Metrics and Measures of Teaching Effectiveness

Ruth Poproski and Rebekah Greene (2018)

Introduction

Measuring teaching effectiveness in higher education is an important but complex task. Over the last several decades there has been an increasing reliance on student evaluations of teaching (or SETs) as a method for evaluating the teaching role of instructors in higher education. At Georgia Tech this shift has been seen with the development of a focus on numerical results on the Course Instructor Opinion Survey (CIOS) at key points for review (e.g., promotion and tenure decisions, annual review, etc.).

More recently, the use of SETs as a measure of teaching effectiveness has been subject to significant scrutiny. Along with evidence-based concerns about gender bias in the results, it is clear that SETs are often difficult to interpret, and they focus on student perceptions that only sometimes align with teaching effectiveness. More importantly, it is clear that SETs are only one of several types of data that are required for a robust evaluation of teaching, and they are best used – for both summative and formative evaluation and for both personal development and career-related decision-making – when they are considered in the context of other measures of teaching effectiveness.

Berk (2018) argues that there are in fact fifteen different possible measures of teaching effectiveness, including student ratings, peer review/observation of teaching, peer review of course materials, teaching and course portfolios, employer/administrator/external expert ratings, advice from mentors, teaching awards, scholarship on teaching and learning, self-evaluation, learning outcomes measurement, exit and alumni interviews, and the use of videos. Selecting several of these measures rather than relying on just one can significantly improve the assessment of teaching effectiveness, and can lead to more robust understanding of ways for instructors to continue with their professional growth and development.

The purpose of this paper is to provide context for the use of multiple measures of teaching effectiveness, along with contextual framing and connection to the literature on teaching and learning. Specifically, we provide summary notes and references to specific studies to help the reader understand how and why each method might be used in the quest to evaluate teaching effectiveness.

Ruth Poproski is Assistant Director for Faculty Teaching and Learning Initiatives at the Center for Teaching and Learning. Rebekah Greene is a 2016-19 Marion L. Brittain Postdoctoral Fellow in the School of Literature, Media, and Communication. *This paper was written in conjunction with the work of Georgia Tech's 2017-18 Teaching Effectiveness Taskforce, and was supported by both the Center for Teaching and Learning and the Office of the Vice Provost of Graduate Education and Faculty Development.*

Table of Contents

Part I: Student Perspectives

Method 1: Student Focus Groups and Discussions

The focus group is a well-defined and regularly used research method that can be readily applied to teaching. In the evaluation of teaching, the *Small Group Instructional Diagnosis* (SGID) method has been developed as a best practice for gathering feedback from students about their experience in a course, and providing an opportunity for individuals to reflect on their teaching effectiveness. The act of working with a teaching and learning specialist to facilitate a focus group session, meeting with the facilitator to discuss the received student feedback, and communicating with students to address the feedback that they have provided can all aid instructors in adjusting and adapting their teaching approach to eliminate barriers to learning for their students. (Nelms 2015)

For more on the use of focus groups and SGIDs at Georgia Tech, visit http://ctl.gatech.edu/resources/best-practices/GnR/dialogue

SGIDs and focus groups are useful because they provide robust, targeted feedback from students about their ongoing experiences in a course. While there are similarities between end of semester student evaluations of teaching (SETs) and SGIDs, the timing and nature of the focus group approach allows for a closed feedback loop where instructors respond explicitly to student feedback, and adjust their teaching that can positively impact student learning throughout the course. In the process, instructors gain insight into student perceptions about their current teaching practices and are able to incorporate changes into their course structure as needed, benefitting current students. Ultimately, focus groups contribute to instructor development, providing an opportunity for the individual to reflect on their own teaching effectiveness, targeting current teaching strengths and opportunities for improvement identified by both students and teaching and learning specialists. (Black 1998; Coggman 1991; Diamond 2004).

Selected Studies: Using Focus Groups to Assess Teaching Effectiveness

The SGID method is a valuable technique for building effective teaching practices (Finelli et al 2008). This study highlights research conducted in the College of Engineering at the University of Michigan, investigating how different types of data (student ratings of teaching, student feedback collected during an SGID, or videotaped class sessions) can be utilized to assess gains in student ratings, faculty perceptions of consultations with instructional support staff, and reported changes in teaching practice. The researchers found that statistically the most effective consultation method was guided by student feedback from an SGID, seeing marked improvement in end-of-semester ratings related to “use of techniques to foster class participation” and “level of instructor respect towards students,” as well as “enthusiasm” (401) during the same semester that the SGID took place in.

Faculty participants reported adapting their approach and incorporating more effective teaching practices into their courses in several ways, including introducing more active learning, explaining concepts and/or examples more clearly, managing class time differently, calling directly on

students by name, and changing the pace of class. Key advantages associated with the use of SGIDs are that the faculty voice is represented in the process, gathered feedback is useful for instructors at all experience levels, and the use of SGIDs tends to increase teaching effectiveness over future semesters.

The SGID method is a beneficial formative assessment tool for faculty at all career stages (Blue & Evins 2008). This paper highlights the results of SGIDs administered in 45 courses to 1,086 students taught by 27 STEM instructors. The researchers reviewed data gathered from a selection of small (<15 students), medium (15-25 students), and large (>25 students) classes, and found that instructional strength and suggestion categories identified by students focused on teaching style/method, evaluation, class materials, instructor support/class policies, instructor characteristics, and organization. They note instructors can use the findings of SGID evaluations to improve current and future classes, particularly by clarifying policies with students, improving student ease of access to lecture notes and materials in preparation for exams, better managing class time in relation to complicated examples, and increasing patience with student questions. They also note that while instructors tend to request SGIDs before tenure and promotion decisions, the process has value for faculty at all career stages.

Using the SGID process to gather mid-semester feedback allows for adjustments to be made to a current course (Diamond 2004). Diamond (2004) reports results of a 2 year study of mid-semester feedback, suggests that feedback is a highly effective tool for improving teaching practices. The study consisted of 82 faculty from a wide range of disciplines, working with a facilitator to survey students. Facilitators guided student discussion and then consolidated results for faculty, which were then shared during follow-up sessions. In a follow-up survey, participating faculty (49 of the original 82) suggested that the program was valuable in helping them gain feedback which they then used to make changes to their classes. Participants reported changing in-class teaching techniques (35%), adjusting tests, assignments, and grading (31%), making changes to class content and how it's covered (16%), and clarifying details for students (10%). Ultimately, the majority of study participants reported finding the process useful, with many noting that it was helpful for them to be able to restructure their courses in such a way that current students could receive the maximum possible value from the course.

Method 2: Early and Mid-Course Feedback Surveys

Surveys are a quick and easy way to collect feedback from students – about their learning, their experience in the course so far, and their suggestions for changes to the way the course is taught. Unlike end of semester SETs, early and mid-course surveys are best used after about one-third of the semester has passed (typically around week four to six in a full-semester course), which allows enough time for students to form an opinion about a class, but also leaves enough time for the instructor to respond to the feedback gathered.

For more information about mid-semester feedback surveys, including several templates, visit http://ctl.gatech.edu/resources/best-practices/GnR/surveys

Selected Study: Using Early & Mid-Course Feedback Surveys to Assess Teaching Effectiveness

Mid-semester feedback surveys are a useful tool for assessing student learning and the effectiveness of teaching practices (Payette & Brown, 2018). Payette and Brown observe that mid-semester feedback is a systematic and formative mode of assessment that allows teachers to learn more about classroom dynamics, student engagement, and student experiences. Faculty can then use this data to consider adjustments to classes that are still in progress. While the typical process for mid-semester feedback is a collaborative effort between faculty and learning specialists, the authors note other variants (bare bones questionnaires, online surveys, or open feedback using Google Documents) are available for faculty who are short on time, or when critical staff are unavailable to partner with faculty. Finally, the authors note that mid-semester feedback yields benefits for faculty by revealing how their students are responding to course content and affording them the opportunity to make changes to content to facilitate learning.

