## **2023 Annual Conference & Exposition**

Baltimore Convention Center, MD | June 25 - 28, 2023



Paper ID #38758

# Learning from an Omnidirectional Mentorship Program: Identifying Themes and Outcomes through a Qualitative Lens

## Matthew Lewis Caulfield Dr. Daniel Ivan Castaneda, James Madison University

Daniel I. Castaneda is an Assistant Professor in the Department of Engineering at James Madison University. Daniel earned his PhD in 2016 and his Master's in 2010, both in civil engineering from the University of Illinois at Urbana-Champaign. He previously earned his Bachelor's in 2008 from the University of California, Berkeley. His course development includes civil engineering materials, dynamics, engineering design, engineering economics, first-year engineering experience, matrix analysis, mechanics, probability and risk in engineering, statics, and structural analysis. His research aims to better society by exploring how infrastructure materials can be made to be more environmentally sustainable and resilient; and by exploring how engineering can be structured to be more welcoming of diverse perspectives, which can fuel solutions in challenging societal inequities.

#### Dr. Melissa Wood Aleman, James Madison University

Dr. Melissa Aleman (Ph.D. University of Iowa) is Professor of Communication Studies at James Madison University and has published research using qualitative interviewing, ethnographic and rhetorical methods to examine communication in diverse contexts. Sh

#### Dr. Robert L. Nagel, James Madison University & Carthage College

Dr. Robert L. Nagel is Director of Engineering at Carthage College and Professor of Engineering at James Madison University. Dr. Nagel, a mechanical engineer by training, performs research on engineering student learning and engagement with a focus on interventions, pedagogies, and design methodologies. Through his research, he seeks to gain applicable knowledge for increasing student engagement and reducing barriers in engineering, design, and making. At James Madison University, Dr. Nagel has been KEEN Leader, sophomore design coordinator, and Director of the Center for Innovation in Engineering Education. At Carthage College, Dr. Nagel is leading development of two new degree programs: a Bachelor of Arts in Engineering and a Bachelor of Science in Engineering.

## Learning from an Omnidirectional Mentorship Program: Identifying Themes and Outcomes through a Qualitative Lens

#### Abstract

Mentorship has many benefits which may include sharing, reflection, and empathy. Mentoring fosters understanding of others and their perspectives. Being mentored increases one's potential for success and satisfaction, opening doors for new opportunities in personal and professional growth. Omnidirectional mentorship is a type of organizational structure that emphasizes the collective growth of a community, providing opportunities for collective input and acknowledgment. This mentorship approach allows an individual to take on the role of both mentor and mentee.

A year-long omnidirectional mentorship program was developed and piloted at a Mid-Atlantic university. This pilot program included ten faculty members, each at various stages of their career, from various departments: engineering, computer science, technology, biology, education, and graduate psychology. Assessment of this omnidirectional mentorship program occurred through focus groups. The data from two mid-point focus groups provided insight into the developed relationships among participants through their interactions in structured gatherings. We qualitatively inspected this data through content and thematic analysis to answer our research question: How did participants' engagement in this omnidirectional-style mentorship program influence their relationship with others inside and outside the mentorship community?

Preliminary findings in this **qualitative research study** reveal participants expressing and experiencing feelings of affirmation, motivation, and satisfaction in themselves and their personal lives. A participant growth model is developed to represent the participant transformation through the communication of shared experiences, as members in the mentorship community feel and experience safety in the group, exhibit feelings of empathy for others, and feel empowered to act on their problems through the community created.

#### 1 Introduction

"I'm mid-career, I'm seen as someone who knows things, who should be doing, official mentoring, that type of thing. And I [think to myself], "Oh, please don't make me do this"... I'm positioned as somebody who knows things or somebody who could be supportive or somebody who can... I want to be those things. But if it's seen as more of a professional capacity, [I feel], 'My life is a lesson of what not to do'."

