

# Investigating current approaches to assessing teaching evaluation in engineering departments

Nicole P. Pitterson, Shane Brown, Keisha Ann Villanueva

Civil and Construction Engineering  
Oregon State University  
Corvallis, OR

[pittersn@oregonstate.edu](mailto:pittersn@oregonstate.edu), [shane.brown@oregonstate.edu](mailto:shane.brown@oregonstate.edu),  
[villanuk@oregonstate.edu](mailto:villanuk@oregonstate.edu)

Ann Sitomer  
STEM Education  
Oregon State University  
Corvallis, OR  
[ann.sitomer@oregonstate.edu](mailto:ann.sitomer@oregonstate.edu)

**Abstract** - The nature of teaching evaluation is, more often than not, determined primarily by the results of surveys based on students' evaluation and, sometimes, peer evaluation ratings. However, previous work has highlighted that in most cases student evaluation surveys are the main and/or only method used to evaluate teaching. This led to the critique of using student evaluation surveys as insufficient as a stand-alone method of evaluating teaching. These criticisms are based on the fact that instruments designed for students to evaluate teaching commonly consist of the same set of generic closed-ended questions and lack the ability to appropriately judge the multi-dimensional nature of teaching and learning. Additionally, the focus of teaching evaluation is theorized to differ based on the type of institution (which are doctoral universities, baccalaureate and associate colleges). With this in mind, this study seeks to explore current approaches to evaluate teaching in engineering departments. Based on the call for multiple approaches to evaluating teaching in higher education this research seeks to answer the following questions "what are the current approaches to assessing teaching evaluation and how are these approaches similar or different based on institution type?" As part of a larger study, this paper will describe the teaching evaluation practices within three types of institutions aforementioned. The goal of this study is to provide stakeholders with a repository of teaching evaluation practices. The authors also posit that having a broad spectrum of teaching evaluation approaches is highly valuable in improving teaching and student learning in the engineering community.

*Index Terms* – evaluation of teaching, formative and summative assessments, higher education

## INTRODUCTION

Teaching evaluation is used in higher education to offer valuable feedback to instructors/professors on the quality of their teaching as well as ways in which they can improve their performance so as to ensure optimal student learning [1]. The importance of conducting formative and summative assessments of teaching lies in the following three core

benefits teaching evaluation provide: 1) feedback aimed at improving teaching for increased student learning, content covered in courses and overall classroom design, 2) measure of teaching effectiveness that can be used in the promotion and tenure process and, 3) information for future revision to courses and programs so as to effectively meet the need of the students who enroll in these courses/programs [1]–[3].

Research focused on the evaluation of teaching suggests student evaluation surveys are the most commonly used methods and in some cases the only method [4]. Student evaluation surveys are reported as having high levels of validity since students are best positioned to judge particular aspects of teaching and the classroom in general. However, student evaluation surveys have been critiqued as an invalid and unreliable method of evaluating teaching when used as the only assessment method [5]. This critique has fueled the call for multiple sources of evidence in assessing teaching effectiveness that has become stronger over the last decade [3]. This is based on the fact that student evaluation surveys usually consist of closed-ended, generic type questions which, while intent on making the process fairly easy for students to complete, on their own are not enough to capture all facets of teaching effectiveness. The lack of open-ended or explanatory approaches, such as interviews or focus groups, limit the possibility of collecting student explanations of their perceptions of instructional strategies chosen to enhance the learning process [2], [3], [6].

Employing additional methods to evaluate teaching effectiveness create the opportunity to truly assess all the interacting pieces of teaching and learning. This is especially necessary since "learning and teaching are multi-dimensional constructs, therefore an evaluation of teaching should involve a multi-dimensional approach" [2, p. 30]. Consequently, there is a need for additional methods of evaluation so that the breadth of teaching effectiveness can be assessed. Additionally, there are some aspects of teaching and learning students are incapable of assessing such as instructor commitment to teaching, decisions made concerning course design and class structure, and the instructor's rationale for instructional decisions made in the classroom [6], [7].

This study examines teaching evaluation processes in engineering departments and whether these processes are consistent across the different institution types that diverge in

their focus on teaching and learning. Using the Carnegie classification of institutions, this study was conducted to investigate the various teaching evaluation processes at doctoral universities, baccalaureate and associate colleges.

From our study, stakeholders will become aware of the different evaluation techniques that can be used in teacher evaluation at various types of institutions. The authors posit the teaching evaluation system in engineering departments can benefit from having a wealth of approaches to assess the various aspects of teaching. In addition, this work will open up the conversation about how teaching evaluation can be reformed to improve the quality and magnitude of student learning.

