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Their 2011 study of how principals are evaluated in Wisconsin found that the evaluation systems are defined and administered inconsistently across districts. None of the systems displayed the power to promote changes in practice. The study also found that half of the principal evaluation systems in Wisconsin were more than 10 years old. Few school districts had defined what it means to be an effective principal. Where definitions did exist, they did not align with the evaluation system. In most districts, evaluators designed their own systems. Comprehensive policies, procedures, or guidelines for principal evaluation did not exist.

A high quality formative evaluation system should link the principles of effective evaluation to a clear definition of effective leadership. Results should then inform principal professional development.

With that guiding concept, Kelley and colleagues designed a new formative school leadership assessment and feedback system. Their Comprehensive Assessment of Leadership for Learning (CALL) assesses specific leadership practices and tasks characteristic of high-performing middle and high schools.

The CALL online survey captures leadership practices and school cultures across five domains:

1. focus on learning,
2. monitoring teaching and learning,
3. building nested learning communities,
4. acquiring and allocating resources, and,
5. maintaining a safe and effective learning environment.

The survey captures leadership practices rather than opinions about leadership. That’s because feedback should motivate and direct improvements in performance. It should focus on the tasks and task performance, not on the individual person or his or her self-concept.

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A Next Generation Formative Evaluation and Feedback System

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The CALL assessment measures the presence of formal and informal leadership practices—distributed throughout the school—that promote student learning and that advance learning equity for children at risk. CALL provides three levels of feedback:

(continued on next page...
Each issue of WCER Research Highlights presents a unique mix of stories about research into K-12 education and postsecondary education. This issue opens by describing a new tool for evaluating leadership practices and tasks characteristic of high-performing middle and high schools: The Comprehensive Assessment of Leadership for Learning (CALL).

The second story describes another measurement tool, one that focuses on instruction at the college level. In a story about teaching styles, WCER researcher Matthew Hora says “lecturing” does not adequately describe instruction that involves the instructor speaking to students in class. Two instructors who both frequently lecture may actually exhibit very different teaching behaviors. Hora explains more detailed and multi-dimensional descriptions of teaching.

The graduate schools of 100 research universities train about 80 percent of doctoral students nationwide. The Center for the Integration of Research, Teaching and Learning (CIRTL) at UW–Madison brings together activities that graduate education has historically kept apart. Christine Pfund explains how three interrelated ideas form CIRTL’s conceptual framework: the teaching-as-research (TAR) approach is explored through learning community (LC) opportunities that are based on learning-through-diversity (LtD).

Many students find college costs prohibitive. The Wisconsin Scholars Grant program intends to increase the size of students’ financial aid packages and reduce student debt. UW-Madison education professor Sara Goldrick-Rab and colleagues find that need-based financial grants are modestly effective at inducing students to remain enrolled, earn slightly more credits, and get somewhat better grades, and that these effects are likely stronger when students receive more aid.

Adam Gamoran
WCER Director
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1. a summary report showing results of leadership practices by domain and subdomain;
2. information about effective practices for each domain and subdomain, drawn from research literature; and,
3. guidance on specific steps to take, and tools to use, to strengthen distributed instructional leadership in the school.

Why distributed leadership? Many people in schools are responsible for establishing the conditions for improving student learning. For example, the school special education staff might provide critical feedback to teachers in classrooms, and the school literacy coach might coordinate the assessment practices that help teachers understand how to support student learning. Assessing only the quality of principal misrepresents the practice of leadership across the school organization.

Focusing on distributed leadership relieves principals from a defensive posture toward critical feedback. Instead, survey feedback helps principals model effective leadership behavior and teach those around them to become stronger instructional leaders.

Why focus on practices rather than individuals? If an assessment system were to identify the principal as a weak communicator, the path toward strengthening communication skills may be unclear. In contrast, if the system identifies the school as having weak communication practices, such as the lack of a clear system for communicating student progress to parents and families, the path toward addressing this gap is clearer.

For that reason the CALL survey asks questions about specific practices carried out within the classroom, in interactions between teacher and other staff members, and across the school. For example, to measure instructional leadership practices by teachers in small peer groups, the survey assesses the frequency of teacher conversations with other teachers about student work, test scores, and instruction. The CALL system then provides formative feedback to strengthen instructional capacity.

