

Aligning Practice to Policies

Changing the Culture to Recognize and Reward Teaching at Research Universities



We have considerable knowledge about what teaching approaches are most effective in facilitating learning in STEM courses. This understanding is based upon extensive research much of which was done by faculty members on our own AAU member campuses. It is now time for us to apply this knowledge to improve how undergraduate STEM classes are taught. This will take a major shift in how departments and our institutions evaluate, recognize, and reward the use of effective teaching pedagogy by our faculty. This joint project between AAU and the Cottrell Scholars represents an effort to facilitate institution-wide change aimed at better promoting, evaluating and rewarding effective teaching at all levels of our research universities.

Tobin Smith, Association for American Universities

Part of the Cottrell Scholar mission is to ensure that faculty at all universities are able to pursue the highest levels of scholarship as both researchers and teachers. An integral element of this is to go beyond simply studying how to assess teaching and to engage in changing the culture of universities to be one of a scholarly approach to teaching. This project endeavors to be one step in this process of change and provide faculty and institutions with practical approaches to a scholarship of teaching.

Michael Dennin, University of California Irvine

Universities want to see their student succeed, but the metrics commonly used to assess and reward teaching do not necessarily promote student learning. Here we promote flexible models to enable holistic evaluation of faculty effort that allow institutions to maintain their values and identity.

Zachary Schultz, University of Notre Dame

The premise of the Cottrell Scholar program is that high-caliber research integrated with modern, interactive educational tools creates a perfect environment for both scientific breakthroughs and outstanding student learning outcomes crucial for nurturing the next generation of U.S. scientists. This project attempts to close the gap between scholarly activities and institutional policies that can impede the development of true teacher-scholars at research universities.

Silvia Ronco, Research Corporation for Science Advancement

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In collaboration the Association of American Universities (AAU) and the Cottrell Scholars Collaborative funded by Research Corporation for Science Advancement (RCSA) have worked to address a critical lever to improve the quality of undergraduate STEM education: How to value, assess, and reward teaching quality and effectiveness at research universities?

Since 2012, we have worked together to understand the landscape of established and emergent means to reward teaching more accurately than traditional measures such as student evaluations and to assess how research universities do or do not reward teaching in promotion and tenure decisions. Together the Cottrell Scholars and AAU believe for undergraduate teaching and its evaluation to be taken seriously in the academy requires more active intervention. Research universities need to create an environment where the continuous improvement of teaching is valued, assessed, and rewarded at various stages of a faculty member's career and aligned across the department, college, and university levels. Evidence shows that stated policies alone do not reflect practices, much less evolve culture to more highly value teaching. A richer, more complete assessment of teaching quality and effectiveness for tenure, promotion, and merit is necessary for systemic improvement of undergraduate STEM education.

In May 2016, the Cottrell Scholar Collaborative and AAU supported by funds from RCSA, brought together leading higher education scholars and practitioners as well as research-active faculty members to develop specific recommendations and guidance to value, assess, and reward effective teaching. This grant built from an initial Cottrell Scholar Collaborative and AAU project led by Stephen Bradforth, William Dichtel, and Adam Leibovich¹

The following report highlights strategies to enhance the espoused value placed on teaching and to promote effective evaluation of teaching at research universities. Three universities currently advancing new efforts to assess and reward contributions to teaching are profiled. We want to acknowledge the insights and contributions from the workshop speakers and participants. We also want to thank the members of the workshop planning and editorial team for playing a key role in the development of this report.

This research collaborative between the Association of American Universities and the Cottrell Scholars is supported by funds from the Research Corporation for Science Advancement.

¹ In January 2014, the Cottrell Scholar Collaborative and AAU hosted a workshop titled, "Effective Evaluation of Teaching and Learning". The workshop brought together leading research-active faculty as well as higher education scholars and practitioners to discuss how to more effectively evaluate teaching and learning in undergraduate STEM education. The workshop culminated in a workshop report, [Searching for Better Approaches: Effective Evaluation of Teaching and Learning in STEM](#) and an article in *Nature* titled, "[University learning: Improve undergraduate science education](#)".

Rewarding Teaching²

...many post-secondary institutions have launched institution-wide efforts to improve the quality and effectiveness of undergraduate teaching and learning.