We see in this quote, someone who struggles with the complexities of navigating a mid-career professional academic journey; a journey that can be fraught with dead ends, wrong turns, and hard-earned lessons. Irrespective of the challenges, formal mentoring for academics at this stage of their career can be sparse. Mentorship can play a vital role in personal and professional development, allowing individuals to learn from experienced individuals who can guide and support them through one's varied pursuits.

A pilot omnidirectional mentorship program was developed and conducted at a Mid-Atlantic research university. Omnidirectional mentorship is a mentorship program structure that emphasizes the collective growth of a community [1,2]. It is meant to provide opportunities for collective input and acknowledgment, which lead to a sense of community among participants [1,2]. Omnidirectional mentorship is different from other forms of mentorship in that it is a mutual exchange of knowledge, skills, and support between the mentor and mentee. An individual takes on the role of being both the mentor and mentee, actively sharing their expertise and learning from each other within a community of individuals. This approach allows for a more dynamic and reciprocal relationship, where the individual is empowered to take an active role in their development and growth [1,2].

The piloted mentorship program included ten faculty members, each at various stages of their careers, from different departments: engineering, computer science, technology, biology, education, and graduate psychology. The assessment of this program occurred through focus groups which sought to understand the developed relationships among program participants through their interactions in structured gatherings. The interactions between participants include storytelling, sharing of resources, and peer-to-peer feedback, all of which contributed to the development of stronger connections and relationships among the participants.

The data collected during the focus groups provide insight into the effectiveness of the program in fostering the collective growth of the community and in the development of the relationships among the participants. Through the content and thematic analysis of the data, we gain understanding of the impact of the omnidirectional mentorship program on the participants' relationships with others inside and outside the mentorship community and how these relationships have influenced their personal and professional growth.

While there is believed to be a specific value of omnidirectional mentorship, there are few case studies on omnidirectional mentorship, specifically. This paper adds to the literature through a focused study of an omnidirectional mentorship program in an academic setting. Examples of other conceptual omnidirectional mentorship programs in other fields can be found in Appendix 1. The results of this study contribute to a deeper understanding of the potential limitations, extensions, and results of implementing an omnidirectional mentorship program in other contexts in higher education.

This paper overviews and explores the design of an omnidirectional mentorship program and the influences of participant engagement with others inside and outside of the mentorship community. This paper fits within the Engineering Leadership Development Division (LEAD) strategic initiatives of *Design* and *Explore*, specifically as follows:

- **Design:** Omnidirectional mentorship relationships that have been established are reviewed and discussed. Relationships are within the context of the exchange dynamics created by participant interactions and engagements with others in the program.
- Explore: An implemented program for faculty at career transitions operationalized from within an engineering department at a Mid-Atlantic comprehensive university is explored to demonstrate the limitations, extensions, and results of the program at its midpoint.

## 2 Background

Mentorship is grounded in the connection and relationship between individuals [1], providing individuals with a basic understanding and learning beyond their own perspective [1,2]. Through mentoring, individuals working with others may be able to increase their success and satisfaction in themselves, their work, and their career [1,2]. Beyond themselves, an individual may also develop an understanding of others by gaining insight into different perspectives and experiences. Through the growth potential in mentoring, an individual may identify new opportunities, both personally as well as professionally [1-3]. As organizations are recognizing these benefits from studies conducted, more and more companies are investing in mentorship programs and are seeing positive returns on their investments [4,6].

Traditional mentorship models often involve a single, directional relationship, where the mentor provides guidance and advice to the mentee [6-9]. While this approach can be effective, it limits the potential for growth and development between the two parties [6,7]. In a bidirectional mentorship, both the mentor and the mentee have the opportunity to learn from each other and benefit from the relationship [1,2]. The mentor shares their expertise and experience, while the mentee brings fresh perspectives and new ideas. The relationship is built on mutual trust and open communication, and both individuals are committed to helping each other grow [6-9]. On the other hand, an omnidirectional mentorship is characterized by a mentor who provides support and guidance to a mentee in all aspects of their personal and professional development [1,2]. The mentor acts as a sounding board, provides feedback, and offers advice [1-3,8]. Ultimately, the responsibility for growth and development lies with the mentee to act [1-3,8]. The goal of an omnidirectional mentorship is to help the mentee become self-sufficient and to support them in achieving their goals [1,2].

