WIP: Exploring Instructional Faculty Perceptions of Effective Engineering Mentoring

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Introduction

The overall goal of this study was to train, mentor, and equip non-tenure track instructional faculty (NTTIF) with the necessary professional development skills to form their own professional action plans for obtaining promotions in engineering departments at their respective universities. The objective of this work in progress paper is to outline overall project parameters, establish early phase project activities, and elaborate on workshop methods. This early-stage investigation, as a part of the overall project, is important to assist in setting the foundation for understanding NTTIF motivations for development and for establishing an understanding of the existing landscape of mentoring for contingent faculty members.

This work is based in data obtained through the "RITA Mentoring Hub" funded by the National Science Foundation (NSF 2217477) from 2022-2025. This study was a collaboration between three higher education institutions including Morehouse College, the University of Florida (UF), and Virginia Tech University. The University of Florida and Virginia Tech University were selected for this study for their R1 research institution status, which has allowed them time and resources to develop multiple academic career tracks, including NTTIF and tenure-track faculty. Morehouse College was selected to incorporate the perspectives of STEM faculty from an institution that is primarily teaching focused.

Workshop

To assist in bridging the gap through mentoring support and helping NTTIF form their own professional action plans for obtaining promotions in engineering departments, first an understanding of the existing landscape of mentoring for contingent faculty members must be established. Lessons learned from this workshop have been previously published [1].

The participants for this study included 12 total NTTIF in engineering departments from three different higher education institutions in the U.S. An institutional review board (IRB 202200008) was conducted and approved, and participants gave their consent to be a part of this study. 12 out of 12 participants participated in the workshop.

In January of 2024, a virtual mentor training workshop was conducted for participants by the International Mentoring Association (IMA) at UF. This IMA workshop, titled "RITA Mentor Training - Building Futures" was created as an insightful guide for helping NTTIF to explore their own background relationship with mentoring, build their mentoring skills, and provide helpful models for success for mentoring in the future [2]. This workshop was led by two instructional staff of the IMA at UF. This workshop highlighted four training modules:

Module 1: Theory - *Essential Question:* How do building blocks underpin mentoring?
Module 2: Skills and Strengths - *Essential Question:* Which skills & strengths drive excellent mentoring?
Module 3: Responsive Mentoring - *Essential Question:* What does success look like in mentoring?
Module 4: Assessment - *Essential Question:* How do purposeful supports impact mentoring?

In Module 1: Theory, workshop instructors guided participants through the developmental stages of the mentoring process and encouraged participants to reflect on their

own experiences with mentoring relationships as NTTIF to uncover building blocks that establish or undermine effective mentoring. Module 2: Skills and Strengths, guided participants through designing effective questions that align with mentorship evaluations and how these proactive practices can model responsive mentorship behaviors. Module 3: Responsive Mentoring, focused participants on personal and career reflections to establish the impact of situational responsiveness as a mentoring strategy. In Module 4: Assessment, workshop instructors guided participants through appropriate assessment tools for mentorship and an outline of mentorship best practices.

This work in progress paper focuses on Module 1 and Module 3 to highlight the building blocks that underpin effective mentoring relationships and the situational responsiveness to the impact of mentoring in classrooms. A focus was placed on the challenges within effective mentoring in engineering.

Module Content

The workshop started with brief introductions of workshop instructors, an outline of the agenda, and an overview of participant expectations in the workshop. These expectations included active participation in workshop activities, creating a culture of respect towards other participants, and establishing confidentiality of participants shared information and experiences. This welcome section immediately transitioned into Module 1 material.

Module 1 consisted of 3 breakout room session with 2 - 4 participants per breakout room and 1 – 2 researchers in each breakout room to help guide the discussion and transcribe notes from the sessions. Participants in each room were assigned at random. Breakout room sessions for this module ranged from 12 – 13 minutes in duration. In Module 1, participants were prompted with 3 separate discussion topics to elaborate within each breakout room session.

Table 1. Module 1 Participant Breakout Session Prompts

Module 1: Theory - Essential Question: How do building blocks underpin mentoring*?*		
Session No.	*Subject*	*Directions*
1	Mentors in Your Life: Triads	Below, list key mentors in your personal life and also those in your professional life. Circle the one true personal mentor and one professional mentor who have influenced you the most. You'll be sharing within your small group regarding how those two mentors (one personal; one professional) impacted you.
2	Reliable Techniques: Pause, Paraphrase, Probe	Pause, Paraphrase, Probe: Partner A discusses a key challenge(s) encountered the first year on the job. Partner B employs Pause-Paraphrase-Probe. Switch partners. The goal is to practice pause, paraphrase, and probe.
3	The Hidden Curriculum: Seekers, Bridgers, Agents	Using the article as reference, answer the following questions: (1) How is the hidden curriculum working at your institution? (2) Are you a seeker, bridger, agent or something else? (3) How does this apply to mentoring?