### PERSPECTIVES FROM LITERATURE

Teaching evaluation is described as the process whereby the quality of teaching is assessed [2]. This measure of assessment can be conducted using formative and/or summative approaches. In higher education, formative assessments of teaching are focused on providing instructors/professors with information that can help them to improve their teaching. Formative assessment provides feedback on content delivery, design of classroom, course materials and, in some cases, teacher preparedness. Summative assessment, on the other hand, is used in the promotion and tenure process whereby information collected by the evaluation method is used to measure overall performance of the instructor/professor [3], [6], [8]. At associate-degree granting colleges that rely on a large number of adjunct faculty, these summative evaluations are also used in decisions to rehire [9]. However, the primary focus of teaching evaluation should be the educator's ability to create the conditions necessary to optimize student learning. It is on this premise that some researchers seek to determine what is "good" teaching. For example, the work of Chickering and Gamson [10] on good practice in teaching and learning emphasize the following seven principles:

1. encourages contact between students and faculty,
2. develops reciprocity and cooperation among students,
3. encourages active learning,
4. gives prompt feedback,
5. emphasizes time on task,
6. communicates high expectations,
7. respects diverse talents and ways of learning.

Based on these seven principles previous work has categorized "good teaching" into three distinct facts:

1. creation of a student-centered learning environment
2. appropriate assessment of student learning and,
3. sufficient preparation for teaching and learning.

These three categories therefore require a multi-method approach to teaching evaluation. "The key to effective teaching evaluation is to collect data from multiple sources (triangulation) making sure that all education-related activities are rated by the people best qualified to rate them" [5, p. 38].

### A. Research on the purpose of teaching evaluation

From previous research on the evaluation of postsecondary teaching, evaluation of teaching is conducted in disparate silos, mostly by researchers in higher education or educational leadership [7], [9], [11]–[13]. In addition, some scholars with an expertise in evaluation in general [12] and researchers working within disciplinary practices such as social work [14] or engineering [15] assess teaching and teacher effectiveness. Although scholars researching postsecondary evaluation of teaching all build upon previous work, our literature review did not uncover a clear research agenda that is currently being pursued to help us explain the relationship between evaluation of teaching and improvements in postsecondary teaching. However, this is not surprising given the variety of research interests of those engaged in this inquiry.

As mentioned above, these scholars highlight that evaluation of teaching often serves two purposes, data for improving teaching or as a summative evaluation. However, conflating these two purposes is rarely interrogated, with a few notable exceptions [12], [15].

The literature does highlight three primary categories of strategies for evaluating postsecondary teaching: student evaluation of teaching (SETs), peer evaluation of teaching (POT), and self-evaluation [7], [16]. Within each of these categories, there are a variety of quantitative and qualitative tools. SETs may consist of numerically scored questionnaires used either formatively or summatively, open-ended responses to items on a questionnaire, or be gathered using student focus groups [16]. Research on the peer evaluation of teaching underscores a number of issues, for example, culture or personal bias [17], lack of training in the observation and evaluation of teaching [13], the need to observe more than one class meeting or use multiple peer evaluators and to consider other aspects of the course, such as activities and assessments [11]. Self-evaluation also takes several forms, from completing checklists [16] to creating portfolios that significant reflection on one's teaching [5], [7]. Several studies compared two of these strategies, but few compared the various tools within particular strategies. Further, our review uncovered no research that compares self-evaluation strategies.

Saroyan and Amundsen [7] is a frequently cited review of research that both summarizes past findings and makes recommendation for best practices. Significant from our perspective is the idea that both SET and POT are observations of behavior and cannot reveal educators' underlying rationale for instructional decisions [18]. In addition, these authors, as well as Kealey [14] and Nygaard and Belluigi [12] acknowledge that teaching is a complex and contextualized activity and that development is rarely linear. To this end it is necessary to employ multiple approaches to evaluate teaching that goes beyond students' perception. The purpose of this paper is therefore to examine the various approaches to teaching evaluation used in the engineering

departments/units of different institutions. The research questions we seek to answer are:

- a. What are the current approaches used in engineering departments/units to assessing teaching evaluation?
- b. How are these approaches similar or different based on institution type?