An omnidirectional mentorship program allows members to take on both the role of mentee and mentor simultaneously [1,8-10]. This approach recognizes that everyone has something valuable to offer and learn, regardless of their experience, level, or position [1,8-10]. It is suggested through research that by allowing individuals to both give and receive mentorship, an omnidirectional mentorship approach fosters a culture of mutual learning and development, leading to a more inclusive and dynamic experience for everyone involved [1,9,10]. Omnidirectional mentorship allows for collective input and acknowledgment, promoting a sense of community and belonging among participants [1,9,10]. The collective growth promotes more shared experiences, therefore more people from whom to learn [10].

The omnidirectional mentorship approach also promotes the development of skills such as communication, collaboration, and empathy, which are essential for success in today's workforce [11]. The omnidirectional mentorship program allows for more flexibility and adaptability, as mentees have the opportunity to learn from multiple mentors with different experiences and skill sets [1,8,9]. Research suggests the approach in mentorship can lead to a more diverse range of perspectives, ideas, and resources available for the mentees [1,8,10]. As a result, mentees can have better associate their learning needs with the resources provided by the program, mentors, and fellow mentees.

An omnidirectional mentorship program allows for more diversity in mentorship styles and approaches, as mentees can learn from multiple mentors with different experiences, skill sets,

and backgrounds [12,13]. Research suggests the approach in mentorship can lead to a more personalized learning experience and help mentees find a mentor with whom they can relate to and confide in [12,13]. The collective input and acknowledgment in the program promote a sense of community and belonging among participants, leading to a more supportive and collaborative environment [14]. The collective growth promotes more shared experiences with more people from which to learn, fostering a culture of continuous learning and development [10].

Omnidirectional mentorship programs are also believed to have positive effects beyond the individuals directly involved in the mentoring. Research suggests this style of mentoring often provides opportunities for participants to develop their leadership and management skills through communication, collaboration, and empathy [15]. These skills are transferable providing participants with skills that can be used in other contexts to foster a sense of community, belonging, and mutual learning [4,5,11]. When omnidirectional mentorship is coupled with a workplace, these skills may lead to increased employee engagement, retention, productivity, creativity, and collaboration [4,5,16].

It is important to note, though, that an omnidirectional mentorship program has challenges and limitations. One of the downsides of this approach is both the mentee and mentor are expected to have knowledge and skills to share [17,18]. If, however, one individual is not as experienced or knowledgeable as the other, it can lead to an uneven or unproductive relationship [17,18]. Another downside of this approach may occur when both parties are actively sharing their expertise; it may be harder to focus on specific goals or areas of development with the conflicting narratives occurring simultaneously [19]. This approach also requires a significant time and trust commitment from both the mentor and mentee; if all parties are not able to make that commitment, the relationship will suffer [20]. These challenges can be mitigated by setting clear expectations, having effective communication channels, being mindful of the dynamics between the individual participants in the program, and using external facilitation [17-20].

#### 3 Research Questions and Justification

By understanding how mentorship works and what makes it effective, researchers can improve the design and implementation of mentorship programs to better support the development of individuals. Toward this goal, the following research questions are addressed herein:

**Research Question 1:** What individual meaning is developed by participants engaging in an omnidirectional mentorship program?

**Research Question 2:** What individual impact is experienced by participants engaging in an omnidirectional mentorship program?

**Research Question 3:** How are interactions between participants and their relationships formed, potentially providing insight into the strengths and weaknesses of an omnidirectional mentorship model?

Answers to these questions will provide an increased understanding of the potential limitations and extensions of an omnidirectional mentorship program as well as will provide some validation toward the postulated benefits of individual participation in the program.

#### **4 Program Structure**

The following section first describes the omnidirectional mentorship program as an intervention designed to support faculty at career transitions in which they complete a year-long program aimed to provide mentorship opportunities for participants. Second, we describe the focus group methodology used to explore the participant's experiences in the program to illustrate the meaning-making, impacts, and strengths and weaknesses of this program.