Method 3: Longitudinal Evaluations – Alumni and Exit Interviews and Surveys

Surveys of exiting seniors and alumni are valuable tools for providing feedback on teaching. Although some variation in these surveys exists, with institutions choosing to design their own instruments or utilize pre-existing instruments such as the National Survey for Student Engagement (NSSE),[1] they typically provide useful information on curriculum design, teaching methods, evaluation techniques, and specific faculty strengths (Berk 2005). With more and more institutions utilizing alumni surveys or surveys of exiting seniors for accreditation purposes, such measures can also prove to be effective for the more regular assessment of teaching.[2] Encouraging alumni, especially recent graduates, to carefully reflect on the attributes and actions of teaching faculty – after they have gained some distance from the stresses of completing their degree – can provide a useful measurement of teaching effectiveness.

Selected Studies: Using Alumni and Exit Interviews and Surveys to Assess Teaching Effectiveness

Recent alumni can provide thoughtful insight into effective teaching practices (Moore & Kuol 2007). This article offers a consideration of how recent alumni can provide insight into effective teaching by identifying factors associated with excellent teaching – including communication practices and a focus on student needs. The researchers selected a sampling of 800 alumni and asked them to nominate teachers for awards and provide reasoning for these nominations. 139 responses were received, for a response rate of 17.4%. Alumni responses, focused on their experiences in the classroom, revealed the important contributions of teacher attributes and actions to the student learning process. Other response types included intellectual

[1] For more on the validity of the revised NSSE, see Zilvinskis, Masseria, & Pike, G.R. (2017).
[2] Dumford and Miller (2015) note a recent study (2014) by the National Institute of Learning Outcomes Assessment that indicates 85% of US higher education institutions use these surveys as part of their assessment mix, likely the outcome of mandates for increased engagement with alumni on the part of accreditation agencies such as ABET.

engagement and command over disciplinary areas, but this particular survey found that alumni especially valued an increased focus on students as a sign of effective teaching. As a result of this study, the authors recommend that properly constructed and implemented alumni surveys can be powerful indicators of what students value in their educational experiences.

Alumni surveys are useful for evaluating overall quality of instruction (Volkwein 2010). This article notes that feedback from alumni can provide valuable assistance building and developing performance and accountability systems for the evaluation of academic programs. Alumni feedback can be used for assessing curricula and support programs, and can also be useful for supporting accreditation and accountability efforts. Volkwein (2010) observes that typical alumni surveys may include questions focused on quality of instruction received, enhanced abilities and knowledge, satisfaction with academic experiences, perceived college impact on personal and professional development, and preparation for graduate school, career, or employment.

Using the answers to questions themed like this can aid faculty and administrators in strengthening teaching effectiveness. Volkwein (2010) makes several recommendations for the design of alumni surveys and sampling size, noting that surveys of recent graduates are the most valuable when considering teaching effectiveness efforts as "memories of the experience are fresh" (128). Volkwein (2010) also mentions several examples of well-designed alumni surveys, including those used by MIT, Penn State, and Georgia Tech.

Surveys of graduating students provide timely feedback regarding teaching effectiveness (Gainey 2017). This article suggests that surveys of exiting seniors can provide timely, relevant feedback that can help academic departments continuously improve. For example, responses can help department chairs "identify troubling trends and respond accordingly" (14), and they can help identify ways to "increase morale" among department members (16). Gainey (2017) recommends that surveys of graduating seniors should be short in order to encourage participation, and includes a sample survey distributed to graduating seniors in a management program. This survey asks students to rate the quality of the instruction they have received, and faculty availability. The survey also asks graduating seniors to identify the teacher who had the most positive impact on their studies. While the survey design does not allow for significantly developed or expansive responses, the answers to these questions do still provide an indication of how students perceive the effectiveness of the teaching they received as part of their major.

Part II: Peer Review of Teaching

As Yon, Burnap, & Kohut (2002) observe, "[t]he expanding use of peers in the evaluation of teaching is part of a larger trend in postsecondary education toward a most systematic assessment of classroom performance. Most scholars believe that informed and well-trained peers are ideally suited to evaluate their colleagues, especially colleagues in the same field" (104). Utilizing peer review can ultimately aid a program in building a more robust and systematic assessment program that does not solely rely upon student evaluations.[3] For example, by using

[3] As Fernandez & Yu (2007) note, students are good at observing basic daily classroom practice but peers

peer review of teaching through teaching observations, in combination with student evaluations and a peer review of course materials, faculty and administrators alike can specifically focus on developing and enhancing quality teaching practices. (Fernandez & Yu 2007; Yon, Burnap, & Kohut 2002)

See Table 1 for a breakdown of three main models for peer review as it is used in higher education.

Method 1: Peer Observation of Teaching

Faculty peer review of teaching – also known as peer observation, peer coaching, and peer feedback – has been a recognized tool for the measurement of teaching effectiveness in college classrooms for well over 35 years (Alabi & Weare 2014). The resulting significant body of literature suggests that the peer review of teaching can be utilized as part of a formative or a summative assessment process (Chism 2007). For example, peer observations of teaching can contribute to the overall evaluation of teaching effectiveness for the purpose of promotion and decisions (summative assessment), but they can also be used to aid instructors in their quest for professional growth and development, improving their teaching and classroom management techniques over time.

Ultimately, some peer observations of teaching will likely still be held by a program or department for summative assessment purposes having to do with personnel management issues such as tenure and promotion cases. However, recognizing and conducting peer reviews as a useful formative assessment tool centered on improving teaching and classroom management techniques can eventually increase faculty buy in to a more triangulated assessment process, one that is not solely based on student course evaluations.

For more information about the use of peer observations, visit http://ctl.gatech.edu/resources/best-practices/gnr/observation

Selected Studies: Using Peer Observations to Assess Teaching Effectiveness

Collaborative peer observations can improve teaching, foster intradepartmental collegiality, and increase collaboration among faculty (Fletcher 2018), This study was undertaken in an engineering department with approximately 45 faculty members, focused on developing and implementing a collaborative model for peer review. Study participants worked in pairs, and met in a pre-observation meeting to clarify how observations would be recorded and made available to the instructor. Each participant pair observed 4 total classes (2 per instructor) and then met together to provide feedback. Study participants ultimately used the feedback to improve their teaching, and cited an increased sense of collegiality within their department as a key benefit.

are more appropriate assessors of accurate course content and discipline appropriate teaching practices.