In the engineering context it is especially necessary to explore the various methods of teaching evaluation being used in different institutions. This is an important area to investigate primarily because of the lack of studies on this topic. In addition, the recommendation made by the National Research Council's book on *Evaluating and Improving Undergraduate Teaching in Science, Technology, Engineering and Mathematics* [3] speaks to "the collection of different kinds of evidence that can be used to determine whether faculty and departments are indeed promoting student learning" (p. 116).

## METHODOLOGY

### I. Study Design

This study guided by a descriptive case study with multiple embedded units approach which is situated within the constructivist research paradigm. "A descriptive case study enables the researcher to describe an intervention or phenomenon and the real-life context in which it occurs" [19, p. 549]. The units of analysis are the various institutions from which our data were collected. The data were collected using an exploratory sequential mixed-method design to answer the research questions. This approach involved collecting both quantitative and qualitative data [20]. In this paper we will report on the qualitative data collected. The preliminary analysis of these data was used to guide the collection of quantitative data.

### II. Participants (Institutional Overview)

Educators with varying responsibility and ranks such as course instructors, department heads, and program coordinators in engineering programs at schools across the US, were contacted and asked to participate through email in a semi-structured interview. Snowball sampling was used to identify participants. One author provided contact information for individuals at some institutions who were invited to be interviewed and asked to identify further colleagues they believed would be interested in this research. A total of 34 participants were interviewed once in this study. Almost half of the participants were department chairs (N=15). Table I shows the number of participants and their role in their department and/or institution. The participants who were interviewed in this study came from 31 different schools. There were few participants who were identified to be from the same school, however they were not from the same engineering department.

TABLE I  
PARTICIPANTS' DEPARTMENT ROLE

Participants' Department Role	N	Percent
Department Chair	15	44%
Associate Department Chair	1	3%
Full Professor	1	3%
Associate Professor	6	18%
Assistant Professor	3	9%
Engineering Instructor	6	18%
Program Coordinator	2	6%
<b>Total</b>	<b>34</b>	

### III. Data Collection

The data collected and used for this stage of our project were gathered using semi-structured interviews. An interview protocol was developed to query each participant's department practices in conducting teaching evaluations. However, many of the participants also reported their *own* practices in conducting teaching evaluations. The interview protocol was developed based on a literature search of teaching evaluation procedures. The duration of each interview ranged between 15-60 minutes. During the interview, copies of any documents related to teaching evaluation such as student end of course questionnaires, letters, memos, and questionnaires used for student midterm evaluation were requested from the participants at the end of each interview. These materials were requested and collected to help with the comparison and analysis for this study. The documents collected from some participants were kept confidential and any identifiers such as name, school name, and department name are edited and replaced by codes. However, not all participants were able to share any or all of the documents and it was not possible to perform a comparative document analysis. The interviews were audiotaped and notes were also taken.

### IV. Data Analysis

Each interview was transcribed either via professional transcription company or by a graduate researcher. The text documents were uploaded into Dedoose a web application for managing, analyzing, qualitative and mixed methods research data. An excel spreadsheet was also used to tabulate and keep track of the data obtained from Dedoose. The data were analyzed in two phases. In phase one, all evaluation techniques were grouped based on similarity in their execution; in phase two, the evaluation techniques were categorized based on institution type to identify similarities and differences. However, an unequal number of participants were interviewed from each institution type. For example, half (N=17) of the total participants came from research-intensive universities, 11 of the participants were from teaching-focused universities and the rest came from the community colleges (N=6). Therefore, this comparison may be biased due to the number of sample sizes from each institution type. However, the authors' intention was to see if there were any pattern that might emerge by grouping the participants within the three institution types.

## RESULTS

### A. What are the current approaches to assessing teaching evaluation?

We found a total of five approaches used in the evaluation of teaching. These approaches are summarized in Table II and a brief discussion of how each assessment is conducted.

TABLE II  
SUMMARY OF METHODS USED TO EVALUATE TEACHING

Methods to evaluate teaching	How assessment is conducted
Student End-of-Course Evaluation	Usually administered through the use of closed-ended survey items, students are instructed to rate a given prompt.
Student Mid-term Evaluation of Teaching	Considered an informal method of assessment, teachers gauge students learning midway through the course by gathering information about students' perception of the instructor's teaching and the progression of the course. Instructors may use the feedback gathered to adjust the delivery during the second half of the course.
Student Exit Evaluation	Graduating students are surveyed using pre-determined questions to gather information about the effectiveness of courses and educational programs.
Classroom Observation by Peers	The purpose of this method can be twofold; it can be used to improve teaching, as well as inform promotion decisions. A peer, usually a senior department member, visits the classroom of the faculty member being evaluated. The peer may also evaluate course artifacts; and self-assessment documents such as a teaching portfolio/dossier. Collective feedback is given to the faculty with constructive criticism.
Classroom Observation by Administrators	This method is usually used to gather information about in-class practices associated with teaching and learning. Classroom observations are usually conducted by personnel who are knowledgeable about pedagogical strategies or the content being taught. This observation is sometimes conducted by an external evaluator such as someone who works with the institutions' Center for Teaching and Learning.