Our approach to mentorship was designed with three key elements in mind: 1) catalyst, 2) affirmation, and 3) negotiation. Chiefly, catalyst introduces and sparks engagement among participants; affirmations support professional and personal development and growth; and negotiations reconcile individuals' sense of self and belonging to a community. These three elements are noted as being critical for young engineering female students finding success in the male-dominated culture of engineering makerspaces, so we justified their adoption in this omnidirectional mentorship program for promoting shifts in faculty attitudes toward underrepresented members and new approaches to work and life [21].

## 4.1 Participants

For the first semester of the program, eight faculty members from various departments (engineering, computer science, technology, biology, education, and graduate psychology) comprised the cohort, and this cohort of eight was divided into two mentorship circles using only scheduling constraints to drive circle placement. The demographics of the cohort included 1 male and 7 female participants. The Institutional Review Board approved protocol for the study does not allow for the reveal of participants' age, race, or gender as it may allow the reader to identify the participants.

The participant selection process for this piloted community was focused on instructional faculty at any rank. Recruitment encouraged applications from faculty who had previously been part of a formal mentoring relationship. All applicants received during the application window were admitted into the mentorship program.

The cohort grew to ten in the second semester of the program as members of the first cohort shared their experiences resulting in the recruitment of two additional faculty members. There was no attrition through the program.

Participants were given \$1500 as a professional development stipend one month following each semester.

## 4.2 Piloted Omnidirectional Mentorship Program Overview

The omnidirectional mentorship program ran for one calendar year (a Spring semester followed by a Fall semester) at a Mid-Atlantic comprehensive regional university. The Entrepreneurial Minded Learning (EML) framework provided the blueprint of the program design, emphasizing the importance of the three C's: curiosity, creating value, and connections [22]. The omnidirectional mentorship program consisted of four parts:

1. Cohort Collabs for Co-Creation, Connection, and Celebration – Four-hour long gatherings run in January 2022 (launch) and August 2022 where the cohort engaged in a curiosity-

- driven, community-wide shared experience. Storytelling served as the connecting theme across the celebrations.
- 2. Catalyst Meetings for Curiosity, Discovery, and Exploration Three-per-semester, one-hour-long gatherings of the cohort to explore topics related to personal and professional growth. During the year-long project, catalyst meetings were led by external facilitators, members of the organizing team, and members of the cohort.
- 3. **EML Community Circle Meetings** *for* **Value Creation** Every-other-week, 90-minute-long Circle Meetings happened across a range of professional development, personal growth, and work-life interaction issues. The cohort was divided into two circles, and through the first semester, the circles did not change. Membership into a circle was determined by scheduling constraints.
- 4. **Reflections** *for* **Sense-Making** In the weeks between meetings, participants individually reflected on their experiences. Reflective journal entries were the second of two key pieces of data collected in this project.

A longitudinal ordering of events for the first semester of the piloted omnidirectional mentorship program is seen in Figure 1. Within the graphic, the solid line indicates circle one, and the dashed line indicates circle two. Entire cohort events include the Collab and the Catalysts.

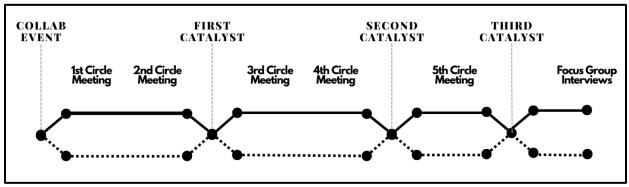


Figure 1: Piloted Omnidirectional Mentorship Program Timeline for the First Semester.

The program opened up with a collaboration event at the start of each semester to celebrate and signify the start of the mentorship experience. The event began with a "meet and greet" lunch and an activity prompting participants to take turns sharing stories relating to their past and present selves. The event continued with activities focused on drafting the stories of oneself, telling one-minute stories, trust building, and generating themes of individual stories of good and not-good mentoring experiences in which participants have previously engaged. The purpose of sharing stories in this event was to create value as a means of sense-making, prioritizing goals, and understanding self and place.