Table 1
3 models of peer review: evaluation, development, and collaboration (Fletcher 2018)

Feature	Evaluation Model	Development Model	Collaboration Model
Who is involved?	Senior staff, or evaluators/auditors selected to review other staff	Educational developers or expert teachers observe/review others	Teachers/peers/colleagues
Intent	Quality assurance; promotion, tenure, general review.	Demonstrate competency/improve teaching competencies	Improve teaching through dialogue; and reflection
Result	Report/judgment	Feedback /action plan for improvement to teaching	Analysis, reflection, discussion, teaching improvement
Relationship	Hierarchy of power	Hierarchy of expertise	Equality/mutuality
Confidentiality	Between manager and reviewee	Between reviewer and reviewee; may include manager	Between reviewer and the reviewee
Inclusion	Selected faculty: faculty being considered for tenure; applying for promotion; teaching award	Faculty on initial training course, faculty identified as needing teaching improvement	All involved in supporting student learning
Verdict	Pass/fail, score, quality assessment	Feedback on how to improve teaching	Non-judgmental, constructive & facilitated dialogue
Items reviewed	Teaching performance, course design, learning materials, student evaluations	Teaching performance, course design, learning materials	Any aspect of course design, teaching, student learning outcomes chosen by reviewee
Benefits	Institution, department	The reviewee (one way interaction)	Mutual benefits for both peers
Conditions for success	Effective management	Respected senior faculty	A culture in which teaching is valued and discussed
Hazards	Alienation, lack of cooperation, opposition	No shared ownership, lack of impact	Confirms existing practice, passive compliance

Peer observation of teaching is a valuable aid for reflection on one's teaching (Goldberg et al 2010). Researchers at Wichita State University surveyed 115 instructors in accredited communication science and disorders programs across the United States. The purpose of the survey was to investigate how these programs utilized the peer observation process, and for what purposes. While 27 instructors responded that peer observations were not currently required by their institutions, other respondents noted that peer observations are a regular part of their assessment mix. The majority of study respondents indicated that a follow-up discussion regarding their peer observation session was a pivotal part of the process, noting that it is this meeting and the resulting conversation about teaching practices that triggers modifications to teaching, rather than the actual observation itself. Respondents also reported that the act of conducting a peer review caused them to reflectively think about their own teaching.

Goldberg *et al* (2010) recommend the following best practices for peer observation of teaching:

- peer observations should be conducted by knowledgeable peers;
- the instructor being observed should be fully briefed regarding the process;
- the instructor being observed should be given time to prepare for the observation and should distribute class materials to the observer; and
- the instructor and observer should meet after the observation to collaboratively reflect upon and discuss suggested changes.

Peer observation of teaching is an inexpensive, flexible formative assessment tool for formative evaluation of teaching, and subsequent improvement of teaching effectiveness (Lowder et al 2017). Researchers at Kennesaw State University report in this article on a voluntary "Teaching Partners Program" offered between 2013-2014, involving 49 faculty pairs. Faculty members volunteered for the program, coordinated by the Center for the Excellence in Teaching and Learning. They were paired, typically with faculty from other departments, and then observed each other's classes and reported to each other on strengths or weaknesses that were observed. The observed benefits of this program included the following:

- inexpensive to develop and operate;
- faculty learn additional teaching strategies from each other;
- observing others provides younger faculty with confidence in their own teaching practices;
- increase in collegiality increases likelihood faculty continue to engage in peer observations;
- average time commitment needed on the part of an individual faculty member for such a process is less than five hours per semester;
- partnerships can be forged between faculty in the same department, similar disciplines, or across disciplines.

Method 2: Peer Review of Teaching Materials

Peer review of teaching materials typically involves review of artifacts like course syllabi, instructional plans, text selections, handouts, homework assignments, sample exams, tests, and projects, samples of graded student work, and framing comments from the instructor under

review. Ideally, the selected materials should represent how the instructor under review designs and implements their courses. The steps involved in this peer review process (e.g., preparing materials for review, receiving feedback, and engaging with the feedback to make changes) can provide instructors with valuable insight into their current teaching practices. Research also suggests that instructors who engage in this process tend to see an increase in their teaching effectiveness during subsequent semesters. (Berk 2005; Fink 2008; Houston 2010)

It is generally recommended that this process be used as a way to contribute to an instructor's professional growth and development – providing an opportunity for the individual to reflect on their own teaching effectiveness as they prepare for milestones related to the promotion and tenure process. While some recommend that the process of peer review of teaching materials be an annual event, others suggest that it be used instead for key check-in stages such as third-year review for junior faculty. Seasoned faculty can also benefit from the process as they are exposed to pedagogical innovations during the act of assessment.

Ultimately, the establishment of a department-wide peer review process brings about greater awareness of both teaching effectiveness and assessment practices, as materials are rated by peers on a scale—ideally developed and agreed upon department-wide prior to implementation-- which identifies instructor/material compliance with specific criteria (Berk 2005).

Selected Studies: Using Peer Review of Teaching Materials to Assess Teaching Effectiveness

The peer review of teaching materials process is useful for continued personal and professional faculty development (Thomas 2014). This article offers an examination of 34 studies of the peer review of teaching as read through a Strengths-Weaknesses-Opportunities-Threats (SWOT) framework. The researchers define the peer review of teaching as multi-pronged, including "the observation of lectures and tutorials, monitoring online teaching, examining curriculum design, and the use of student assessments" (113). They note that its strengths include that the technique "can be used as part of performance appraisal and tenure portfolios" and that it "sharpens individual skills" (113). Increased faculty participation in both the preparation of teaching materials and the assessment of these materials as part of a peer review process can aid individual continued growth in both teaching competence and cognitive understanding (115). Developing a peer review program including a teaching materials component can:

- help faculty gradually recognize the process as "useful for personal and professional development" (143);
- develop action plans for improvement based on both reflection and feedback from colleagues (148);
- "demonstrate professional responsibility and accountability" through the regular gathering of teaching materials for review purposes (150); and
- provide opportunities for faculty at all stages of their career to critically reflect on their own individual everyday teaching practice.

The peer review of teaching materials process develops good summative and formative assessment practices at the departmental level (Murphy & Flynn 2009). The authors of this study synthesize the research of Fink (2008) and Arreola (2007) – among others – suggesting that an effective and triangulated teaching quality assessment program can be readily built. Building on Arreola (2007)'s skill dimensions, defined as "content expertise, instructional design skills, instructional delivery skills, instructional assessment skills, and course management skills," Murphy & Flynn (2009) design a portfolio system for the assessment of teaching materials at their institution. They propose this as a way to supplement the use of SETs and peer observations in the evaluation of teaching effectiveness. A post-study survey of participants noted that some identified the process as a challenging one, primarily due to issues relating to how precisely to evaluate materials. The researchers note that the majority of identified challenges can be overcome by:

- selecting specific criteria for assessment (preferably via an "open discussion process" at the departmental level;
- ensuring that all departmental reviewers are clear as to how to evaluate the materials as related to the identified criteria; and
- encouraging a wider campus discussion (among both faculty and administrators) about best practices regarding critical reflective practice as an important part of the overall assessment process.

Involving all faculty in the process at the department level provides an increased attention to the quality of teaching. Junior faculty maintain their progress towards tenure and promotion while senior faculty can stay abreast of new and evolving developments in pedagogy.

Preparing for a review of teaching materials fosters continuous reflection and growth in effective teaching practices (Fink 2008). In this chapter, Dee Fink considers the evaluation of teaching and how it can be used as a form of summative and formative assessment. Fink outlines how teaching materials and their careful evaluation by peers can supplement student evaluations. Fink (2008) also includes a candid discussion of how the preparation of teaching materials can foster a continuous cycle of formative assessment (and improved teaching) in the individual faculty member, especially if materials are centered around the following four general criteria: knowledge of subject matter, design of learning experiences, student interaction, and course management.

Part III: Instructor Reflection and Review

Method 1: Teaching Portfolios

A teaching portfolio is a factual description of an instructor's teaching strengths and accomplishments. It includes documents and materials that collectively suggest the scope and quality of a professor's teaching performance. The portfolio is to teaching what lists of publications, grants, and honors are to research and scholarship. When portfolios are submitted for personnel decisions, the focus should be on evidence that documents the professor's best

works as a teacher and demonstrates that significant student learning (cognitive or affective) has taken place. The faculty member's achievements, awards, and successes are the focus.