Research on how students learn and on learner-centered teaching practices is well documented in peer-reviewed scholarship (Bransford et al., 2000; Ambrose et al., 2010; Brown et al., 2014; Doyle, 2008) and more recently highlighted in high-level policy reports and papers (Handelsman et al., 2004; Singer, et al., 2012; Kober, 2015). Robust evidence shows that active learning pedagogies are more effective than traditional lecture-based methods in helping students, including students from underrepresented backgrounds, learn more, persist, and have higher rates of completing their undergraduate degrees (Freeman, et al., 2014; Haak, et al., 2011; Lorenzo, et al., 2006; Eddy & Hogan, 2014; Becker, et al., 2015; Trenshaw, et al., 2016). Grounded in this scholarship, many post-secondary institutions have launched institution-wide efforts to improve the quality and effectiveness of undergraduate teaching and learning. As commented by Susan Singer, former Director of the Division of Undergraduate Education at the National Science Foundation, the landscape is filled with encouraging ways to transform undergraduate education (Singer, 2015).

Despite this movement toward developing and supporting systemic reform in undergraduate education, a majority of research university faculty members who teach undergraduate science and engineering classes remain inattentive to the shifting landscape. Student-centered, evidence-based teaching practices are not yet the norm in most undergraduate STEM education courses, and the desired magnitude of change in STEM pedagogy has not materialized (Malcolm & Feder, 2016; Anderson et al., 2011; Dancy & Henderson, 2010; Dancy et al., 2014; Henderson & Dancy, 2007, Singer et al., 2012).

Together the Cottrell Scholars and the Association of American Universities believe that providing faculty members with support for improved teaching, using metrics that accurately reflect teaching effectiveness, and aligning incentives with the expectation of quality teaching are necessary for systemic improvement of undergraduate STEM education. Currently, faculty members at research universities “tend to be assessed and promoted mainly on the basis of research success” (Bradforth, et al., 2015). This reality is frequently reinforced by a lack of support and feedback about teaching (Gormally et al., 2014). Furthermore, teaching effectiveness is overwhelmingly assessed using student evaluation surveys completed at the end of each course, despite evidence that these evaluations rarely measure teaching effectiveness (Boring, et al., 2016; Clayson, 2009), contain known biases (Centra & Gaubatz, 2000), promote the status quo, and in some cases reward poor teaching (Braga, 2014). Also, the ease with which these surveys are applied has led to widespread misuse. A challenge to enabling effective evaluation of teaching practices is to provide a practical framework that is scholarly, accessible, efficient, and aligned with local cultures so as not to preclude their use by most institutions. Such a framework would provide the greatest probability that teaching and its evaluation will be taken seriously in the academy (Wieman, 2015).

² Essay under review by CBE-Life Sciences Education

In an attempt to assess the current importance of teaching at research universities, we examined the published promotion and tenure policies at research intensive institutions and combined this analysis with outcomes from a perception survey administered to instructional staff on the importance of teaching at research universities. These results formed the basis for a workshop sponsored by the AAU and Research Corporation for Science Advancement held in May of 2016 that aimed to develop practical guidelines to recognize and reward contributions to teaching at research universities at the department, college, and university levels. The following sections report what was learned about differences in policies and perceptions, and include recommended strategies to create an environment where continuous improvement of teaching is expected, valued, assessed, and rewarded at various stages of a faculty member's career. The essay concludes with profiles of three institutional examples drawing upon such strategies to assess and reward contributions to teaching.

The Gap Between Policy and Practice

Development of a coherent set of policies to guide the evaluation of a faculty member's work is a precondition for improving the merit and promotion processes and for enhancing the espoused value placed on teaching. However, evidence shows a wide variation in commitment to and expectations for research, teaching, and service between and within research universities exists (Fairweather & Beach, 2002) and that stated policies alone do not reflect practices, much less evolve culture to more highly value teaching (Fairweather, 2002, 2009; Huber, 2002). The latter, *i.e.* evolving the culture, requires more active intervention by institutional leaders and faculty members, especially in the hiring, merit, and promotion processes.

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AAU's analysis of 51 research institutions' university-level promotion and tenure policies shows that many contain language valuing teaching in addition to research. Forty-one of these policies give some form of guidelines as to how teaching should be considered. Out of the 41 institutions that provide guidelines, 36 required at least one form of evidence, 36 recommend or require student evaluations to be used, and 26 recommend or require peer classroom observation.

