

Workshop - Leveraging Different Scales of Course Feedback for Enhanced Student Learning and Growth

Dr. Benjamin Goldschneider, University of Virginia

Benjamin Goldschneider is an Assistant Professor of Engineering Foundations at the University of Virginia. He holds a PhD in Engineering Education from Virginia Tech, as well as a BS in Industrial Engineering from Purdue University. His research interests include students' sense of belonging, socialization, program development, and pre-college introductions to STEM material.

Shaylin Williams, University of Virginia

Shaylin Williams is invested in identifying ways to improve the engineering education experience for future generations of engineers. As a McNair Scholar, Shaylin worked on chemical engineering projects creating thermal barriers for food packaging and studying soil remediation. Additionally, she completed an REU project in healthcare engineering at the University of Wisconsin- Madison. She earned a master's degree in industrial and systems Engineering with a Management Systems Concentration in December 2022. Shaylin recently completed her Ph.D. in Engineering Education at Mississippi State University, using Self Determination Theory to analyze freshmen and continuing Summer Bridge students' experiences and senior engineering students' graduation plans. She previously worked on a longitudinal study researching how varying first-year experience structures affect students' engineering identities and involvement in communities of practice. Shaylin now serves as an Assistant Professor for the University of Virginia's First Year Engineering Center and is interested in learning more about what contributes to engineering students' success, how they can get the most out of their undergraduate programs, and how programs can be better designed to cater to students' needs.

Dr. Esther Tian, University of Virginia

Esther Tian is an Associate Professor of Engineering in the School of Engineering and Applied Science at University of Virginia. She received her Ph.D. in Mechanical Engineering from the University of Virginia. Her research interests include bio-inspired robotics and engineering design education.

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Workshop Session Description

Purpose:

This workshop explores how various modes and methods of feedback support facets of student development and, when used in concert, support holistic growth. This workshop will support first-year instructors, administrators, career development staff, and academic advisors in shaping the way they collect, process, and apply student feedback in pursuit of helping their students grow.

Format:

This 90-minute session will be comprised of four interwoven explorations of distinct kinds of feedback implemented in a large public Mid-Atlantic university's First Year Engineering (FYE) program, followed by a conversation underlining how they work in tandem with one another. The mini sessions will vary in presentation, but will all provide background information alongside examples of how the feedback was collected and applied to support student development. The mini sessions will be sequential, and all workshop participants will go through them together.

Learning Goals:

Attendees will be able to identify and explain how four provided kinds of feedback—a full-year pre- and post-survey, career reflection assignments, module reflection assignments, and exit surveys—support different aspects of students' growth. Furthermore, attendees will be able to extrapolate from the provided feedback methods to design their own means to effectively target and support specific facets of students' development.

Content:

The opening minutes of the workshop introduce the topic of the session and introduce the program that served as the backdrop for the deployment of these feedback methods. The FYE instructors in our program are embedded advisors for students until they declare their specific engineering majors. Our course is also supported by a Career Development team, who provide two embedded career workshops per semester. While these course features are not necessary for using the feedback methods discussed in this session, they do contextualize how these methods were implemented previously.

The first mini session explores a simple survey, distributed to students at the beginning of the fall semester and again at the end of the spring semester. This survey's objective is to provide a high-level overview of how students develop as engineers over their first year. The focus of this mini session is on the process of survey design. Our survey synthesized a variety of existing and validated instruments to investigate a broad spectrum of topics: technical and sociotechnical proficiencies, confidence in performing engineering work, STEM (Science, Technology, Engineering and Mathematics) identity and belongingness, teamwork and ethical competencies, and major and career planning. The survey gauges students' academic and professional

development primarily, but also gives insight into their personal development and alignment with their trajectory in engineering. From a course design perspective, the survey informs macro-level design philosophy, guiding what content is most useful or needed, and what dimensions of engineering need to be stressed.

The second mini session involves a career-focused assignment wherein students are asked to compare their work goals, life goals, and the intersection between them. Assigned as a companion to a lecture given by a Career Development professional, this reflection gives students a new lens through which to examine their own values, objectives, and identities. Prioritizing personal and professional development, the Career Development team provides comments and conversation to every student's reflection, fostering an ongoing discussion surrounding the steps required to pursue their goals. This dialogue enables students to make small or large adjustments to their academic, professional, and life goals, depending on their individual needs.