Teaching portfolios can also contribute to instructor development as they provide an opportunity for the individual to gather together data and artifacts related to their teaching, and reflect on their own teaching effectiveness. In addition, assembly of a teaching portfolio can help instructors identify gaps or weaknesses in their approach to teaching, potentially prompting them to pursue new opportunities for professional development, and/or to try new things with their teaching. (Seldin, Miller, & Seldin 2010)

Selected Studies: Using Teaching Portfolios to Assess Teaching Effectiveness

Teaching portfolios have two goals: development and evaluation (De Rijdt 2006). This study examines faculty attitudes towards teaching portfolios, and suggests that the portfolio ideally has two goals: development and evaluation. A study of teaching portfolios at four different institutions raised a variety of concerns including faculty knowledge of portfolio design, the time required to complete a portfolio, and the transparency of the assessment process. Respondents generally agreed that teaching portfolios are a useful way to reflect on and improve teaching and that there are some positive consequences of keeping a portfolio, including more clarity about responsibilities and course construction. Ultimately the study found that those faculty respondents using portfolios as a form of assessment tool improved their teaching via reflection, improving course materials, and the feedback of reviewers.

Teaching portfolios are valuable instruments to assess thinking about teaching (Trevitt & Stocks 2012). The authors of this study utilize their experiences in aiding others in developing teaching portfolios and in assessment to argue that portfolios aid assessors in gaining insight into the faculty member's day-to-day pedagogy, which they term as "authenticity." They provide a detailed rubric based on their experiences, suggesting that assessors value portfolios that contain markers of authenticity such as treatments of teaching contexts/issues and challenges faced in the classroom, evidence of the development, and practical use of teaching approaches, evaluations and instructor response to feedback.

The researchers use a small study of portfolios to demonstrate how these criteria for authenticity can be measured against three different levels of performance, ultimately suggesting that teaching portfolios can be so varied in terms of their content that assessment teams will need to come to a consensus on a methodology for assessment. Their research suggests that reflective portfolios are valuable instruments to "assess thinking about teaching" due to "the narrative element [which] is generally more revelatory than the various bits of paperwork that lecturers use to evidence their practice".

Assessing teaching portfolios requires development of specific procedures (Tigelaar et al 2005). This study considers the portfolio as a collection of qualitative data that is sometimes hard to objectively rate. The researchers use a review of literature relating to teaching portfolios and their assessment to make recommendations for criteria that can be used to effectively judge the rich variety of items on display in many faculty portfolios, ultimately arguing that candidates under

review should be made fully aware of the assessment process. They also offer the following recommendations for organizational procedures for assessment:

- portfolios should be read by at least two assessors who represent multiple perspectives on teaching;
- assessors should keep a record of the evaluation process, use guiding questions, and discussion with each other during the process;
- mentors should offer advice about the choice of items for inclusion;
- internal and external monitoring should provide checks and balances; and
- purpose of the portfolio should be explained.

While the researchers do recognize that all of these components may be hard to implement, they note that doing so provides the candidate with deep feedback that will aid in their continued development and representation of effective teaching practices, and it can allow the portfolio to serve as a measure for both formative and summative assessment.

Method 2: Self-Evaluation of Teaching Effectiveness

Over the past two decades, more and more higher education institutions have been considering faculty self-ratings (sometimes also called self-evaluations or self-assessment) as evidence of teaching effectiveness. These self-ratings, frequently taking the form of annual progress reports, record teaching accomplishments over the course of an academic year. Instruments for self-ratings may include structured forms that document the type of course taught, number of students, display teaching objectives, activities, accomplishments, and failures. Checklists and writing prompts for reflection may also be used as a part of the process.

Examples & Samples

- Case Studies: Arreola (2007)
- Sample Self-Reflection Tool: Lorch (2013)
- Sample Annual Report Structure: Hoyt & Pallet (1999)

The literature generally agrees that self-ratings should be utilized with other measures of teaching effectiveness, such as portfolios or peer observations of a class. In sum, the work of organizing materials for self-ratings on an annual basis and critically reflecting upon teaching efforts can lead to overall increases in effectiveness and aid faculty in documenting their individual achievements in preparation for retention, tenure, and promotion review. (AAUP 2015; Berk 2005; Buskist 2006; Miller & Seldin 2014; Seldin 1982; Seldin & Miller 2009).

Selected Studies: Use of Self-Evaluation to Assess Teaching Effectiveness

Self-assessment instrument preparation leads to increases in teaching effectiveness through reflection (Rigler et al 2016). This article reports the results of adding a faculty self-assessment[4] instrument into a merit evaluation system at a state university. A two-year study

[4] The researchers rightly point out that the body of current literature is "unclear on the distinction between self-evaluation, self-assessment, and self-reflection" (3), with authors regularly using all three terms interchangeably. Rigler and his colleagues observe some distinctions, suggesting that self-evaluation offers faculty insight into teaching that other sources cannot provide and shapes instruction. They also state that

involving 19 faculty members in a single department revealed that, for the majority of participants, utilizing a PDF form allowed faculty to clearly identify accomplishments, set goals for the following year, and continue reflecting on opportunities for individual growth.

The researchers note that self-assessment instruments can add value to evaluation procedures as they allow faculty to:

- identify their achievements in teaching;
- utilize their reflections on teaching practices to increase awareness of the effect of their practices and to design future experiments in the classroom; and
- consider ways to advance teaching effectiveness in the classroom.

Self-evaluations provide valuable insight into teaching (Miller & Seldin 2014). This article offers an overview of Miller and Seldin's 2010 survey of academic deans and the assessment of faculty performance. The researchers surveyed 538 academic deans of accredited liberal arts colleges and received 420 responses to their questionnaire. Miller & Seldin (2014) observe that the surveyed deans value classroom performance as the most important part of faculty performance, but also note that research, publication, campus committee work, and student advising are also highly valued. They state that self-evaluation of teaching has increased from 2000 (58.7%) to 2010 (67.6%) and suggest that "self-evaluation can provide insights into the values and beliefs that help shape course and instructional objectives and, in turn, contribute to classroom competency."

Self-reflection helps faculty members think about effective teaching and future development (Lorch 2013). This selection of self-reflection tools developed for occupational therapy teaching faculty in cooperation with a learning consultant offers an overview of basic core competencies for effective teaching. Of special note is their faculty self-reflection tool, that can be readily adapted for any discipline. The self-reflection tool asks faculty to consider what they most enjoy teaching, and also encourages a self-identification of teaching challenges.

Method 3: Self-Evaluation using Videos of Instructor's Teaching

Recording, watching, and reflecting upon videos of one's own teaching can all be useful techniques for increasing teaching effectiveness. Videos are useful measures of teaching effectiveness – whether they are a three minute clip of a lesson or a full class period in length – because they provide documented evidence of a faculty member's command of a classroom. Videos are relatively easy to create and aid instructors in understanding how their classroom personas may impact student learning. Watching a video of a class and then reflecting on speaking rates and tone, volume, body language, or usage of classroom technology can help improve teaching effectiveness through increased attention to classroom management of student

self-assessment allows faculty to "rate their effectiveness on a scaled form or provide brief written evaluations of their teaching performance" (Centra 1979 qtd. in Rigler *et al* 2016, p. 4) and is more formal in nature. Finally, self-reflection considers teaching practices, student results, and potential implications for future teaching (Bullock and Hawk as qtd. in Rigler *et al* 2016, p. 4). Given that this particular study refers to the testing of a specific, formal process, self-assessment is the preferred term for the researchers.

understanding of concepts. In the long run, developing careful criteria for how the video should be produced and how it will be assessed (either at the departmental or institutional level) will assist faculty in more readily adapting this easy, cost-effective method that offers constructive suggestions for continued improvement. (Berk 2005; Snoeyink 2010; Tripp & Rich 2012a).