One key finding on the use of these methods is the fact that some of the methods summarized in Table II are used formally (at the departmental or unit level) as well as informally (at the faculty-to-faculty level). In addition, we also found that these methods are sometimes used for formative assessment, to provide feedback to improve teaching and for summative assessment, to make decisions about faculty promotion and tenure. Table III illustrates this information. From the table it can be seen that student end-of-course evaluation of teaching is the most utilized assessment approach with a frequency usage of 100%. Classroom observation is the second highest with a frequency count of 85% while peer evaluation has a frequency usage of 79%.

Student mid-term evaluation also has a high usage of 74% while student exit evaluation was reported at 62%.

In some interviews, participants mentioned additional methods such as teaching portfolios, alumni evaluation and in-class informal techniques to gauge students perception. However, the use of these methods to evaluate teaching was not explicitly discussed.

### B. How are these approaches similar or different based on institution type?

Our study consisted of 34 institutions of which 17 (approximately 50%) were research intensive universities, 11 (approximately 32%) were teaching focused institutions while six (approximately 18%) were community colleges. Figure 1 summarizes this distribution.

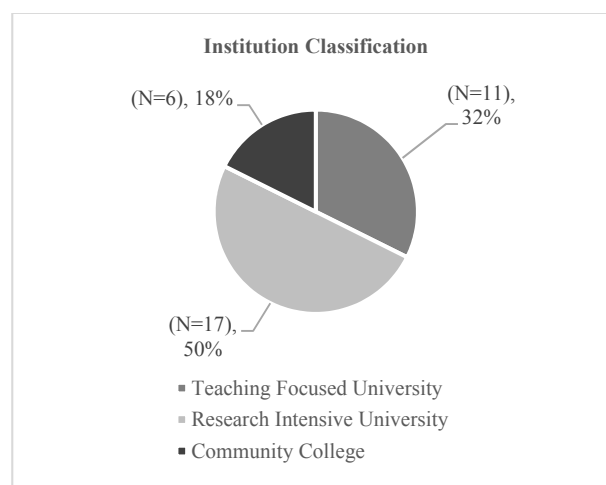


FIGURE 1  
DISTRIBUTION OF INSTITUTION TYPE USED IN OUR STUDY

Across the institution types investigated in this study, we found similar assessment approaches. For example, student end-of-course evaluation was used 100% of the time at all three institution types investigated. Similarly, classroom observation, peer and student exit evaluation had comparable usage across all three institution types. The use of student mid-term evaluation was the only major difference; community colleges had the highest usage of this form of teaching evaluation at 83%, teaching focused universities had an 82% usage and research intensive universities a 59% usage. The utilization of teaching evaluation approaches across institution types are illustrated in Table IV.

## DISCUSSION

The methods used to evaluate teaching unearthed by our study did not appear to have significant differences in how they were utilized at the three institution types. For example, we found that student evaluation of teaching similar frequency of usage in all institution types. Our findings also indicate that teaching focused institutions and community colleges had more frequent usage of all the methods used to

TABLE III  
SUMMARY OF UTILIZATION OF METHODS USED TO EVALUATE TEACHING

Teaching Evaluation Practices	Utilization by Participants	
	N	Percent
Student End-of-Course Evaluation	34	100%
Student Mid-term Evaluation	25	74%
Student Exit Evaluation	21	62%
Classroom Observation by Peers	27	79%
Classroom Observation by Administrators	29	85%
<b>Total Number of Participants in this Study</b>	<b>34</b>	

TABLE IV  
UTILIZATION OF METHODS USED TO EVALUATE TEACHING CLASSIFIED BY INSTITUTION TYPE

Teaching Evaluation Practices by Institutions	Utilization by Participants		
	Teaching-Focused University	Research-Intensive University	Community College
Student End-of-Course Evaluation	100%, (N=11)	100%, (N=17)	100%, (N=6)
Student Mid-term Evaluation	82%, (N=9)	59%, (N=10)	83%, (N=5)
Student Exit Evaluation	64%, (N=7)	59%, (N=10)	50%, (N=3)
Classroom Observation by Peers	91%, (N=10)	71%, (N=12)	83%, (N=5)
Classroom Observation by Administrators	82%, (N=9)	88%, (N=15)	83%, (N=5)
<b>Total Number of Participants by Institution, (N)</b>	<b>11</b>	<b>17</b>	<b>6</b>

evaluate teaching with the exception of classroom observations and student exit evaluation.