The AAU, as part of its Undergraduate STEM Education Initiative, collected statements on the evaluation of teaching from 32 department chairs at eight universities. Across all institutions and departments there was a strong assertion that teaching is highly valued. Furthermore, all departments make use of student evaluations at the end of courses and provide an annual award for excellence in teaching. However, it was impossible to discern for 19 of 32, or 59% of the statements submitted whether attention to student learning outcomes or evidence-based pedagogy was either required or recognized.

Additionally, the AAU collected information about the value placed on teaching and the quality of the evidence used to assess effective teaching in merit and promotion processes from approximately 1,000 instructional staff.

Respondents³ rated statements giving some indication of the perceived value placed on teaching in their department, college, and school, as shown in Table 1. The purpose of the survey was to try to provide some baseline of the overall culture toward teaching at these various levels. Respondents agreed that both their departmental administration and their campus administration at their universities recognize the importance of teaching and is supportive of faculty members improving and changing their teaching practices (3.20 ±0.74 and 3.02 ±0.75, respectively). However, when asked whether faculty members in their departments believe that ongoing improvement in teaching is part of their job duties, the level of agreement drops slightly (2.90 ±0.74). Also, when asked to give their opinion whether effective teaching plays a meaningful role in the annual review and salary processes within their colleges and within the promotion and tenure processes at their institutions, the mean responses were in the middle between agree and disagree (2.50 ±0.87 and 2.54 ±0.86, respectively). These results suggest some disconnect between what is publicly supported within colleges and universities and what actually happens in day-to-day processes.

Table 1: Overall Means for Survey Statements by Faculty Members About Importance and Recognition of Teaching

1= Strongly Disagree; 2=Disagree; 3=Agree; 4=Strongly Agree

Statement	Mean	Std. Deviation	Valid N
My departmental administration recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.	3.20	0.74	964
Campus administration at my university recognizes the importance of teaching and is supportive of faculty improving and changing teaching practices.	3.02	0.75	960
Instructors in my department believe that ongoing improvement in teaching is part of their jobs.	2.90	0.74	962
In my opinion, effective teaching plays a meaningful role in the annual review and salary processes in my college.	2.50	0.87	950
In my opinion, effective teaching plays a meaningful role in the promotion and tenure processes at my institution.	2.54	0.86	950

Furthermore, when respondents were asked to provide their opinion about the quality of the evidence for effective teaching used by their colleges in annual review and salary processes and in the promotion and tenure processes at their institutions, those choosing “Don’t Know” or not answering increased to slightly more than 40% (See Table 2). Of those who chose to respond, in both cases, one third noted the teaching evidence was of “low quality” and half cited “medium quality” evidence of effective teaching.

Table 2: Percent Responses to Quality of Evidence of Effective Teaching

Your feedback regarding the quality of the evidence for teaching used in the following circumstances								
	Low Quality		Medium Quality		High Quality		Total	No Response/Don't Know
	N	%	N	%	N	%	N	N
By your college in the annual review and salary process.	224	34.4%	331	50.8%	97	14.9%	652	441
By your institution in the promotion and tenure process.	212	33.2%	325	50.9%	101	15.8%	638	455

³ 2,971 instructional staff received the AAU Faculty Survey across the eight project site institutions. Over 1,000 (1,093) submitted at least a partially completed survey, resulting in an overall response rate of 36.8%; individual institutional response rates ranged from 21.6% to 69.4%. A majority of respondents (542 or 49.6%) were either associate professors or professors with tenure. Twelve percent were tenure-track professors who did not yet have tenure at the time they were surveyed. Over a quarter of respondents were graduate students (26%) and the final 12.5% were instructor/lecturers, non-tenure faculty, no response, or other instructional staff. Responses from private institutions comprised 36% of the total with 64% from public institutions.

Recommendations to Value, Assess, and Reward Contributions to Teaching at Research Universities

Faculty members should be provided with mechanisms to document and evaluate teaching innovations and improvements...

Larger long-term improvement to undergraduate STEM education will evolve from an environment of continuous improvement of teaching coupled with an altering of the practice of how contributions to teaching are recognized and rewarded at research institutions, particularly relating to the evaluation of teaching for purposes of merit and promotion. It is in the interpretation of written policies during the enactment of those decisions where the true institutional values lie (Fairweather, 2002).