In 2012, Kelley and colleagues administered the CALL survey in 120 middle and high schools across the country. Afterwards, practitioners told Kelley that taking the survey gave them an opportunity to think about what they should do, what they do well, and what they need to work on in their leadership practice.

Read more about CALL http://www.callsurvey.org/
Measuring STEM Instruction More Meaningfully

Fair or not, the national discourse on science and math education at the postsecondary level often focuses on one issue: how to get faculty to stop lecturing. But the terms used to describe teaching practice, such as lecturing, are often flawed.

To measure and portray postsecondary teaching practices more clearly, UW–Madison researcher Matthew Hora and colleagues found that instructional practice is far more complex than a single descriptor can capture. Reducing how an instructor teaches Biology 101, for example, to a variable such as lecturing masks other important dimensions of her teaching, such as the types and frequency of questions she posed to students or how her students are socially and cognitively engaged in the classroom.

Hora says the field of college-level science education faces a critical problem of measurement, and that has significant implications for policy and practice. Categorizing teaching into simple dichotomous groups (for example, lecturers vs. interactive teachers) provides policymakers with an inaccurate and coarsely grained perspective of teaching that does not reflect the realities of classroom practice.

Often overlooked, for example, is the instructional practice of using a variety of methods within a single class period. A single descriptor ignores how long particular methods are used and how different techniques are used in combination with one another.

In spring semester 2012, Hora and colleagues used the Teaching Dimensions Observation Protocol (TDOP) to observe 58 math and science faculty (self-selected) in three public research universities. The findings demonstrated that postsecondary teaching is more complex and nuanced than is suggested through a reliance on simple descriptors such as lecturing.

The TDOP captures five dimensions of teaching practice (see textbox, above). It includes more subtle pedagogical strategies such as instructor use of humor, illustrations or anecdotes, and verbally marking transitions between topics that play critical roles in instruction. A singular focus on instructor behavior also obscures the nature of questions instructors pose to their students as well as inferences regarding the potential for different forms of cognitive engagement among their students (recalling and memorizing information, problem solving, and responding to faculty use of technology).

Faculty employ different ways to ask questions during class. They use rhetorical questions when students are not expected to answer aloud. They ask open-ended questions (“display” questions) that solicit specific information. The frequency with which each instructor strategy was observed varied considerably among disciplinary groups, underscoring the importance of accounting for disciplinary context.

So “lecturing” does not clearly describe instruction that involves the instructor speaking to students in class. In many cases faculty lecture with specific types of instructional technology (PowerPoint, chalkboard writing, and demonstration equipment). Another variant is the Socratic lecture in which the instructor poses questions frequently to students and uses their answers to guide the course of discussion. Instructors often combine these types of lecturing with other dimensions of teaching in a variety of ways. That means that two instructors who both frequently lecture may actually exhibit very different teaching behaviors, leading to dramatically different experiences for their students, Hora says.

The TDOP instrument provides more detailed and multidimensional descriptions of teaching. It promises to be useful in three ways:

1. analyze teaching practice at departmental and/or institutional levels,
2. inform faculty professional development sessions, and
3. give policymakers more accurate empirical accounts of classroom teaching.

Read more at http://ccher.wceruw.org/

Matthew Hora
Grants Can Improve Student College Success

Financial aid has long been evaluated for its effectiveness at promoting college attendance. But the utility of college at promoting social mobility hinges on students completing years of college credits. Facilitating college persistence among students from low-income families appears to require offsetting the growing costs associated with college attendance. Need-based financial grants are a popular mechanism with which to lower those costs.

The Wisconsin Scholars Grant (WSG) program intends to increase the size of students’ financial aid packages and reduce student debt. The privately funded program is distributed by lottery among eligible first-year undergraduates attending Wisconsin’s 13 public universities.

A recent analysis of the program by UW-Madison’s Sara Goldrick-Rab and colleagues provides evidence that need-based financial grants are modestly effective at inducing students to remain enrolled, earn slightly more credits, and get somewhat better grades, and that these effects are likely stronger when students receive more aid.

Goldrick-Rab is associate professor of educational policy studies and sociology at the UW-Madison. She and colleagues examined the impact of offering an additional $3,500 grant (renewable for up to five years) on the college continuation decisions of Pell Grant recipients. They collected longitudinal data for four cohorts of students eligible to participate in the WSG program (nearly 15,000 people in total).