In the third mini session, we discuss another course assignment, given at the end of each section of the course, hereafter called "modules." Each module has a distinct focus, ranging from research to the design process, and students are asked to write a short reflection about their experience with each when they end. These reflections ask students to evaluate what they got out of the module, what they liked, what they did not, and what changes they would like to see. These serve a dual purpose: the students are given the chance to take inventory of their new skills and accomplishments, and instructors get a roadmap of what changes need to be made to support students' academic development more effectively.

Finally, we will discuss exit surveys, a class-to-class feedback mechanism that has proven to be useful for more than just small-scale course adjustments. Given at the end of each class, exit surveys—previously studied for their value in getting rapid feedback on course content and procedures (Van Tyne et al., 2023)—have also proven to be a powerful method of helping first-year students transition to college life as well. Providing students with a means to give comments and ask questions anonymous to their peers but not their instructor gives a unique opportunity to address some of the hard questions of college life. The key to implementation of these surveys is the selection and discussion of student responses directly in class sessions. From poor exam scores to struggling to balance life's priorities, student concerns can be discussed openly without isolating any individual student or forcing a one-on-one conversation.

To close, these four methods will be woven together to underline how collecting feedback class-to-class, between modules, and over the course of the first year can provide a much richer look at how students experience their first semesters, and subsequently allow for the most meaningful revisions to be made. The discussion will also focus on how collecting feedback is only the beginning, underlining the value and importance of direct responses and clear action. In combination, feedback at multiple levels provides the clearest direction for FYE instructors, administrators, and staff to support students in all aspects of their development.

Activities:

Build-A-Survey: The Build-A-Survey activity tasks small groups with identifying the areas where they would most like to improve their own programs. Designed to help participants think through what kinds of questions they would most benefit from their students answering, the exercise is more focused on thinking through key outcomes than actual instrument design. The limited time prevents participants from diving into research or any specific existing instrumentation but aims to give them direction to do so moving forward.

Workview, Lifeview, and You: Participants will be tasked with creating a short list of their highest priorities in their work and their personal lives, before identifying alignments and misalignments. This is effectively a condensed version of the task given to students, allowing the participants to put themselves in the students' shoes. A final debrief will recontextualize this understanding from the student perspective, with the whole world in front of them and only bits and pieces of the roadmap to their goals.

Breaking Down Student Responses: This activity entirely revolves around giving insight into the kinds of feedback we receive when doing our post-module reflections. We aim to present our key findings, what questions are most useful for course revisions, and how changes can and have emerged from the results of these reflections.

How to Have Hard Discussions: Students ask difficult questions, often outside of the scope of reasonable discussion in class. This activity will ask participants to recount some of these kinds of questions from their own experiences and collectively discuss how to approach the conversation. There will be an emphasis on how to have in-class discussions, given the mini-theme, but given the limitations of the medium, other approaches are more than welcome.

Schedule

1. **5 minutes**: Welcome and workshop introduction, survey of audience to understand who is attending (advisors, administrators, FYE instructors, etc.). Brief introduction of the structure of the program these feedback methods were employed in.
2. **15 minutes**: First mini session: Full-Year Survey
 - a. **5 minutes**: Survey structure, implementation, purpose, and limitations
 - b. **10 minutes**: Build-a-survey Activity
3. **15 minutes**: Second mini session: Career Reflections
 - a. **5 minutes**: Overview of Career Reflection assignment, implementation, follow-up, and limitations
 - b. **10 minutes**: Workview, Lifeview, and You Activity
4. **15 minutes**: Third mini session: Module Reflections
 - a. **5 minutes**: Module reflection timing, prompt, usage, and limitations
 - b. **10 minutes**: Breaking Down Student Responses Activity
5. **10 minutes**: Fourth mini session: Exit Surveys
 - a. **5 minutes**: Exit Survey format, implementation, examples, and limitations
 - b. **10 minutes**: How to Have Hard Discussions Activity
6. **5 minutes**: Exploring the Intersection of the Four Mini Sessions
7. **10 minutes**: Open discussion and reflection, Workshop Exit Survey

- a. Exit survey designed to gauge participants' use of these approaches or similar, attitude towards the approaches, and potential plans to incorporate any or all feedback modes

An additional 10 minutes left for flexible expansion on any topic of particular interest

References

Van Tyne, N. C. T., Soledad, M., Chambers, B. D., & Goldschneider, B. (2023). How to interview the crowd: Enlisting informal student feedback in a formative assessment process. *14th Annual First Year Engineering Experience Conference*, 5.