Fostering a university culture that values high-quality and continuous improvement of teaching as much as performing high quality research requires establishing teaching as a public and collaborative university activity, as well as an integral aspect of the individual faculty member's *scholarship*. To do this, it is critical to identify the criteria and relevant roles of the faculty member, program, department, college, and institution for evaluating an individual faculty member's work that fits both the local context (program/department/college) and the larger institutional mission. Ultimately the goal is to allow local variation in a manner that both preserves the academic freedom of faculty in the classroom while supporting the university's collective responsibilities for undergraduate education.

Deans and department chairs play a critical role. As institutional leaders they can reinforce an expectation that faculty members understand teaching not as an isolated activity, but as integrated into their roles as scholars, as members of the university, and as members of their own disciplinary-based community. This requires department chairs and deans to encourage faculty members to think critically about their teaching and develop a continuous improvement mindset about their teaching within their discipline and in the context of the educational responsibilities of their department. Beginning this conversation during the hiring process (e.g., through clear language in the job announcement and application package materials) articulates the importance of teaching. Furthermore, assessing a candidate's attitudes about teaching and advising can be achieved by including questions about teaching and advising in addition to research in the on-campus interview. This approach demands that universities, colleges, and departments must desire to hire outstanding scholars who participate in the dissemination of the knowledge that they create, and view teaching as an essential element of scholarship.

Emphasize the importance of teaching at the onset of hire. For new hires, a department could provide teaching professional development funds as part of start-up packages, require a professional development plan for teaching, support participation in faculty learning communities, or intentionally support faculty mentoring by pairing expert teachers with those interested in improving their teaching and provide course-load credit for both faculty members.

Communicate criteria and expectations on how contributions to teaching will be evaluated and recognized. Faculty members should be provided with mechanisms to document and evaluate teaching innovations and improvements necessary to satisfy these criteria and expectations.

Fundamentally the values of a university and a department can be discerned from the activities they promote and reward.

Additionally, data from such documentation should feed into reward systems. Three practices are essential to this recommendation.

- (1) Empower departments to establish an agreed-upon set of metrics that go beyond student satisfaction surveys for each faculty member. A broader array of materials could include: development/revision of learning goals and content in course syllabus, incorporation of new pedagogical practices into courses, documented achievement of student learning outcomes or changes in classroom culture, involvement in teaching service or scholarship, or shifts of assessment from factual recall to providing evidence of how students use their knowledge. The primary purpose of these strategies is to encourage faculty members to be reflective about their teaching practice.
- (2) Make sure that metrics are efficient, *i.e.*, they are not so labor-intensive as to preclude their use by most faculty members.
- (3) Ensure that promotion and tenure committees at both the departmental and institutional levels are educated with respect to best practices about how to effectively review the materials submitted by faculty members.

Establish a culture consistent across departments, colleges, and the university that recognizes the scholarly activity of teaching.

Fundamentally the values of a university and a department can be discerned from the activities they promote and reward. The above recommendations are aimed at establishing a culture consistent across departments, colleges, and the university that recognizes the scholarly activity associated with the time and effort to maintain and improve education. Achievement of this goal will require a holistic approach to value, support, assess, and reward teaching at multiple institutional levels. Fundraising around curricular activities can bring exposure and reward to faculty members invested in student learning. Resources from the university and college dedicated to providing faculty members the support for improving large introductory STEM courses signals a commitment to quality educational practices for all. A commitment by the department and university to use clearly articulated empirical evidence for rewarding teaching, both in the promotion and tenure process and for teaching awards, provides validation for the importance of effective undergraduate education. Efforts to address the perceived divide between tenure-stream “research” faculty and instructional faculty, who often play a significant role in the large introductory courses, could further support the university’s educational mission. Opportunities to discuss and present scholarly activities around teaching provide public exposure that can be emphasized by the visible support of key institutional leaders, such as deans, chairs, and other academic administrators. Furthermore, increasing awareness within the university about existing efforts and related scholarship to improve student learning and teaching effectiveness on campus has the potential to better articulate how the institution’s educational objectives relate to the research mission of the university.