Selected Studies: Using Videos of Teaching to Assess Teaching Effectiveness

Using videos as a measure of teaching effectiveness can help teachers make modifications to classes (Snoeyink 2010). This study of pre-service teachers suggests video as a self-analysis tool can be a valuable aid for increasing teaching effectiveness. Citing literature on the usage of videos in teaching education programs, the author notes that video can be viewed multiple times for clarity, can help teachers view themselves from different viewpoints, and can aid teachers in becoming more mindful during the act of teaching and "modifying their actions in the moment" (102). Additional benefits include becoming more aware of body language, facial expressions, posture, usage of whiteboards and other classroom technologies, rates of speaking, tone of voice and volume, and repetition of words.

Study participants reported growth in three important areas (classroom management, student understanding of concepts, and self-reflection) after viewing their videos. The author rightfully observes that the relatively small size of the sample (8 participants) make the results difficult to measure and interpret but suggests that there is still value in utilizing video as a self-analysis tool for teachers of all levels.

Videos have value as documented evidence of teaching performance (Berk 2005). Berk (2005) claims that the use of video can be a powerful, relatively easy to create tool for improving teaching effectiveness. Faculty can readily record their performance in the classroom, using colleagues, institute videographers, audiovisual experts, or even a tripod. The recording should take place in the regular classroom and should be as natural as possible for best results. Berk (2005) proposes multiple options for video evaluators, including self and/or a peer or group of colleagues who view the video and provide ratings and feedback. On the value of this process, Berk notes that it is a powerful documentary of teaching performance, a good way to generate a profile of positive and negative behaviors, and it leads to the development of specific objectives to address deficiencies in the classroom.

Videos are useful tools for reflection on teaching (Tripp & Rich 2012b). Tripp & Rich (2012b) reviewed 63 studies where participants recorded their own teaching, examined their performance on video, and reflected on their performance. They note that there are a number of factors that need to be carefully considered when designing a form of video assessment, including facilitation of the reflection process, the extent to which instructors reflect on their video individually or collaboratively, and the number of reflections required (see Table 2 for more details). They also note that there is no current consensus about what length of video is best for use as a reflection tool – from a simple 3 minute video to a full class session length. Further, they suggest that guiding reflection through the use of written rubrics or collaborative reflection with other peers can be important, especially for junior faculty.

They conclude that "video-aided teacher reflection has demonstrated posited change through varied measures (self-report, case studies, lesson plans, pre-/posttest scores)" (679), but also note that we lack frameworks for use of videos as a measure of teaching effectiveness (688).[5]

Table 2
Summary of the dimensions of the video analysis process, and recommendations for future research (Tripp & Rich 2012b)

Dimension	Definition	Question
Reflection tasks	Tasks teachers participated in during or after viewing their teaching: (1) completing codes or checklists, (2) participating in interviews or conferences, (3) writing reflections and (4) video editing.	What type of reflection tasks will I ask teachers to engage in during their video reflections
Guiding reflection	How the reflection process was facilitated. For example, in some studies participants chose their own reflection focus, while in other studies researchers or supervisors guided the teachers' reflections.	Will I provide teachers with a framework to guide their reflections?
Individual/ collaborative reflection	Individual reflection refers to instances where teachers viewed and reflect on their video individually.	Will I ask teachers to reflect individually, collaboratively, or both?
Video length	In past studies the length of video used for reflection varied from 3 minutes to an entire teaching episode.	What length of video will teachers use for reflection?
Number of reflections	In past studies the number of times teachers reflected on their videos varied from one to more than three reflections.	How many times will teachers reflect on their videos?
Measuring reflection	This refers to how studies determined the influence of video on teachers' reflections.	What methods will I use to determine if video was beneficial for teacher reflection?

[5] For more on how Tripp and Rich have used video to improve teaching at their home institution, see Tripp & Rich (2012a).

Method 4: Scholarship and Reflection

One way for instructors to engage in formative evaluation of their own teaching is to apply a research mindset to the enterprise, and to follow that up with a critically reflective consideration of how their observations can and should impact their teaching practices. Shulman (2000) calls this our professional obligation, and points out that scholarship on teaching and learning is necessary to ensure that one's work as an educator continues to improve. As he notes, "Active scholarship of teaching provides the teacher with a very different perspective on what he or she may have been doing for many years." (48). As Williams (2015) puts it, "good teachers use research (or variations of it) to inform their teaching every day, sometimes without knowing it. They are constantly reviewing assessment data, making critical observations of their students and themselves, and collecting qualitative and quantitative data." (4). Brookfield (1995) argues that the path to discovering the worth of your teaching is through a process of critical reflection, connected to observable data. In other words, reflective scholarship on teaching and learning can be a powerful way to evaluate (and improve upon) one's own teaching effectiveness.

According to Trigwell (2013), scholarship on teaching and learning is frequently described in the literature as a way or means to:

- enhance university teaching;
- raise the status of teaching;
- come to teach more knowledgeably;
- assess the quality of teaching;
- enhance students' experience of learning;
- enhance the research profile of an individual or department; and
- stimulate interest in teaching.

Selected Study: Using Scholarship and Reflection to Assess Teaching Effectiveness

Approaching teaching with scholarly inquiry makes teaching more effective (Trigwell 2013). Trigwell (2013) reports on a questionnaire distributed to 56 faculty at a major Australian university regarding the scholarship of teaching and learning (SOTL). Participants in the study were surveyed on six dimensions, including use of literature, articulation of a teaching/learning model, inquiry, reflection, teaching as a public activity, and peer review. Respondents who indicated that they use a student-focused approach to teaching as opposed to an information-transfer based approach scored higher on all of the dimensions and also were found to be more reflective about their teaching practices overall. While the author suggests that further research into the use of SOTL for assessment purposes is needed, the results of the questionnaire indicate that approaching teaching with scholarly inquiry can make both teaching and student learning more effective.

Part IV: Evidence of Student Learning (Learning Outcomes)

Identifying and evaluating what student learning has occurred – also known as measuring student learning outcomes – is a valuable way to measure teaching effectiveness because it gets at the heart of the purpose of teaching. Measuring learning outcomes can help us understand the

knowledge, skills, abilities, and habits that a student has gained at the end of a project, course, program, or major. As a result, the use of learning outcomes is considered one of the most pivotal measures of teaching effectiveness for both summative and formative assessment. (Suskie 2018)

There are multiple methods for assessing learning outcomes, including (but not limited to) the following:

- questionnaires administered at the beginning and end of a class or capstone experience (a.k.a. pre- and post-tests);
- focus groups coordinated by faculty and/or teaching center personnel;
- the use of portfolios with instructor reflections; and
- faculty submission of student materials that map to specific outcomes (e.g., quizzes, exams, presentation films, etc.).