Module 3 consisted of 1 breakout room session with 4 participants per breakout room and 2 researchers in each room to help guide the discussion and transcribe notes from the sessions. Participants in each room were assigned at random. Breakout room sessions for this module were 25 minutes in duration. As a part of Module 3, participants were prompted with 1 discussion topic to elaborate within the breakout room session.

Table 2. Module 3 Participant Breakout Session Prompts

Module 3: Responsive Mentoring - Essential Question: What does success look like in mentoring?		
Session No.	*Subject*	*Directions*
1	Situational Influences: What about you?	Discuss in your breakout session what groups you belong to and how your group identification may impact your mentoring.

Module Content Discussion

The content covered a part of the first breakout session of Module 1 focused participants on identifying key personal and professional mentors that influenced them the most. In identifying these relationships, a highlight was developed around what attributes each of these mentors possessed and why these attributes stood out as influential for each participant. This conversation set the groundwork for participants to outline personally identifiable features of mentorship that they perceive to build up or underpin effective mentorship practices. Effective mentoring is defined as the positive psychosocial support and career support that is created through developing a network of others that bring intentionally collaborative learning to different situations [3].

As a part of Module 1's focus on theories within mentoring, the three techniques of Pausing, Paraphrasing, and Probing, from Garmston and Wellman's Seven Norms of Collaboration [4] were presented to participants as a reliable technique in facilitating effective mentoring relationships. The 'pausing' phase of this technique equips mentors with the instructions to wait and give undivided attention in listening to their partner without interruptions. 'Paraphrase' allows mentors to summarize and restate the conversation key points to then shift the conversation up or down in identifying the potential emotions involved in the situation. The 'probing' phase enables mentors to dig deeper in the conversation by asking "just right" questions to prompt deeper thoughts on the situation by both parties [2]. Participants were asked to use this technique to discuss key challenges encountered during their first year on the job as NTTIF.

The focus of the final breakout session in Module 1 was to highlight the concept of hidden curriculum and allow participants the ability to identify how hidden curriculum has laid the building blocks to underpin effective mentoring relationship development inside and outside the classroom. Hidden curriculum is defined as unwritten or unacknowledged norms in a working or learning environment that hinders the successful navigation of participants in these environments [5]. Participants were instructed in the basics of hidden curriculum in engineering based on the reference article "Transforming Engineering Education Through Social Capital in Response to Hidden Curriculum" [5]. This informative recap included coverage of the hidden

curriculum identities within engineering; identities of a seeker (collectors of social capital), a bridger (sharers of social capital), and agents (brokers of social capital). Social capital is defined as the social resources and benefits linked to having social relationships and networks [5].

Workshop study participants spent time discussing how hidden curriculum is present within their home institutions and how it has limited successes with coworkers, peers, and within their teaching requirements. Participants were asked to classify themselves as seekers, bridgers, agents, or individuals who used social capital to navigate hidden curriculum.

Module 3 aimed its focus on content related to purposeful support and the impact it has on mentoring. The main purposeful support in mentoring was identified to be situational responsiveness and how a situationally aware relationship can encourage a difference in perspectives to help drive innovation. Situational responsiveness is defined as the support given based on the ability to perceive and adapt understandings based on the specific contexts of a given situation [6]. In breakout session 1, participants were prompted to discuss what situational group they belong to and how this group identification impacts mentoring relationships.

Preliminary Findings

Preliminary findings indicate that in identifying previous personal and professional mentoring relationships of NTTIF, these relationships are not often built on backgrounds that align with their work or fulfil the needs of a mentorship support system. Using the Pausing, Paraphrasing, and Probing techniques, NTTIF identified key challenges of the job that included being overwhelmed with teaching responsibilities, limited time for classroom impact, and frequent unknown expectations of job requirements and performance. When discussing the topic of hidden curriculum, participants identify a lack of institutional support and acknowledgment as undermining features of career growth.

Conclusion and Future Work

This work in progress paper provides insights on the methods, workshop content, and preliminary findings of the first and third modules of a mentoring workshop for NTTIF in engineering from three higher education institutions. While still in the early stages, the information shared provides a baseline foundational understanding of the existing landscape of mentoring for contingency faculty members. Future work with the data collected from the RITA Mentoring Hub will include continued analysis of Modules 2 and 4 from this workshop and data analysis of the mentoring activities from other phases of this project. Future work will also see the deductive and inductive coding of participant responses throughout the project.

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