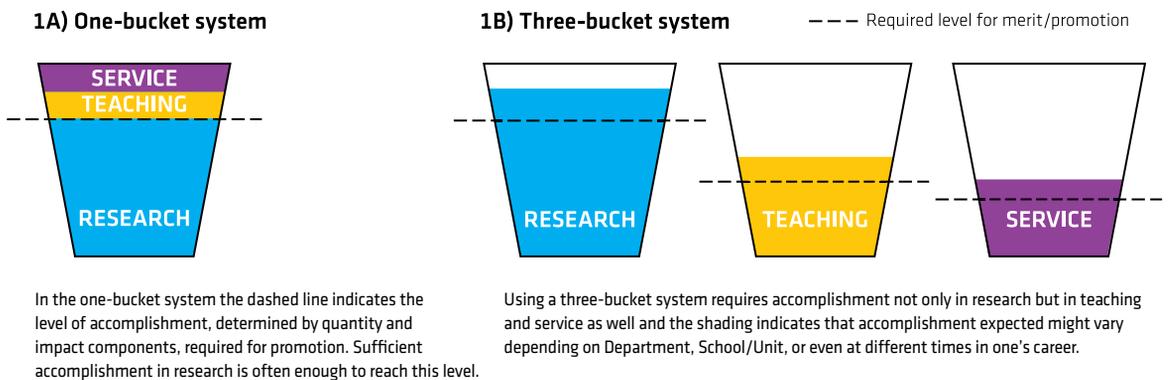
Three Examples of Institutional Initiatives to Assess and Reward Teaching

1. Promotion Process at UC Irvine: Moving to a Three-bucket System

At most universities accomplishment in three areas—research, teaching, and service—is evaluated to inform merit and promotion decisions. Overall accomplishment, that has both quantity and impact components, can be represented by a single bucket (Figure 1A). The level that must be achieved for promotion varies by university and discipline, but is generally agreed upon locally and is represented by the dashed line in Figure 1A. Getting over the line results in promotion. But this graphic illustrates the common perception, particularly at R1 universities, that the fill line can be determined almost completely by accomplishments in research.

When all faculty are compared in this one-bucket system, those who do more teaching and service rarely benefit in terms of merit and promotion since getting to the dashed line is what is needed. One solution is to move to a three-bucket system where a level of accomplishment, that has both quantity and impact components, is required in each of three buckets (Figure 1B). If the faculty member does not reach the required level in all three buckets, merit-based salary increases are not awarded, or promotion/tenure is denied. In this system one cannot simply fill up the research bucket so full that empty teaching and service buckets are acceptable.

Figure 1. Moving from a one- to three-bucket system



University of California (UC Irvine) has not yet made a complete transition from a one-bucket to a three-bucket system, but is making steady changes in this direction. For example, as a member of the UC system, UC Irvine has a merit and promotion system that governs advancement through the ranks with associated salary increases on a regular schedule (http://www.ucop.edu/academic-personnel-programs/_files/apm/apm-210.pdf). Advancements can be accelerated in time to reward the most outstanding faculty. On the UC Irvine campus accelerations have typically required demonstration of research accomplishments at a significantly higher rate and of similar or greater impact than expected for a regular action. Since 2014, accelerations have required evidence of excellence above that expected for normal actions, not only in research but also in teaching and/or service.

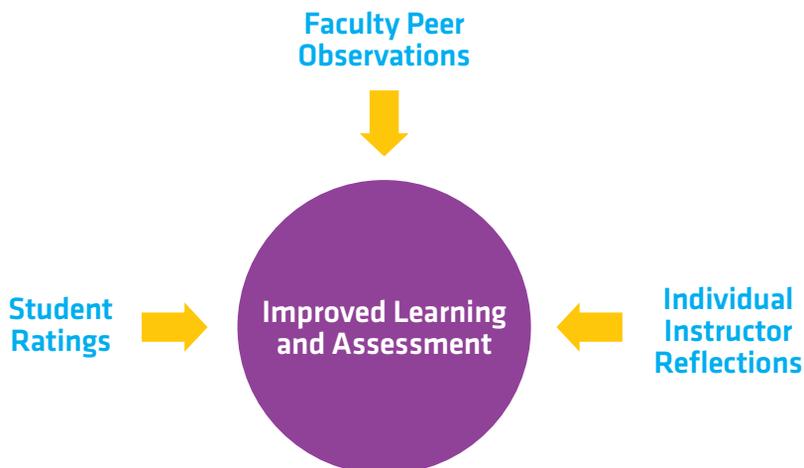
What is put into the buckets also matters. While published UC policy indicates that at least two types of evidence should support evaluation of teaching (Page 5, http://www.ucop.edu/academic-personnel-programs/_files/apm/apm-210.pdf), in practice student evaluations are often the only evidence

used. For the 2016 review cycle, UC Irvine has required individuals to upload at least one additional type of evidence to evaluate teaching (e.g., reflective teaching self-statement, syllabus, peer-evaluation, or measure of student achievement). This change is a first step toward conducting a more thorough evaluation of the contributions to teaching. It also broadens the discussion of teaching by everyone involved in the review process, and thus has the potential to increase awareness of the innovative and effective teaching practices taking place on campus.