One important finding our study highlighted was the fact that the methods used to evaluate teaching were either used for formative or summative evaluation. The choice of method used was dependent on the purpose of teaching evaluation. For example, when the purpose is to assess the quality and magnitude of student learning or for the faculty member to use data to improve teaching, then the methods were used formatively (e.g. student mid-term evaluations). In cases where the evaluation was ultimately used in the institution's rewards system such as promotion and tenure or continued employment for non-tenure line faculty, then the method was used summatively.

Additionally, formative and summative approaches and how they are used are subjected to the policies and practices of schools/departments. However, to increase the validity and reliability of the teaching evaluation process it is necessary to combine multiple methods. This finding is supported by the NRC report on *Evaluation and Improving Undergraduate Teaching in Science, Technology, Engineering and Mathematics* which states "assessment that is based on a single teaching activity e.g. classroom presentation or depends on information from a single source such as student evaluation ratings is less reliable, useful and valid than an assessment of an instructor's strengths and weaknesses that is based on multiple sources"[3, p. 51].

Though our participants discussed multiple methods used for teaching evaluation, student evaluation surveys

remain one of the main methods used in summative assessment of teaching evaluation. While there are benefits to having students report their perception of teaching and decisions made by the professor/instructor about their learning using multiple methods of assessment create a more complete picture of the many facets of teaching. Additionally, we were unable to ascertain that when multiple methods are used in teaching evaluation, are these are weighed in the same manner? However, our participants have expressed interest in identifying alternative ways to evaluate teaching that could be used in their departments. Although there is substantial interest in improving teaching evaluation practices in engineering programs, it was identified that the existing practices are still somewhat different from the identified best practices in the literature.

One such practice is an argument made by several researchers [5], [7], [8] to utilize multiple forms of evaluation to teaching that also attend to the many facets of teaching. For example, in Felder and Brent's model, students would evaluate practices related to the classroom such as instruction, assessment methods, advising and mentoring provided by the instructors. Peers would be responsible for assessing instructional pedagogy and the appropriateness of their use, course documents and feasibility of stated learning outcomes. The instructor/professor being evaluated would reflect and rate their own philosophy of teaching, how well they complete their role as an instructor and how are they designing the students learning experience to meet their own learning outcomes. Documentation of these different areas of

evaluation would then help to develop a teaching portfolio which could be used as a summative artifact for promotional decisions. The advantage of using this model is that multiple perspectives are included and the process of teaching evaluation becomes structured with all stakeholders having some level of investment.

## CONCLUSIONS

Based on the research questions that guided this student the following important conclusions can be made:

*Student evaluation of teaching surveys are still the most prominent teaching evaluation approach*

We found that despite the call for increasing variety of methods for evaluating an educator's teaching, student evaluation of teaching is still widely used because it is fairly easy and less demanding than other approaches. The second most used approach is classroom observations conducted by administrators and peers. We found that these two approaches to teaching evaluation are mandated by most of the institutions explored. While we acknowledge that to implement other teaching evaluation approaches could be time consuming and additional service commitment for faculty, we still argue that the use of multiple approaches is beneficial. Being able to triangulate various approaches allows for a complete assessment of all the interacting factors associated with teaching. However, the methods or practices chosen to use should be dependent on the purpose of the evaluation. The issue of time constraints could be addressed by combining a set of practices/techniques discussed in the literature and result sections. In addition, new practices such as student focus group interviews using present and past students of a particular course can be added to student evaluation and peer observation approaches as a third data point.

*Level of usage of teaching evaluation approaches were similar among teaching focused institutions and community colleges*

A key finding was the similarity in usage of teaching evaluation methods at teaching focused and community colleges. However, this finding is hardly surprising as emphasis on "good teaching" varies based on institution type. In cases where teaching evaluation determines contract renewal and job promotion, such as at the community college level, the importance of assessing all aspects of teaching is of utmost importance. Similarly, at teaching-focused institutions, student learning and achievement is a primary goal of instruction. This being the case it is necessary to evaluate the teaching processes that encompass class preparation, information dissemination and student assessment. These different emphases on the teaching and teaching evaluation dictate a multi-faceted approach.

