DIY Classroom Observations: A Toolkit for Novice Classroom Observers

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Abstract

"Improving Student Experiences to Increase Student Engagement" (ISE-2) was funded by the National Science Foundation, through EEC-Engineering Diversity Activities, at Texas A&M University. The grant activity focuses on a faculty development program for faculty who teach first- and second-year engineering courses. As part of the evaluation plan, classroom observations were conducted by the ISE-2 team to assess the classroom climate and teaching practices of ISE-2 faculty participants and non-participant faculty peers. Since Spring 2017, the team has conducted 78 classroom observations. The ISE-2 evaluation team had expert classroom observers train novice observers. The observer training sessions became the basis of this DIY Classroom Observation Toolkit, which is available for people who are interested in conducting systematic classroom observations but have limited experience with qualitative coding and observational research. The goal of the Toolkit is for these individuals to teach themselves using the Toolkit components: a) an annotated bibliography introducing articles that are helpful to understanding and conducting classroom observations, b) training videos teaching viewers to conduct classroom observations using a protocol, and c) a series of sample classroom videos and validation keys for each of the sample videos. This paper serves as a user manual for the Toolkit, which can be accessed at http://bit.ly/diyclassobtoolkit.

Introduction

"Improving Student Experiences to Increase Student Engagement" (ISE-2) was funded by the National Science Foundation, through EEC-Engineering Diversity Activities, at Texas A&M University. The primary grant activity in ISE-2 is a development program for faculty teaching first- and second-year Engineering courses. The development program focuses on reducing implicit bias and deficit thinking related to students and increasing active learning in the classroom. The expectation is that students who experience classrooms led by ISE-2 faculty will have higher engagement, success, and retention than students in non-ISE-2 classes. Additionally, although students from all backgrounds are expected to benefit from experiencing ISE-2 classrooms, underrepresented minority (URM) students in Engineering programs (i.e., women, ethnic minorities, first generation) are expected to have an even greater positive outcome than their non-minority peers, because the content of the development program directly addresses some of the causes of experiences that lead URM students to report feeling less welcomed in the field of Engineering [1], [2]. The project period is March 1, 2017 to February 29, 2020 [3].

As part of the evaluation plan for ISE-2, classroom observations were conducted to assess the classroom climate and teaching practices of ISE-2 faculty and control (i.e., non-trained peers) faculty teaching first- and second-year Engineering courses in the College of Engineering. The

classroom observations were conducted using Environmental Scans (minute-by-minute notes detailing classroom interactions) and the Classroom Observation Protocol for Undergraduate STEM (COPUS) [4]. For each observation, two ISE-2 project team members attended a full-length class session and detailed the instructor and student behaviors and interactions following the Environmental Scan and COPUS protocols [3], [5]. In the context of the ISE-2 project, the observations will be used to understand the degree to which ISE-2 faculty have altered their instructional practices by comparing classroom observations from before the ISE-2 training and after the ISE-2 training. Additionally, the ISE-2 team can compare whether the instructional practices of ISE-2 faculty are different from those of non-ISE-2 faculty [3]. To date, the team has observed 78 classes during four semesters, with two observers attending most of these observation sessions.

The ISE-2 observation team consists of faculty, PhD-level instructional consultants from the Center for Teaching Excellence (CTE), doctoral students, and undergraduate research assistants. Thus, there was a wide range of experience among the research team in conducting classroom observation, ranging from expert to novice. In order to ensure the quality of the classroom observations and improve interrater reliability, the novice classroom observers were trained to observe undergraduate classrooms by the expert observers at the beginning of each semester. These training sessions became the basis of this Toolkit.

Toolkit Rationale and Overview

Well-conducted classroom observations can be a powerful means to improve teaching. Feedback from students (e.g., teaching evaluations) is often incomplete, inconsistently measured, providing limited information to faculty, and lacking specific information about how instructors can improve their teaching [6]. High quality peer observations by faculty (i.e., faculty conducting classroom observations to observe other faculty) can provide specific details about class dynamics and instructional practices that student feedback is unable to provide. Peer observations can be used both formatively and summatively; peer observations can provide formative feedback to improve teaching prior to more formal, summative reviews that are documented in personnel files, which allows for opportunities for improvement [7].