The study concluded that, on average, offering students the new grant generated small, positive impacts on their retention rates, credit completion, and grade point average. Effects appeared strongest at the institutions where typical academic performance among Pell recipients leaves the most room for improvement.

Students receiving more aid during their first year of college stayed enrolled longer. Specifically, the study found a 2.8 to 4.1 percentage point increase in retention to the second year of college accruing to a $1,000 increase in total financial aid.

The Wisconsin Scholars Grant (WSG) was initiated in 2008 and is supported by a $168 million endowment from the Fund for Wisconsin Scholars, making it one of the largest need-based grant programs in the state. This study provided impact estimates based on the entering cohorts of 2008, 2009, 2010, and 2011.

The most detailed estimates focused on data from the program’s first cohort: The study considered three years of outcomes for cohorts 1 and 2, two years for cohort 3, and one year for cohort 4.

Examining effects across multiple cohorts helped to provide a sense of the reliability of the results and provided some space to consider how program implementation relates to effectiveness.
"Children from low-income families now face a nine percent chance of attaining a bachelor’s degree. That low rate of college attainment is substantially attributable to high rates of college dropout."

The study found that treatment impacts appear to fade over time. This may be attributable to the sharp declines in the number of students continuing to get the grants over time, related to the criteria for continual receipt. The estimated impact on retention grew weaker and became non-significant by semester four. There were no detectable effects by the third year of college. Effects were also negligible where the grant simply supplanted students’ loans—the effects were far more noticeable when the grant added money to the students’ aid packages, rather than reducing loans.

Goldrick-Rab points out that monetary interventions are “rarely simple drops of cash from the sky.” Grant money reaches students through a process, one that can affect the monetary and non-monetary value of the money. A closer examination of how packaging practices vary across institutions may yield greater insights into which changes would be most effective.

Wisconsin Scholars Grant Program

The WSG program offers Pell-eligible students a $3,500 grant per year for up to five years, with a total potential maximum award of $17,500 per student. This amounts to 20.4% of their estimated costs of attendance, and 69.9% of students’ annual demonstrated financial need.

Students are eligible for the Wisconsin Scholars Grant if they are Wisconsin residents who attended and graduated from a state public high school within three years of matriculating to one of the state’s 13 public universities, where they enrolled for at least 12 credits (full time), completed the Free Application for Federal Student Aid, and qualified for a federal Pell Grant, while still possessing calculated unmet need (net of all grant aid) of at least $1.

In fall 2008, the average adjusted gross income of students’ parents was just under $30,000 and the average expected family contribution was $1,631. Thus most students came from families living above the poverty line, yet qualifying as “working poor” because they earned less than 200% of the federal poverty threshold.
Preparing Future Research Faculty to Teach

Graduate and postdoctoral students at research universities will shape the future of undergraduate science, technology, engineering, and math (STEM) education in the United States. Since almost 80 percent of doctoral students are trained at only 100 research universities, the graduate schools of these institutions are a critical leverage point for improving undergraduate STEM education across the country. If a significant fraction of these universities were to prepare future STEM faculty as teachers of undergraduates, they would seed undergraduate institutions across the country with thousands of faculty and instructional staff who teach effectively and continually improve the teaching and learning process.

The Center for the Integration of Research, Teaching and Learning (CIRTL) brings together activities that graduate education has historically kept apart. UW–Madison, Michigan State University, and Pennsylvania State University founded CIRTL in 2003 with funding from the National Science Foundation (NSF, Robert Mathieu PI). The network now includes 23 research universities across the nation.

Three interrelated core ideas form CIRTL’s conceptual framework: the teaching-as-research (TAR) approach is explored through learning community (LC) opportunities that are based on learning-through-diversity (LtD). TAR describes the process of improving student learning in terms that are familiar from disciplinary research. LC and LtD emphasize researchers’ rich and productive experiences working in diverse teams to achieve a common goal (see full descriptions at www.cirtl.net). By engaging graduate students and postdoctoral students in professional development based on this framework, CIRTL strives to produce cohorts of STEM faculty who implement effective teaching practices for diverse learners as part of a multifaceted professional career.

In 2003, CIRTL launched its prototype learning community at UW-Madison: the Delta Program in Research, Teaching and Learning (www.delta.wisc.edu). Since Fall 2003 more than 1,600 UW–Madison graduate students and postdocs and 650 faculty and staff members from a range of STEM and social-science disciplines have participated in Delta.