In the next phase of this work, a Qualtrics survey will be administered to participants to collect additional information

based on findings from our preliminary analysis. However, one key limitation of this study was the disproportionate distribution of institution type. For example, half of the institutions studied were research-intensive while only six were community colleges. A recommendation for future study is the exploration of more community colleges and other teaching focused institutions. Another area of exploration could be to examine based on institution type what practices are mandated or voluntarily done at the discretion of departments or units.

## ACKNOWLEDGMENT

This material is based upon work funded by the National Science Foundation under grant DUE-1347817.

## REFERENCES

- [1] J. C. Ory, "Teaching evaluation: Past, present, and future," *New Dir. Teach. Learn.*, no. 83, pp. 13–18, 2000.
- [2] M. E. Kite, *Effective evaluation of teaching: A guide for faculty and administrators*. Society for the Teaching of Psychology, 2012.
- [3] National Research Council, *Evaluating and improving undergraduate teaching in science, technology, engineering, and mathematics*. Washington, DC: The National Academies Press, 2003.
- [4] Y. Chen and L. B. Hoshower, "Student evaluation of teaching effectiveness: An assessment of student perception and motivation," *Assess. Eval. High. Educ.*, vol. 28, no. 1, pp. 71–88, 2003.
- [5] R. M. Felder and R. Brent, "How to evaluate teaching," *Chem. Eng. Educ.*, vol. 38, no. 3, pp. 200–202, 2004.
- [6] D. P. Hoyt and W. H. Pallett, "Appraising teaching effectiveness: Beyond student ratings," in *IDEA Center*, 1999, no. #36.
- [7] A. Saroyan and C. Amundsen, "Evaluating university teaching: Time to take stock," *Assess. Eval. High. Educ.*, vol. 26, no. 4, pp. 341–353, 2001.
- [8] H. K. Watchel, "Student evaluation of college teaching effectiveness: A brief review," *Assess. Eval. High. Educ.*, vol. 23, no. 2, pp. 191–212, 1998.
- [9] J. P. Campbell and W. C. Bozeman, "The value of student rating: Perceptions of students, teachers, and administrators," *Community Coll. J. Res. Pract.*, vol. 32, pp. 13–24, 2008.
- [10] A. W. Chickering and Z. F. Gamson, "Seven principles for good practice in undergraduate education," *AAHE Bull.*, pp. 3–7, 1987.
- [11] I. Iqbal, "Academics' resistance to summative peer review of teaching: questionable rewards and the importance of student evaluations," *Teach. High. Educ.*, vol. 18, no. 5, pp. 557–569, 2013.
- [12] C. Nygarrrd and D. Z. Belluigi, "A proposed methodology for contextualised evaluation in higher education," *Assess. Eval. High. Educ.*, vol. 36, no. 6, pp. 657–671, 2011.
- [13] H. Smith, "Points of departure: The unintended consequences of grading teaching," *Teach. High. Educ.*, vol. 17, no. 6, pp. 747–754, 2012.
- [14] E. Kealey, "Assessment and evaluation in social work education: Formative and summative approaches," *J. Teach. Soc. Work.*, vol. 30, pp. 64–74, 2010.
- [15] G. Mohanty, J. Grete, C. Flowers, B. Algozzine, and F. Sponner, "Multi-method evaluation of instruction in engineering classes," *J. Pers. Eval. Educ.*, vol. 18, pp. 139–151, 2005.
- [16] P. Morgan, "The Course Improvement Flowchart: A description of a tool and process for the evaluation of university teaching," *J. Univ. Teach. Learn. Pract.*, vol. 5, no. 2, 2008.
- [17] M. Yon, C. Burnap, and G. Kohut, "Evidence of effective

teaching: Perceptions of peer reviewers," *Coll. Teach.*, vol. 50, no. 3, pp. 104–110, 2002.

- [18] P. Grossman, "Overcoming the apprenticeship of observation in teacher education coursework," *Teach. Teach. Educ.*, vol. 7, no. 4, pp. 145–357, 1991.
- [19] P. Baxter and S. Jack, "Qualitative case study methodology: Study design and implementation for novice researchers," *Qual. Rep.*, vol. 13, no. 4, pp. 544–559, 2008.
- [20] J. W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 4th ed. Thousand Oaks, CA: SAGE Publications, 2014.