Engaging with learning outcomes in a formative assessment process can directly benefit the individual instructor, but in order for the maximum benefit to be derived from this process, they need to be intimately involved in the process of determining which direct or indirect methods will be used to evaluate the effectiveness of their teaching by way of learning outcomes. Learning outcomes assessment can also help instructors intentionally develop their approach to teaching in ways that will increase student learning. (Bresciani 2009; Cydis 2015; Duque & Weeks 2010; Palmer 1998)

At both the departmental level and the broader institutional level, evidence about student abilities is needed for quality assurance purposes, especially when considering effective teaching practices in a summative assessment process (Tam 2014). Many accreditation organizations, such as ABET or AACSB, have rigorous standards in place to ensure that students are learning the skills and attitudes that they need to be successful in the professional workforce. Other stakeholders, including the University System of Georgia's Board of Regents, also value learning outcomes as a measurement of teaching effectiveness. As Kuh et al (2014) notes, “[c]learly articulated learning outcomes are important in determining whether students know and can do what an institution promises and what employers and policy makers expect.” (p. 8).

Selected Studies: Using Learning Outcomes to Measure Teaching Effectiveness

Using learning outcomes builds consistency and clarity in the classroom, increasing teaching effectiveness and easing the assessment process (Tam 2014). This article offers an overview of how learning outcomes can be used for quality assessment and curriculum improvement in higher education. Tam (2014) offers the following three levels at which assessment might take place:

- *student* (knowledge, skills, and abilities gained through engagement in a teaching/learning experience);
- *program/course* (the development or growth as a result of studying a particular course or program/attainment of competencies); and
- *institute* (“attainment against established standards (criterion-referenced assessment) or as the performance of an individual or group compared to others (norm-referenced assessment)” (161).

All three levels of outcomes contribute to the enhanced development of a student-centered learning experience. Aligning learning outcomes with teaching and learning activities not only ensures consistency within and across the curriculum, but can also foster teaching effectiveness through the continued act of assessment.

Tam (2014) also observes that there are four main benefits to an outcomes-based approach:

- clarity (clear communication between stakeholders about what kind of learning is expected at the end of a course or program);
- flexibility (multiple methods or modes of delivery can be deployed in the classroom; different direct and indirect measures of learning can be assessed;
- comparison (established standards across programs or institution used for accreditation, benchmarking, and accountability);
- and portability (making it easier for students to transfer credits between institutions).

While Tam (2014) notes that it can be hard to measure certain types of outcomes, she concludes that outcomes-based learning is a valuable measure of learning effectiveness and instructional quality, helping instructors succeed in improving both student learning and their own pedagogical practice.

Learning outcomes measurement should not be used for summative evaluation of teacher effectiveness – but may have value for formative and programmatic assessment (Berk 2014). Berk (2014) discusses the use of learning outcomes as a measure of teaching effectiveness, and concludes that while this approach can be used for the formative evaluation of teaching, it is a mistake to use this approach for the summative evaluation of teaching and applying it to personnel decisions (promotion, tenure, annual review, etc.). He identifies three options for developing tools to measure learning outcomes, and explains why none of these options is suitable for the evaluation of an individual instructor's teaching (see Table 3).

Further, Berk (2014) points out that even when we measure learning outcomes by computing (for example) gain scores across multiple measures, the interpretation of those results does not necessary correlate with teaching effectiveness. That is, in many cases student performance is not related to teaching performance, and so the use of learning outcomes to measure teaching effectiveness is misplaced.

Learning outcomes are easily used to guide changes at the course level, enhancing teaching effectiveness (Kuh et al 2014)*.* This report from the National Institute for Learning Outcomes Assessment (NILOA) addresses how higher education institutions across the US are using student learning outcomes as part of their assessment process. A survey was administered to 1,202 provosts (or their designates) during the spring and summer of 2013, with 43% responding to questions about current assessment activities and the usage of evidence directly relating to student learning outcomes. Kuh *et al* (2014) notes that there has been a steady increase in the assessment of learning outcomes over the past decade. Survey participants report the following perspectives, based on their experiences at their institutions:

- more direct faculty involvement in the assessment process is necessary as it helps improve teaching and learning;
- leveraging and sharing what people from around the institution are doing in their

Table 3
Approaches to measuring learning outcomes

Measure	Problem
Instructor-designed measures (e.g., in-class assessments)	Not typically tested for reliability and validity (and the process of doing so is too onerous for widespread practice).
Perceived learning measures (e.g,. self-assessments by students with respect to their perceived learning)	Results tend to correlate with student achievement (e.g., grades), but not with actual learning.
Standardized Tests	It is difficult to find well-designed tests that also align with the curriculum and instruction in particular courses, and for many disciplines and courses there are no such tests available.

classrooms can improve teaching and learning;

- faculty and staff may need clarity when it comes to defining both learning outcomes and assessment methods used to measure outcomes;
- outcomes-based assessment can provide evidence for the need for other improvement-related tasks related to increased teaching effectiveness, such as curriculum modification and faculty development;
- outcomes-based assessment results can be used to guide changes at the course level, which, in turn, increases teaching effectiveness;
- faculty should be encouraged to design assignments that address student learning within the course and simultaneously provide evidence that can be used for institutional purposes; and
- outcomes can be measured effectively using classroom-based assessment, national student surveys, or rubrics.

Kuh *et al* (2014) also notes that the survey's respondents recognize the issue of faculty buy-in to the assessment process, including concerns regarding the validity of assessment measures, how assessment results may or may not be used for performance evaluations, and how to use data for to inform a path toward improvement. The researchers suggest that the majority of these concerns can be readily addressed, noting the following conclusions:

- increased faculty involvement in the process should be encouraged and recognized;
- institutions should work on building assessment of authentic learning into the everyday work of faculty, utilizing processes that may already be in place; and
- institutions should use collected data more frequently to work with faculty to develop and improve teaching effectiveness.

Through better cooperation between institutional stakeholders, a continuous culture of enhanced attention to student learning may be achieved.

Part V: Conclusion

As noted at the beginning of this paper, there are a wide variety of methods that can be used to evaluate the effectiveness of teaching. Much has been written about the use of SETs as a measure of teaching effectiveness, and opinions vary as to their placement in formal reviews of individual instructors. There is general consensus that SETs should not be used in isolation, and that multiple measures should be used in order to effectively evaluate teaching. Further, there is general agreement that while the student voice can be captured through the use of end-of-semester SETs, there are additional ways to capture that voice, and it is also important to capture data from instructors, their peers, and general evidence of student learning.

In addition to the various methods discussed above, some recommend the use of teaching awards as a measure of teaching effectiveness (cf. Berk 2018). This, however, is an under-studied approach to measuring teaching effectiveness, and many have raised concerns about its use. For more information about the use of teaching awards as a measure of effective teaching, please see the appendix to this paper.

Finally, it is worth noting that the assessment of teaching effectiveness need not occur in isolation. Individual instructors can turn to faculty mentors and specialists from the Center for Teaching and Learning. Similarly, School Chairs and others tasked with making personnel decisions and contributing to the promotion and tenure system are also able to turn to experienced colleagues and the Center for Teaching and Learning for support. When making curricular and programmatic decisions, the Office of Academic Effectiveness can also provide support, bringing expertise in assessment to the table.

As Evans & Bertani Tress (2009) remind us, many faculty place a high value on the teaching component of their work, and typically desire to excel in all areas of their jobs. One of the great things about Georgia Tech is the rigor and passion with which all stakeholders attack their work. When it comes to assessing teaching effectiveness – whether it be for individual gain or more formal purposes – there are multiple avenues through which we can engage with this same rigor and passion. By use of a robust plan, we can lead the way to effective assessment of teaching.