Each semester of the program, participating members were required to attend five one-hour circle meetings. During each one-hour circle, two participants took the spotlight seat, during which a participant would discuss a problem they were experiencing and wished to interrogate. The Critical Response Process (CRP), developed by Liz Lerman [23], was used as a structured and respectful method for providing feedback on personal stories shared. Participants were taught CRP at the same time and in the same way. The process consists of four main steps, which are described below [23]:

Step 1. Statements of Meaning: In this stage, responders are asked to state what was meaningful, evocative, interesting, exciting, or striking about the work they have just witnessed. This stage focuses on the audience's subjective experience of the work and encourages them to describe their emotional and intellectual responses to the work. Step 2. Author as Questioner: In this stage, the author takes the lead and asks questions about the work. Responders are expected to stay on topic with the author's questions and may express opinions in direct response to the author's questions allowing the author to gather information and insights about their work and how it is being received by others. Step 3. Neutral Questions: Responders are asked to ask neutral questions about the work, and the author responds. Neutral questions are defined as those that do not have an opinion couched in them. This stage focuses on gaining a deeper understanding of the work and exploring specific aspects of the work neutrally and objectively. Step 4. Opinion Time: In this stage, responders are permitted by the author to state their opinions about the work. The author has the option to decline to hear opinions if they prefer. This stage provides an opportunity for the audience to express their thoughts and opinions about the work directly and openly, which can be helpful for the author in understanding the impact of their work on different audiences.

Participants interrogated the CRP frame in their spotlight story one participant at a time. Use of the storytelling framework established during the Collab was encouraged, though not required. The procedure and use of CRP and the storytelling framework continued in this way through the entire program giving each circle member two opportunities in the spotlight seat per semester. Broadly, the interactions between participants included storytelling, sharing of resources, and peer-to-peer feedback.

Catalyst events during the first semester were held to complement the circle meetings and focus on the concept of a hero's journey in everyday life. These three events aimed to encourage members to explore opportunities, see themselves as heroes, identify obstacles and villains they faced, and recognize the strength in their community. The goal of this extended exercise was to reflect, identify, and assess reasonable changes to limit or eliminate the impact of these stressors, creating a hero's journey towards permanent life changes that advance one towards a personal goal or achievement. Specifically, the following tools were used during each of the catalysts: 1) Designing your Life Framework [24], 2) Network Mapping [25], and 3) Community Strength Finding.

Facilitators for the first semester co-developed a guide to assist in circle operations and management, and a new facilitator was brought in for the second semester and used that guide.

## 4.3 Program Assessment Focus Group Interviews

The program assessment focus group interviews were conducted with each circle at the final circle meeting at the conclusion of each semester and were the first of the two key phrases of data collection in this project. Data used herein were collected through two 90-minute focus group interviews (one per circle group) at the end of a five-month period. Interview questions were designed to elicit participants' personal and professional experiences regarding each component of the mentorship program and crosstalk between participants was encouraged to

mimic the kinds of relational interactions that the participants developed throughout the first half of the program. These focus groups served as the mid-program assessment. Focus group interview questions are provided in Appendix 2.

The assessment protocol was reviewed and approved by the university's Institutional Review Board, and all participants provided written informed consent to use the collected focus group interview data for research purposes. Interviewees used pseudonyms during the focus group interviews to protect their confidentiality.

Focus group interviews were chosen as the sole source of data as it provided insights that are a known resultant from group interaction. Focus groups can generate rich and in-depth data from multiple participants in a relatively short amount of time, providing insights into social processes, norms, and values of the group and their interactions with each other [26]. However, focus groups are subject to the influence of group dynamics, which can lead to groupthink and conformity. To mitigate these weaknesses, the facilitator of the focus group should be skilled at managing group dynamics.

