

Teach like an Entrepreneur: A Faculty Development Initiative

Sarah Zappe

Leonhard Center for the Enhancement of Engineering Education
Pennsylvania State University)
University Park, PA, USA
ser163@psu.edu

Stephanie Cutler

Leonhard Center for the Enhancement of Engineering Education
Pennsylvania State University
University Park, PA, USA
slc5822@psu.edu

Abstract—The purpose of this document is to describe a special session to be presented at the 2020 Frontiers in Education Conference. This special session will feature a workshop that was created as part of a larger faculty development initiative within the College of Engineering at Pennsylvania State University. The faculty development initiative, called Entrepreneurial Mindset for Innovative Teaching (EMIT), was funded as part of the Engineering Faculty Impact Collaborative (EFIC) being led by Arizona State University and the Kern Family Foundation. The EMIT project builds on the idea that the practices and mindset associated with quality teaching mirror practices of entrepreneurship and the entrepreneurial mindset. The special session will feature the introductory workshop developed as part of the overarching EMIT program. The session will be interactive and will allow participants to consider how the processes of teaching and entrepreneurship can be similar. Activities included in the session will be reflections, pair-and-share, case studies, and small- and large-group discussions.

Keywords—*entrepreneurial mindset, faculty development*

I. INTRODUCTION AND DESCRIPTION OF SESSION CONTENT

In the past decade, the number of programs and courses associated with entrepreneurship in engineering colleges and universities has dramatically increased. Organizations such as VentureWell and the Kern Entrepreneurial Engineering Network (KEEN) have funded many initiatives that are intended to help students launch ventures and to help faculty improve teaching of entrepreneurship. One of the key characteristics relating to these endeavors is supporting students' acquisition of the entrepreneurial mindset (EM), a set of knowledge, skills, and attitudes (KSAs) that can be helpful for entrepreneurs to achieve their goals. One definition of EM, developed by KEEN, is that it consists of 3 characteristics, termed the 3 Cs. These characteristics, according to KEEN are "Curiosity, Connections, and Creating Value." [1] While other researchers and practitioners have defined entrepreneurial mindset in other ways [2,3], a common conception of entrepreneurial mindset is that it is applicable not just to the entrepreneurship context. As Bekki and colleagues argue, EM includes "...cognitive behaviors that orient an engineer toward opportunity recognition and value creation in any context, not just that of an entrepreneurial venture" [4, p. 2]. The focus of the special session is the application of EM to faculty in their role as instructors.

Consider the processes and mindset associated with being an entrepreneur. A successful entrepreneur will develop a business plan and conduct customer discovery, then iterate and pivot in the face of failure. Entrepreneurs need to be curious and creative, to demonstrate the value of their product or service, and to make connections among multiple sources of information [5]. Now consider the processes and mindset associated with teaching. Successful teachers will engage in a course planning process, periodically gather information from students on their learning and on their own teaching effectiveness, and adjust teaching strategies as appropriate. A good teacher develops instructional activities that are engaging to students, creates a valuable learning experience for students, and integrates many sources of information into the instructional environment. The overarching goal of the special session will be to emphasize the following tenet: The practices and mindset associated with quality teaching mirror practices of entrepreneurship and the entrepreneurial mindset.

II. GOALS OF THE SESSION

After participating in the session, attendees should be able to: 1) Define the entrepreneurial mindset in terms of KSAs needed to be an entrepreneur, 2) Understand how the entrepreneurial mindset might be applicable to their own instructional practices, 3) Develop a conceptual map linking the KSAs needed to be an entrepreneur and those needed to be a good teacher, 4) Reflect on and identify how they can improve their teaching by integrating skills and practices relating to entrepreneurship. The intended audience for the workshop is broad and would include any engineering faculty members who teach. Faculty who are interested in improving their teaching by considering a unique approach may be interested in participating. This session might also be of interest to faculty developers. No expertise in entrepreneurship is needed to attend this workshop.

III. JUSTIFICATION OF NOVELTY

The use of EM to drive educational innovations is unique; no instances of the teaching as entrepreneurship metaphor for faculty development was found in the literature. The use of this metaphor brings a new framework to how instructors can think about improving their teaching. One of the insights to be

expected as part of the session is that the processes of teaching and entrepreneurship are similar, and also has similarities to other processes such as the engineering design process and the creative process [6]. While there are similarities across the different types of processes, comparing entrepreneurship to teaching will likely reach a new group of faculty and also help faculty to consider strategies in their teaching they would not likely have utilized otherwise.

IV. SESSION AGENDA

The special session will incorporate a number of interactive elements, including pair and share, case studies, concept mapping, and large group discussion. Below, the session agenda provides additional details on the activities that will be included.