This Toolkit is designed for instructors, researchers, support staff, or administrators who are interested in doing systematic classroom observations but have limited experience with qualitative coding and observational research, to teach these methods to themselves and their research assistants. This paper serves as an introduction and a user manual for the Toolkit. The Toolkit includes several components. First is an annotated bibliography introducing articles that are helpful to understanding and conducting classroom observations. Second is a series of training videos teaching viewers to conduct classroom observations using an environmental scan and the COPUS [4], one of the peer-reviewed coding schemes that is available in the engineering

education literature. The final component is a series of sample classroom videos and accompanying validation keys for each of the sample videos (i.e., consensus coding of the sample videos from the ISE-2 team, against which a new team can compare their codes and discuss their matches and mismatches as a group). The Toolkit is available at http://bit.ly/diyclassobtoolkit.

Using the Toolkit requires four steps:

1. Read the annotated bibliography to familiarize yourself with the literature related to classroom observations.
2. Watch the classroom observation training videos and practice documenting classroom recordings using the environmental scan and COPUS codes [4], [5].
3. Practice conducting full-length classroom observations using the sample classroom videos and assess the quality of the observations using the validation keys.
4. Conduct classroom observations.

Annotated Bibliography

The first part of the Toolkit consists of an annotated bibliography summarizing seven articles that are helpful for individuals learning to conduct classroom observations. The first three articles in the annotated bibliography discuss best practices associated with classroom observations with faculty peers. This discussion is followed by two case studies of how faculty peer observations were conducted in post-secondary educational contexts. The last two articles explain the COPUS, the classroom observation protocol used in this Toolkit.

Best Practices in Faculty Peer Observation and Review

Toeh, Ming, and Khan [8] performed a thematic analysis on 26 studies to identify important issues in the area of peer review of teaching. Four major themes were identified: a) importance of involving teaching experts during the peer review process, b) peer review content and feedback quality, c) peer review objectives, and d) perceived barriers to peer review. This Toolkit addresses a few of these challenges. Notably, the Toolkit can be used when there is a lack of teaching experts who can be involved with the peer review process. Additionally, this Toolkit can help faculty give good quality feedback to their observed peers.

Hammer et al. [6] presented the findings of the 2008-2009 Task Force for the Recognition of Teaching Excellence formed by the American Association of Colleges of Pharmacy (AACP) Council of Faculties Leadership. The task force was assembled to collect best practices in teaching and identify evidence-based criteria for excellent teaching. A large portion of this report was devoted to best practice strategies regarding faculty peer evaluation and observation.

Fletcher [7] provides a review of the peer observation of teaching literature and suggests a framework for peer observation of teaching. The paper describes the Collaborative Reflection Model of Peer Observation and provides instructions for the pre-observation meeting, the observation itself, and the feedback (post-observation) meeting. Additionally, the paper discusses different observation criteria and presents insight about providing quality feedback to the observed faculty.

Case Studies of Faculty Peer Observation and Review

Lowder et al. [9] provided a case study of how faculty peer observation helped improve teaching effectiveness at Kennesaw State University. A "Teaching Partners Program" was established and welcomed all faculty who were teaching a course during the semester. The program paired up faculty members from different departments to observe each other's classes and provide feedback to each other. Most of the participants who completed the program stated that they would encourage their peers to also participate in the future.

Mueller and Schroeder [10] present a case study to assess the effects of a campus-wide classroom observation initiative. The classroom observations were non-evaluative observations. This meant that the classroom observers would watch a peer faculty member teach without providing feedback or judging the quality of the teaching. The participants of this initiative generally responded positively to the observations.