In its decade of operation, Delta has developed an array of offerings, including graduate courses and small-group programs embedded within an interdisciplinary community of STEM graduate students, postdocs, faculty, and staff. Delta instructors are free to design learning objectives, activities, and projects based on their expertise, interests, and goals for the future faculty. The only requirements are that course design and content integrate the three core ideas of TAR, LC, and LtD and that participants have an opportunity to apply what they learn. This allows instructors to explore a variety of approaches to teaching future STEM faculty.

In the 2010–11 academic year Delta provided 15 courses, three small-group facilitated programs, 11 internships, six supplemental workshops, and six monthly roundtable dinners. The offerings continue to evolve and new ones emerge. Courses and program instructors change over time. Some carry forward instructional materials and resources with little change, and others introduce novel components.
To examine learning across Delta’s diverse offerings, researchers surveyed more than 300 participants across 39 Delta offerings asking them to describe what they had learned and the steps they would take to teach a concept in their discipline. 23 distinct learning outcomes categories were derived from the survey responses. Participants most frequently mentioned outcomes pertaining to assessment and evaluation, with 230 respondents (73 percent) mentioning the need or intention to assess student learning or teaching effectiveness. Participants also discussed learning goals and outcomes for students (46 percent) and mentioned aspects of student learning (38 percent). Participants also noted the need to acknowledge diverse learners (27 percent) and stated their intent to use a variety of instructional strategies (21 percent).

The three core CIRTL ideas provide a framework for participants to organize the approaches they learn:
At least one concept within the CIRTL framework was included in participant responses from across the range of experiences in the Delta program: 45 percent conveyed an LC-related concept, 57 percent noted an LtD-related concept, and just over 90 percent of respondents included mention of at least one TAR-related concept.

One longitudinal study of former doctoral students, being led by WCER researcher Mark Connolly, found that a majority of respondents (76 percent) applied the knowledge and skills they gained from their teaching development to their subsequent undergraduate teaching. Respondents most frequently cited delivering instruction that increases student engagement (e.g., through active learning, inquiry-based learning, or the creation of LCs within the classroom). They also frequently cited what they had learned in assessment and course preparation and planning.

The 23 institutions in the CIRTL Network are now working to expand local and national efforts to prepare future STEM faculty. While the CIRTL framework links the institutions, each develops its own local LC based on its institutional needs, strengths, and culture. Importantly, the Network learning community provides opportunities for graduate students and post-docs to connect and learn from one another and a diversity of campuses thus better preparing them for faculty positions across the spectrum of higher education institutions.

Adapted from Christine Pfund, Robert Mathieu, Ann Austin, Mark Connolly, Brian Manske, & Katie Moore (2012): Advancing STEM undergraduate learning: Preparing the nation’s future faculty. Change: The Magazine of Higher Learning, 44(6), 64–72.

Christine Pfund

The Delta Program in Research, Teaching and Learning

The Delta Program promotes the development of a future national faculty in the natural and social sciences, engineering, and mathematics that is committed to implementing and advancing effective teaching practices for diverse student audiences as part of their professional careers.

The Delta Program strives to support the ongoing enhancement of its mission through the principles of Teaching-as-Research, Learning Community, and Learning-through-Diversity by:

- improving undergraduate education on the UW–Madison campus in the sciences, mathematics, and engineering through the use of teaching-as-research by graduates-through-faculty (defined as graduate students, postdoctoral researchers, academic/instructional staff, and faculty)
- functioning as a self-sustaining learning community that provides fluid leadership and membership roles to all participants
- positioning learning-through-diversity as an integral part of teaching and learning initiatives in the sciences, math, and engineering across campus

http://www.delta.wisc.edu/

CIRTL Network

The Delta Program is a project of the Center for the Integration of Research, Teaching and Learning (CIRTL) on the University of Wisconsin–Madison campus. CIRTL is a National Science Foundation Center for Learning and Teaching in higher education. A network of 25 research universities, CIRTL uses graduate education as the leverage point to develop a national science, technology, engineering, and mathematics (STEM) faculty committed to implementing and advancing effective teaching practices for diverse student audiences as part of successful professional careers.

http://www.cirtl.net/