2. University of Colorado Teaching Quality Framework

The AAU-sponsored undergraduate STEM initiative has helped to support the development of a new Teaching Quality Framework at the University of Colorado. The framework draws upon organizational change literature and cites the University of Colorado Boulder’s (CU Boulder) already existing guidelines —“(d)ossiers for comprehensive review, tenure, or promotion must include multiple measures of teaching”—to create a framework for assessing and promoting teaching quality (Finkelstein, et al., 2015). The goal of the Teaching Quality Framework (TQF) is to create a common campus-wide framework for using scholarly measures of teaching effectiveness that is disciplinary-specific and provides faculty members with feedback in order to support improved teaching. Thus, CU Boulder seeks to address the calls to professionalize teaching and create a climate of continuous improvement. The framework defines teaching as a scholarly activity—like research—and assesses the core components of such scholarship. Current efforts draw from decades of research in teaching evaluation to create a common framework (Glassick et al., 1997) by defining categories of evaluation as follows: (1) clear goals, (2) adequate preparation, (3) appropriate methods, (4) significant results, (5) effective presentation, and (6) reflective critique.

Figure 2. CU Boulder Model for Improved Learning and Assessment



These framework categories are held constant across all departments; however, specific interpretation of the components of the framework and their relative weights are defined at a department level. Thus, departments specify in a clear way what is meant by “multiple measures” and “significant results” locally, but use common categories across the campus. This approach provides the university with a common framework while preserving disciplinary identity and specificity.

The goal of the rubric is to... create a more holistic view of the faculty member's teaching contributions.

The implementation strategy has created two layers of work: one at the departmental level and one at the campus-wide level. Participation in the TQF is purposefully voluntary, asking departments to work to develop the framework rather than address a top-down mandate. The departmental level seeks to increase engagement and exploration of new ways to assess teaching by empowering individual departments to identify how they might enact more scholarly measures of teaching. Nine CU Boulder departments have committed to piloting the TQF in the 2016–2017 academic year with a postdoctoral-level facilitator and communication channel. Meanwhile, departments have committed two to five lead faculty to identify what the measures of scholarly teaching are that address the framework in their disciplines, while the facilitator manages the biweekly meetings and shares information across departments.

CU Boulder has plans for two levels of campus discussions, the first among the pilot departments, and subsequently one that will include broader representation from other departments, deans, and other institutional stakeholders. Once the departmental metrics, and common campus framework and review system is coordinated, these tools will be deployed in the annual merit review and/or promotion and tenure review of departments across campus.

3. University of Kansas Department Evaluation of Faculty Teaching Rubric

The Center for Teaching Excellence at the University of Kansas (KU) recently developed a rubric for department-level evaluation of faculty teaching. University requires that evaluation of faculty teaching for promotion and tenure, and progress towards tenure includes information from the instructor, students, and peers. However, the quality of the information collected is highly variable, and reviewers often struggle to integrate and make sense of information from the three sources. In practice, many evaluations prioritize a narrow dimension of teaching activity (the behavior of the instructor in the classroom) and a limited source of evidence (student evaluations). Providing a rubric to structure the evaluation of faculty members' teaching increases the visibility of all dimensions of teaching, clarifies faculty teaching expectations, enables quick identification of strengths and areas for improvement, and brings consistency across evaluations and over time.

The goal of the rubric is to help department committees integrate information from the faculty member being evaluated, their peers, and their students in order to create a more holistic view of the faculty member's teaching contributions. Drawing on the peer review of teaching literature (*e.g.*, Bernstein, 2008), the rubric identifies seven dimensions of teaching practice that address contributions to both individual courses and the department's curriculum. For each category the rubric provides both guiding questions and defined expectations. The rubric can also be used to guide a constructive peer-review process, reflection, and iterative improvement.