(0:00-0:05) Introduction and Overview

(0:05-0:10) Reflection exercise: Participants will be asked to generate ideas on the KSAs needed to be an entrepreneur and a teacher.

(0:10-0:15) Pair and share: The participants will pair up and share their KSAs and look for similarities and differences.

(0:15-0:25) Presentation of case studies: Participants will be presented with two hypothetical case studies (one teacher and one entrepreneur).

(0:25-0:45) Small group mapping exercise: Participants will be asked to make a map of how teaching and entrepreneurship are related. These will be placed on large post-it notes.

(0:45-0:60) Large group discussion: Maps will be shared with the larger group. Large group discussion will be facilitated by the presenters.

(0:50-1:10) Individual reflection activity: Participants will be asked to consider the practices of entrepreneurs and which they have or have not used in their teaching. They will then be asked to consider what practices they would like to better integrate into their teaching.

(1:10-1:20) Sharing of reflection activity and wrap-up

As a follow-up to the session, participant contact information will be collected. Participants will receive a summary of the session, including the major conclusions and the results of the large-group discussion comparing the maps of how teaching and entrepreneurship are related. The special session serves the basis of a larger faculty development initiative being conducted at Penn State.

V. ABOUT THE SESSION FACILITATORS

Dr. Sarah Zappe is a research professor and director of assessment and instructional support in the Leonhard Center for the Enhancement of Engineering Education at Penn State. She leads the portfolio of faculty development initiatives that are offered within the College of Engineering. Zappe is an Educational Psychologist with a background in applied test development and measurement. She has worked in a faculty development role for more than 15 years. In addition to her role in the College of Engineering, she also holds an affiliate faculty position in the Educational Psychology department at Penn

State. She is a national leader in engineering education research and has served as an external evaluator on many NSF grants. Her research background is varied, focusing on evidence-based instructional support, faculty development, and entrepreneurship education. In addition to her role in the Leonhard Center, Zappe is deputy editor of the *Journal of Engineering Education* and is the current division chair for the Educational Research and Methods Division of the American Society for Engineering Education (ASEE).

Dr. Stephanie Cutler holds degrees in Mechanical Engineering, Industrial and Systems Engineering, and a PhD in Engineering Education from Virginia Tech. She is an assistant research professor and the assessment and instructional support specialist in the Leonhard Center for the Enhancement of Engineering Education at Penn State. She holds an affiliate position in the Education Psychology department at Penn State and specializes in faculty development and evaluation. Stephanie is recognized for her expertise in faculty development, boundary negotiation of the field of engineering education through peer review, and workshop development & facilitation. She is an emerging leader in engineering education, receiving the American Society for Engineering Education (ASEE) Educational Research and Methods (ERM) division's Apprentice Faculty Grant (2017) and was recently elected a Director for the division. She has served on the executive leadership team to establish the ASEE Faculty Development Division and developed their inaugural program in 2018 and has continued to further the program by serving as the division's Program Chair for the 2019 and 2020 annual ASEE Conferences. Her primary research interest include faculty development, the peer review process, the doctoral experience, and the adoption of evidence-based teaching strategies.

ACKNOWLEDGMENT

The authors would like to acknowledge the Kern Family Foundation, KEEN, and the Engineering Faculty Impact Collaborative (EFIC) at Arizona State University for providing support for this project.

REFERENCES

- [1] KEEN Foundation (2017, March 3). Mindset + Skillset = Educational Outcomes. Retrieved from <https://engineeringunleashed.com/mindset-matters.aspx>.
- [2] Zappe, S. E. (2018). Avoiding construct confusion: An attribute-focused approach to assessing entrepreneurial mindset. *Advances in Engineering Education*, 7(1): 1-12.
- [3] Follmer, D. J., Zappe, S. E., Kisenwether, E., & Reeves, P. M. (March, 2015). Faculty beliefs about entrepreneurship and entrepreneurial mindset. Poster presented at the annual OPEN conference of VentureWell. Washington, D. C.
- [4] Bekki, J. M., Huerta, M., London, J. S., Melton, D., Vigeant, M., & Williams, J. M. (2018). Why EM? Potential benefits of instilling an entrepreneurial mindset. *Advances in Engineering Education*, 7(1):1-11.
- [5] Rae, D. & Melton, D. E. (2016). Developing an entrepreneurial mindset in US Engineering Education: An International view of the KEEN project. *Journal of Engineering Entrepreneurship*, 7(3): 1-16.
- [6] Mumford, M. D., Medeiro, D. E., & Partlow, P. J., (2012). Creative thinking: Processes, strategies, and knowledge. *The Journal of Creative Behavior*, 46(1): 30-47.