The Classroom Observation Protocol for Undergraduate STEM (COPUS)

Smith et al. [4] developed and described the Classroom Observation Protocol for Undergraduate STEM (COPUS) that is used in this Toolkit. The paper details the development of the protocol and explains why the protocol differs from other popular classroom observation protocols. Specifically, this protocol was chosen for the ISE-2 project (and, subsequently, this Toolkit) because it does not require the observer to be a subject matter expert (which is a requirement of the Reformed Teaching Observation Protocol; RTOP) [11] and requires less training time than the Teaching Dimensions Observation Protocol (TDOP) [12].

Liu et al. [5] explain how the COPUS was adapted for the ISE-2 project. Notable changes include: a) coupling the COPUS with an environmental scan, b) using the COPUS codes on a minute-by-minute basis, instead of two-minute intervals, and c) creating emergent codes that are project-specific.

Classroom Observation Training Videos

The second component of the Toolkit is a series of four training videos that are based on the training materials developed for the ISE-2 classroom observation training. The first video serves as an introduction, explaining: (a) the purpose of classroom observations, (b) how classroom observations can be used, and (c) the Toolkit components. The second video explains how to use the environmental scan, describes best practices in classroom observations, and provides viewers with an opportunity to practice documenting a recording of a classroom using the environmental scan. The third video explains how to code environmental scans of classrooms using the COPUS protocol [4] and allows viewers to practice using COPUS codes. Lastly, the fourth video provides guidance from the qualitative coding literature on how to determine whether emergent codes (i.e., additional codes beyond the initially adopted coding scheme) are needed, how to operationalize them within the context of the COPUS, and how to manage them.

Sample Classroom Videos & Validation Keys

The final component of the Toolkit consists of a series of classroom videos and corresponding validation keys. Full-length classes are recorded from one spot in the classroom to simulate the experience of observing a class in person (i.e., not being able to zoom in or see the classroom from multiple angles). The classes recorded in these videos include two classes in the first-year Engineering course sequence, two classes primarily taken by second-year Engineering students, two Psychology classes (behavioral and social), one Philosophy class, and one Anthropology class.

The authors of the Toolkit created validation keys for each of the class videos. Each validation key includes a completed environmental scan form, as well as the COPUS codes for both the instructor and student behaviors in each minute of the class video. The environmental scans for each of the validation keys were completed in real time (i.e., without pausing the video) by experienced classroom observers in the ISE-2 team. Then, the environmental scans were coded using the COPUS [4]—and the emergent COPUS codes listed in Liu et al. [5]—at a later time.

These videos and validation keys are intended to help newly-trained and novice classroom observers practice their classroom observation skills before performing an in-person observation. We suggest that individuals who have viewed the training videos in the Toolkit complete at least two of the full-length practice observations before conducting an in-person observation. The endurance and concentration required for completing an hour-long (or more) classroom observation is very different from the exertion and concentration required for a 5- or 10-minute practice observation.

To practice using the sample classroom videos, observers can play the sample classroom video in a small group or alone. The video should be played at normal speed, without pauses. Please note that while the classroom observation training videos are captioned, the classroom videos are not, to simulate the experience of being in a real classroom. The practicing observers should complete the environmental scan portion of the classroom observation form by documenting what is happening in the classroom recording on a minute-by-minute basis. After the conclusion of the video, the practicing observers should code their environmental scans using the COPUS codes. Once the practicing observers have completed both the environmental scan and COPUS coding portions of the observation, they should compare their final products with those of the authors of the Toolkit. Finally, when possible, the practicing observers should discuss their codes, the choices they made, and both agreements with and departures from each other's codes and the provided key.

Conclusion

This paper serves as a handbook for the Toolkit (http://bit.ly/diyclassobtoolkit). This handbook introduces the three components of the Toolkit shown in Figure 1 (annotated bibliography of related literature, classroom observation training videos, and sample classroom videos with validation keys). We hope that this Toolkit makes classroom observations more accessible to individuals with little or no prior classroom observation experience.