To ensure applicability across disciplines, the rubric does not weigh or place focus on any particular element or require a particular type of evidence to be used. Departments are encouraged to modify the rubric and use it to build consensus about the dimensions, the questions and the criteria. The implementation strategy included discussions with

department chairs and KU Center for Teaching Excellence department ambassadors in advance of its release in order to increase the probability of broad buy-in. The rubric is being piloted during the 2016–2017 academic

year as a guide for peer review of teaching, promotion and tenure, and third-year reviews and is available at: <https://cte.ku.edu/sites/cte.ku.edu/files/docs/KU%20Rubric%20for%20Evaluating%20Teaching%20DEC2016.pdf>.

Table 3. Rubric for Department Evaluation of Faculty Teaching (department should modify as needed)

	Below Expectations: 1-2	Meets Expectations: 3	Exceeds Expectations: 4-5
Expectation levels align with KU's promotion and tenure rating scale.	(1) Poor: Consistently at this level (2) Marginal: Some teaching at this level	(3) Competent	(4) Professional: Some teaching at this level (5) Advanced: Consistently at this level
<p>Goals, content, and alignment</p> <ul style="list-style-type: none"> • What are students expected to learn from the courses taught? • Are course goals appropriately challenging? • Is content aligned with the curriculum? 	<ul style="list-style-type: none"> • Course goals are unclear, inappropriate, or marginally related to curriculum • Content and materials are outdated or unsuitable for students in the courses • Range of topics is too narrow or too broad • Content is not clearly aligned with curriculum or institutional expectations 	<ul style="list-style-type: none"> • Course goals are articulated and appropriate for curriculum • Content is current and appropriate for topic, students, and curriculum • Course topics include an appropriate range • Standard, intellectually sound materials 	<ul style="list-style-type: none"> • Course goals are well articulated, high quality, and clearly connected to program or curricular goals • Content is challenging and innovative or related to current issues and developments in field • Topics are of appropriate range and depth, with integration across topics • High quality materials, well-aligned with course goals
<p>Teaching practices</p> <ul style="list-style-type: none"> • How is in-class and out-of-class time used? • What assignments, assessments and learning activities are implemented to help students learn? 	<ul style="list-style-type: none"> • Teaching practices are not sufficiently planned or organized, or are poorly implemented • Practices are not well executed; little development in methods despite evidence of need • Students lack opportunities to practice the skills embedded in course goals • Student engagement is variable 	<ul style="list-style-type: none"> • Teaching practices are well planned and organized • Standard course practices carried out; follows conventions within discipline and institution • Students have some opportunities to practice skills embedded in course goals • Students consistently engaged 	<ul style="list-style-type: none"> • Activities are well planned, integrated, and reflect commitment to providing meaningful assignments and assessments • Uses effective, high-impact or innovative methods to improve understanding • In- and out-of-class activities provide opportunities for practice and feedback on important skills and concepts • Students show high levels of engagement
<p>Achievement of learning outcomes</p> <ul style="list-style-type: none"> • What impact do these courses have on learners? • What evidence shows the level of student understanding? 	<ul style="list-style-type: none"> • Insufficient attention to student learning—quality of student learning is not described or analyzed with clear standards • Evidence of poor student learning; low level of skill/ understanding is required or achieved without clear attempts to improve 	<ul style="list-style-type: none"> • Clear standards for evaluating the quality of student understanding • Typical student achievement for courses at these levels 	<ul style="list-style-type: none"> • Standards for evaluating student understanding are connected to program or curriculum expectations, or use authentic assessments • Efforts to support learning in all students • Quality of learning supports success in other contexts (e.g., subsequent courses or non-classroom venues), or is increasing over successive offerings
<p>Classroom climate and student perceptions</p> <ul style="list-style-type: none"> • What are the students' views of their learning experience? • How has student feedback informed the faculty member's teaching? 	<ul style="list-style-type: none"> • Classroom climate does not promote civility or discourages student motivation and engagement • Consistently negative student reports of teacher accessibility, interaction skills • Poor sense of learning among students • Little attempt to address concerns voiced by students 	<ul style="list-style-type: none"> • Classroom climate promotes civility • No consistently negative student ratings of teacher accessibility, interaction skills • Most students indicate progress with their learning • Instructor articulates some lessons learned through student feedback 	<ul style="list-style-type: none"> • Evidence that classroom climate is respectful, cooperative, and encourages motivation and engagement • Student feedback on teacher accessibility, interaction skills is generally positive • Students perceive that they are learning important skills or knowledge • Instructor is responsive to student feedback in short- and long-term
<p>Reflection and iterative growth</p> <ul style="list-style-type: none"> • How has the faculty member's teaching changed over time? • How has this been informed by evidence of student learning? 	<ul style="list-style-type: none"> • No indication of having reflected upon or learned from prior teaching or feedback 	<ul style="list-style-type: none"> • Continued competent teaching, possibly with minor reflection based on input from peers and/or students • Articulates some lessons learned from prior teaching and feedback 	<ul style="list-style-type: none"> • Regularly makes adjustments to teaching based on reflections on student learning, within or across semesters • Examines student performance following adjustments • Reports improved student achievement of learning goals based on past course modifications
<p>Mentoring and advising</p> <ul style="list-style-type: none"> • How effectively has the faculty member worked individually with UG or graduate students? 	<ul style="list-style-type: none"> • No indication of effective mentoring or advising students (but expected in department) 	<ul style="list-style-type: none"> • Some evidence of effective advising and mentoring (<i>define as appropriate for discipline</i>) 	<ul style="list-style-type: none"> • Evidence of exceptional quality and time commitment to advising and mentoring (<i>define as appropriate for discipline</i>)
<p>Involvement in teaching service, scholarship, or community</p> <ul style="list-style-type: none"> • In what ways has the instructor contributed to the broader teaching community, both on and off campus? 	<ul style="list-style-type: none"> • No interaction with broader community about teaching, including involvement with teaching-related committees • No evidence of keeping up with reports on effective teaching • Practices and results of teaching are not shared with others • Actions have negative impact on teaching culture in department or institution 	<ul style="list-style-type: none"> • Some involvement in teaching-related committees, or engagement with peers on teaching (e.g., teaching-related presentations or workshops) • Participates in department-level curriculum decisions 	<ul style="list-style-type: none"> • Regular involvement in teaching-related committees, engagement with peers on teaching (e.g., teaching-related presentations or workshops) • Occasional (or more) local or external presentations or publications to share practices or results of teaching • Contributes to department or university curricular planning or assessment • Advanced—Scholarly publications or grant applications related to teaching