References

AAUP. (2015). Statement on teaching evaluation. In *Policy Documents and Reports*. 11th ed. Baltimore: Johns Hopkins UP, 219-22.

Alabi, J. and Weare, W.H. (2014). Peer review of teaching: Best practices for a non-programmatic approach. *Communications in Information Literacy*, 8(2): 180-191

Arreola, R.A. (2007). *Developing a comprehensive faculty evaluation system: A guide to designing, building, and operating large-scale faculty evaluation systems*. (3rd ed.) New York, NY: Wiley.

Berk, R.A. (2005). Survey of 12 strategies to measure teaching effectiveness. *International Journal of Teaching and Learning in Higher Education*, 17 (1), 48-62.

Berk, R.A. (2014). Should student outcomes be used to evaluate teaching? *Journal of Faculty Development*, 28 (2), 87-96.

Berk, R.A. (2018). Start spreading the news: use multiple sources of evidence to evaluate teaching. *Journal of Faculty Development, 32*(1), 73-81.

Black, B. (1998). Using the SGID method for a variety of purposes. *To Improve the Academy*, 17, 245-262.

Bledsoe, R.S. and Richardson, D.S. (2016). An innovative award catches faculty in the act of great teaching. *Journal on Centers for Teaching and Learning*, 8, 51-69.

Blue, J., Wentzell, G.W., and Evins, M.J. (2008). What do students want? Small group instructional diagnoses of STEM faculty. *Proceedings of the 2014 Physics Education Research Conference. Englehardt, P.V., Churukian, A.D., and Jones, D.L., Editors.* 43-46. Retrieved from doi:10.1110/perc.2014.pr.007

Bresciani, M. (2009). Evaluating the efficiency, effectiveness and sustainability of outcomes-based program review. *Journal of Faculty Development*, 23(1), 30-39.

Brookfield, S. (1995). Becoming a Critically Reflective Teacher. San Francisco: Jossey-Bass.

Buskist, W., et al. (2006, April 1). Evaluating and improving your teaching. *Observer*. Retrieved from https://www.psychologicalscience.org/observer/evaluating-and-improving-your-teaching

Carusetta, E. (2001). Evaluating teaching through teaching awards. *New Directions for Teaching and Learning*, 88*,* 30-40.

Chism, N. (2006). Teaching awards: What do they award?. *The Journal of Higher Education*, 77 (4), 589-617.

Chism, Nancy (2007). *Peer Review of Teaching, A Sourcebook*. 2nd ed. Anker Publishing: Bolton (MA).

Coggman, S.J. (1991). Improving your teaching through small-group diagnosis. *College Teaching*, 39 (2), 80-82.

Cydis, S., et al. (2015). Integrating and assessing essential learning outcomes: fostering faculty development and student engagement. *Journal of the Scholarship of Teaching and Learning*, 15(3), 33-52.

De Rijdt, C., et al. (2006). Teaching portfolios in higher education and their effects: an explorative study. *Teaching and Teacher Education*, 22, 1084-1093.

Diamond, M.R. (2004). The usefulness of structured mid-term feedback as a catalyst for change in higher education classes. *Active Learning in Higher Education*, 5 (3), 217-231.

Dumford, A.D., and Miller, A.L. (2015). Are those rose-colored glasses you are wearing? Student and alumni responses. *Research and Practice in Assessment* 10, 5-14.

Duque, L.C. and Weeks, J.R. (2010). Towards a model and methodology for assessing student learning outcomes and satisfaction. *Quality Assurance in Education*, 18(2),84-105.

Evans, L. and Bertani Tress, M. (2009). What drives research-focused university academics to want to teach effectively? Examining achievement, self-efficacy, and self-esteem. *International Journal for the Scholarship of Teaching and Learning*, 3 (2) 1-17.

Fernandez, C.E. and Yu, J. (2007). Peer review of teaching. *Journal of Chiropractic Education*, 21 (2), 154-161.

Fletcher, J.A. (2018). Peer observation of teaching: a practical tool in higher education. *Journal of Faculty Development* 32 (1), 1-14.

Finelli, C., et al. (2008). Utilizing instructional consultations to enhance the teaching performance of engineering faculty. *Journal of Engineering Education*, 97 (4), 397-411.

Fink, L.D. (2008). Evaluating teaching: a new approach to an old problem. *To Improve the Academy: Resources for Faculty, Instructional, and Organizational Development*. Vol. 26. San Francisco: Jossey-Bass, 3-21.

Gainey, T.W. (2017). Improving quality in academic units: the important role of senior surveys. *Quality Approaches in Education*, 8 (1), 12-20.

Goldberg, L.R., et al. (2010). Peer review: the importance of education for best practice. *Journal of College Teaching and Learning*, 7 (2), 71-84.

Hammer, D., et al. (2010). Recognition of Teaching Excellence (Article 164). *American Journal of Pharmaceutical Education*, 74 (9), 1-11.

Houston, N.M. (2010). Organizing your teaching materials. *Chronicle of Higher Education*. Retrieved from http://chronicle.com June 2018.

Hoyt, D. P., and Pallett, W. H. (1999). Appraising teaching effectiveness: Beyond student ratings (IDEA Paper #36). Manhattan, KS: The IDEA Center. Retrieved from www.theideacenter.org/sites/default/files/Idea_Paper_36.pdf June 2018.

Kuh, G. D., Jankowski, N., Ikenberry, S. O., & Kinzie, J. (2014). *Knowing What Students Know and Can Do: The Current State of Student Learning Outcomes Assessment in US Colleges and Universities*. Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA).

Lorch, A. (2013). The teaching self-reflection tool and skills checklist. *Department of Occupational Therapy Faculty Papers*. Paper 59. Retrieved from http://jdc.jefferson.edu/otfp/59/ June 2018.

Lowder, L., et al. (2017). Peer observation: improvement of teaching effectiveness through class participation at a polytechnic university.*Journal of STEM Education*, 18 (4), 51-56.

Malfroy, J. and Willis, K. (2018). The role of institutional learning and teaching grants in developing academic capacity to engage successfully in the scholarship of teaching and learning. I*nternational Journal for Academic Development*, 1-12.

Marchant, T. and Wallace, M. (2016). Gender balance in teaching awards: evidence from 18 years of national data. *Journal of Higher Education Policy and Management*, 38 (4), 393-405.

Miller, E. J., and P. Seldin. (2014). Changing practices in faculty evaluation. *Academe* 100 (3): 35–38.

Moore, S. and Kuol, N. (2007). Retrospective insights on teaching: exploring teaching excellence through the eyes of the alumni. *Journal of Further and Higher Education*, 31 (2), 133-143.

Murphy, T., MacLaren, I., and Flynn, S. (2009). Toward a summative system for the assessment of teaching quality in higher education. *International Journal of Teaching and Learning*, 20 (2), 226-236.

Nelms, G. (2015). Small Group Instructional Diagnosis. Chapter 5 in *Assessing The Teaching of Writing*, edited by Amy E. Dayton. USA: University Press of Colorado.

Palmer, P. (1997). The heart of a teacher: identity and integrity in teaching. *Change*, 29 (6), 15-21.

Payette, P.R., and Brown, M.K. (2018). Gathering mid-semester feedback: three variations to improve instruction. IDEA Paper #67. Manhattan (KS): Center for Faculty Evaluation and Development.

Rigler, K., Cook-Benjamin, L., Wieland, R., and Tholstrup, C. (2016). The inclusion of self-assessment in merit evaluation. *Cogent Education* (3), 1-12.