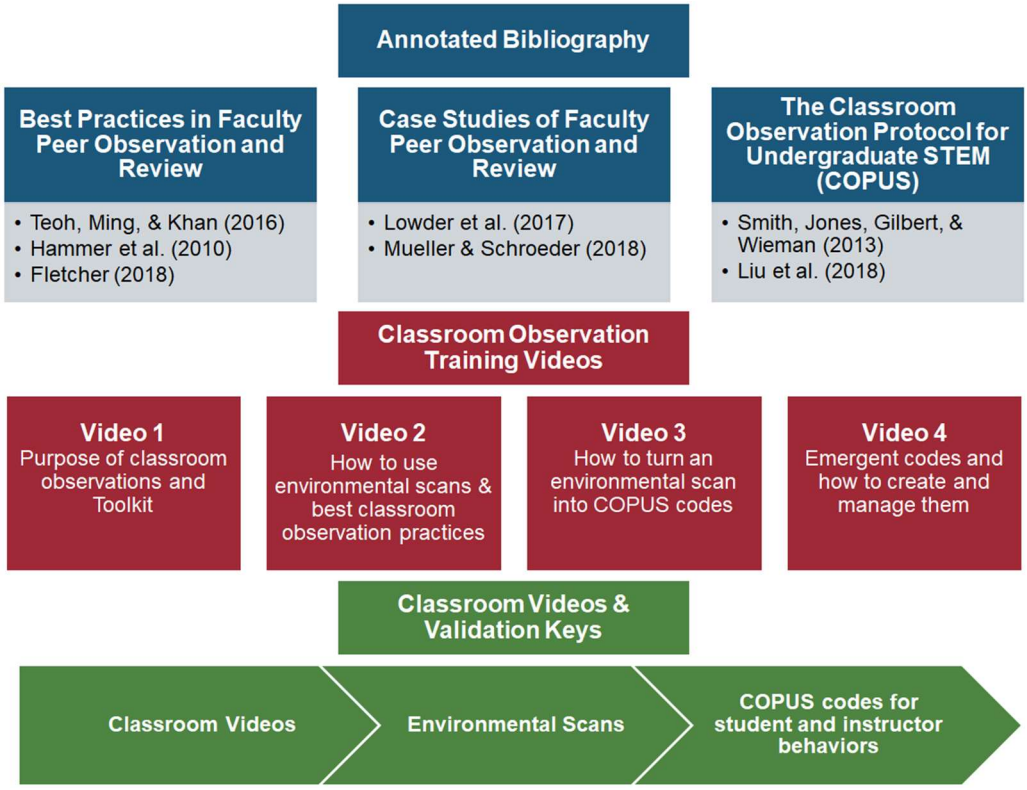

Figure 1. Components of the DIY Classroom Observation Toolkit

We anticipate that the Toolkit will be able to train novice classroom observers to conduct accurate and meaningful classroom observations. There are challenges to classroom observation and coding beyond inexperience. For example, first-time observers often do not know what behaviors to look for during an observation. Novice observers may also struggle with making connections between what they are observing and the codes they are using. This is partly the result of faculty having discipline-specific expertise, but not necessarily pedagogical knowledge or formal training as teachers [13]. Conducting effective observations requires training and education, using tools that are appropriate for the context and purpose of the observation. This Toolkit gives examples of using observations in different contexts—both for informal teaching development and for assessment purposes. Ultimately, whenever instructors pursue teaching development, their teaching quality improves, which leads to improved student learning outcomes [14].

The annotated bibliography introduces the user of the Toolkit to literature regarding faculty peer observations and familiarizes the user with the terminology used in this literature. The training videos in the Toolkit explain, in great detail, the types of faculty and student behaviors that should be observed when conducting a classroom observation. Furthermore, the training videos provide practice examples for the user to familiarize themselves with the classroom observation and coding procedures, and explain best practices of classroom observation and observation coding. Lastly, the sample classroom videos and validation keys give Toolkit users an opportunity to practice conducting and coding full-length classroom observations in a low-stakes setting, before observing a real classroom.

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