Conclusion

There is no question that strong examples of excellent teaching practice already exist throughout research universities. However, increasing visibility of and institutionalizing support for and reward of effective teaching is a challenge faced by many research universities. In most cases relevant policies are already in place that emphasize the importance of teaching, but work remains to change the culture such that common practice aligns with these policies, especially at the departmental level.

At the department level, there needs to be an explicit conversation about the scholarly nature of teaching...

Here we have outlined some key elements associated with reward structures within research universities that can be leveraged to align practice and policy. To illustrate potential variations within the general framework, we highlighted three different approaches that are being piloted at specific research universities. At the department level, there needs to be an explicit conversation about the scholarly nature of teaching and a faculty member's responsibilities regarding teaching as a scholar in a particular discipline. There also needs to be an explicit discussion of the collective nature of undergraduate teaching and its role within the broader responsibility of the research university. Finally, there needs to be recognition and adoption of empirical models for evaluating teaching that have been tested and validated. Within this broader context, the specific implementation at any given research university must be flexible and adaptable to local culture, structures, and goals.

Essential Questions

Through reflecting on these key questions⁴, faculty members, departments, colleges, and institutions can engage in conversations to advance a culture that recognizes and rewards teaching at research universities.

Institution

- How are measures of teaching excellence included in annual/merit review, promotion, and tenure processes for all instructors at the institution in a meaningful way?
- What expectations have top institutional leaders articulated to develop measures of evidence-based teaching beyond student evaluations?

School/College

- In what ways do deans use data on student progression/retention/completion to inform discussions with department chairs and instructors and to facilitate program improvement?
- In hiring new faculty, how do deans make quality teaching a priority?

Department

- How well-known is the department chair's and top faculty members' support of evidence-based pedagogy to instructors and students?
- How are all faculty who participate in annual/merit, promotion, and tenure evaluations educated about the meaningful inclusion of measures of teaching excellence in those processes?

Course

- How well does the instructor understand how meaningful measures of teaching will factor into their own performance, promotion, and tenure reviews?

⁴ In 2017, AAU published [Essential Questions & Data Sources for Continuous Improvement of Undergraduate STEM Teaching and Learning](#). These questions are extracted from this report.

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