Shulman, L. (2000). From Minsk to Pinsk: Why a scholarship of teaching and learning? *The Journal of the Scholarship of Teaching and Learning*. 1: 48-52.

Seldin, P. (1982) Self-assessment of college teaching. *Improving College and University Teaching*, 30 (2), 70-74.

Seldin, P., and Miller, J.E. (2009). The academic portfolio: A practical guide to documenting teaching, research, and service. San Francisco: Jossey-Bass, 31-51.

Seldin, Peter J., Elizabeth Miller, and Clement A. Seldin (2010). *The Teaching Portfolio: A Practical Guide to Improved Performance and Promotion/Tenure Decisions*. San Francisco, CA: Jossey-Bass.

Snoeyink, R. (2010). Using video self-analysis to improve the "withitness" of student teachers. *Journal of Computing in Teacher Education*, 26 (3), 101-110.

Suskie, L. (2018). *Assessing Student Learning: A Common Sense Guide*.(3rd ed.) San Francisco (CA): Jossey-Bass.

Svinicki, M. and Menges, R. (1996). Consistency within diversity: guidelines for programs to honor exemplary teaching. *New Directions for Teaching and Learning*, 69, 109-113.

Tam, M. (2014) Outcomes-based approach to quality assessment and curriculum improvement in higher education, *Quality Assurance in Education*, 22 (2), 158-168.

Thomas, S., et. al. (2014). A qualitative review of literature on peer review of teaching in higher education: an application of the SWOT framework. *Review of Educational Research*, 84 (1), 112-159.

Tigelaar, D., Diana H.J.M. Dolmans, Ineke H.A.P. Wolfhagen, and Cees P.M. van der Vleuten (2005). Quality issues in judging portfolios: implications for organizing teaching portfolio assessment procedures. *Studies in Higher Education*, 30(5), 595-610.

Trevitt, C. & Stocks, C. (2012). Signifying authenticity in academic practice: a framework for better understanding and harnessing portfolio assessment. *Assessment & Evaluation in Higher Education*, 37(2), 245-257.

Trigwell, K. (2013). Evidence of the impact of scholarship of teaching and learning purposes. *Teaching and Learning Inquiry*, 1 (1) 95-105.

Tripp, T. and Rich, P. (2012a) The influence of video analysis on the process of teaching change. *Teaching and Teacher Education*, 28, 728-739.

Tripp, T., and Rich, P. (2012b). Using video to analyze one's own teaching. *British Journal of Educational Technology*, 43 (4), 678-704.

Volkwein, J.F. (2010). Assessing Alumni Outcomes. *New Directions for Institutional Research*, 125-139.

Williams, K.W. (2015). *Doing Research to Improve Teaching and Learning: A Guide for College and University Faculty*. NY, NY: Routledge.

Yon, M., Burnap, C., and Kohut, G. (2002). Evidence of effective teaching: perceptions of peer reviewers. *College Teaching, 50*(3), 104-110.

Zilvinskis, J., Masseria, A.A., and Pike, G.R. (2017). Student engagement and student learning: Examining the convergent and discriminant validity of the revised national survey of student engagement. *Research in Higher Education*, 58 (8), 880-903.

Appendix: Teaching Awards as a Measure of Teaching Effectiveness

Many institutions of higher learning are now recognizing quality teaching through an awards process. Chism (2006) states that the growth in teaching awards, especially over the past four decades, can be traced to (1) many institutions' wish to acknowledge their support for teaching, (2) the importance of acknowledging the accomplishments of excellent teachers, and (3) encouraging other faculty to strive for excellence in their own teaching. Depending on the type of award, data is typically collected from three primary sources: past and present students, peers, and the individual nominee.

Faculty participation in teaching award processes through the establishment of award criteria, participation in portfolio development workshops, and the adjudication of awards tends to increase faculty awareness of effective teaching practices, and reflection on their own teaching. In addition, the process of updating materials is good practice for the type of self-reflection valued in the formative assessment process and can ultimately lead to increases in teaching effectiveness. (Bledsoe & Richardson 2016; Carusetta 2001; Marchant & Wallace 2016; Svinick & Menges 1996).

That said, an individual's receipt of teaching awards is not generally recommended as a good measure of teaching effectiveness. For example, these awards are often highly politicized, they are small in number (so many very effective teachers will never receive a teaching award), and the criteria associated with the awards often do not align with direct measures of teaching effectiveness. In addition, in recent years there has been a growing concern that the percentage of awards won by female faculty and by part-time/contingent faculty is not appropriately representative. As a result, the use of teaching awards in the evaluation of teaching effectiveness – particularly for summative purposes – is not well-placed. (Chism 2006, Marchant & Wallace 2016).

Selected Studies: Using Teaching Awards to Assess Teaching Effectiveness

Teaching awards come in multiple forms and can advance both scholarship and teaching effectiveness (Malfroy & Willis 2018). This article suggests that teaching awards can come in multiple forms, including institutional learning and teaching grants. Malfroy & Willis (2018) suggests that while such grants do have value as they lead to innovations in teaching, the development of resources (including collaboration), and increased frameworks for good practice, research on evaluating the effectiveness of such grants has been somewhat limited to date. For grant programs to be truly effective, clearly identified expected outcomes need to be established early in the process. They studied 27 completed grant funded projects from 2013 and 2015 and learned that final reports detailing the results of funded projects varied widely in terms of literature

support prior to updated guidelines. The new guidelines for final reports ask grant recipients "to refer to relevant literature but to also explain how the project advanced the existing knowledge and practice," resulting in more substantial information (7). Study participants ended in sharing the results of their grant-funded projects at conferences, in book chapters, and in journal articles (among other venues), which suggests that this form of teaching award can help increase effectiveness by providing opportunities to share the results of research that happens inside the classroom.

Teaching awards and required evidence: Steps to improving teaching excellence (Hammer 2010). This white paper from the 2008-2009 *American Association of Colleges of Pharmacy Task Force for the Recognition of Teaching Excellence* considers best practices for acknowledging and rewarding teaching excellence. The task force members note that effective teaching recognition programs must clearly identify the purpose, criteria, number and mix of awards, frequency, type of award, and method of nominating and determining awardees when establishing programs. They establish useful guidelines for using these types of evidence and also include a list of useful questions to ask when establishing awards and determining the form the award itself should take. While they suggest that the connection between teaching awards and a renewed commitment to teaching improvement is currently critically under-researched, they also acknowledge that other opportunities associated with the teaching award process do have value in improving overall teaching effectiveness.

The teaching award process contributes to collegial responsibility and uses data from multiple sources (Svinicki & Menges 1996). This article offers a list of suggestions for ensuring that teaching award programs not only recognize effective, excellent teaching, but also remain above suspicions of favoritism. These suggestions include:

- establishing consistency with the institution's mission and values and communicating those values to the community;
- grounding award programs in research-based teaching competencies rather than having them be dependent on special interests, favoritism, or popularity;
- recognizing all significant facets of instructional activities that are conducted by faculty (including laboratories, fieldwork, office hours, course design, etc.);
- rewarding collaborative as well as individual achievements;
- neither precluding nor displacing rewards for teaching that are part of the institutionalized reward system;
- calling on those who have been honored to continue to contribute to the development of others through peer modeling;
- contributing to collegial responsibility for promoting exemplary teaching through the act of asking faculty to nominate colleagues;
- encouraging self-reflection at all levels of the institution;
- basing the program on sound assessment practices, including multiple data sources, multiple measures, and consistency over time; and
- keeping the program open to scrutiny and change as conditions evolve.