The program assessment focus groups were conducted by a student in the graduate communication program at the university who had formal training in conducting semi-structured interviews and focus group interviews through coursework and university employment. The focus group interviews were digitally audio-recorded using a university-provided laptop and were stored on a password-protected computer until the interview was transcribed. Transcriptions were performed using REV.com. Following transcription, the Project PI read all transcripts twice to ensure that the data was anonymous, guaranteeing that no identifying information was contained within the transcript. Transcription resulted in a total of 86 pages of single-spaced typed data combined.

#### 4.4 Method of Data Analysis

The qualitative data were analyzed in multiple iterative stages to identify recurring themes and patterns. First, the first author carefully read the entire data set multiple times in the data immersion phase, making analytic memos of initial observations and high-level ideas recurring in the data [26]. Second, the first author used methods of constant comparison to code the data line-by-line in the primary cycle coding phase using N'Vivo data management software to organize these initial codes.

The approach of constant comparison is an application to Grounded Theory, which emphasizes the development from the data rather than from the research questions or existing literature. This analysis approach was chosen as it is stated to help researchers better understand complex phenomena and develop more accurate and nuanced explanations of social and organizational behavior. This applies to the research in understanding the growth and change that took place with participants in the program [26]. Constant comparison was implemented into the initial coding process as the first author constantly compared each new piece of data with existing codes to see if they fit or if new codes needed to be created.

Following this initial round of primary coding, the first author of this paper worked with the last author of this paper, to order and synthesize first-level codes into interpretive second-level codes and build interpretive models based on the research questions for this research.

Themes were constructed based on their recurrence, repetition, and forcefulness [27], these were identified to arise from commonalities between individual stories and reoccurring scenes [26,27]. Themes identified were iterative and required the first author to move through multiple rounds of primary and secondary-cycle coding following an abductive process, enabling refinement of the overall categories, filling gaps in interpretations, and identifying rich exemplars that illustrate the complexity of the program participants experiences. Details on the interpretive models utilized as themes from the data collected can be found in Section 5.

## **5 Program Assessment: Participant Growth Model**

Through this mid-point program assessment, our data reveals that our program participants went through three phases: Existing Mindset, Communication of Shared Experiences, and Changed Mindset, a representation of which is provided as Figure 2. The development and progress between the phases are brought on through the practice of self-reflection and realistic evaluation, seeking diverse perspectives or new information, and a willingness to integrate new information and experiences into a participant's existing mindset to achieve growth and change. Further, our data reveals three major outcomes across participants through engagement in the omnidirectional mentorship program: safety, empathy, and empowerment. All three of these outcomes are noted to occur during a Shared Experiences phase of the Participant Growth Model (Figure 2) as participants communicate their stories and navigate their realization that amongst themselves, they share both physical and metaphorical heroes and villains.

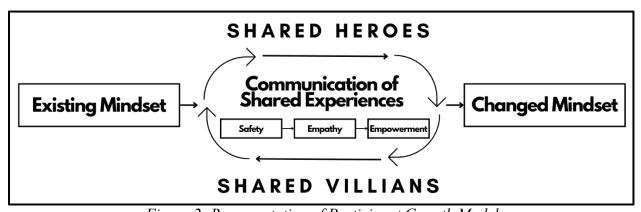


Figure 2: Representation of Participant Growth Model

The participants in the program experienced a transformation from a sense of safety to empathy and ultimately to empowerment within the phase of Shared Experiences. This was achieved by creating a secure and trusting environment that allowed the participants to freely share their personal stories. The development of empathy among the participants was evident through their ability to connect with and understand the emotions and experiences of others. With the help of a safe and empathetic community, the participants felt confident in taking action despite uncertainty.

## 5.1 Existing Mindset

The acknowledgment of an Existing Mindset is the first phase of the participant growth model. In this phase, participants share their current understanding and perspective on the topic or issue at hand. This includes beliefs, attitudes, and assumptions. It's important to acknowledge that everyone comes to the program with their own unique set of experiences, knowledge, and understanding. By identifying and understanding their existing mindset, the group can better understand where each individual is coming from and better tailor the program to their needs.

For example, in the following statement, a participant acknowledges a disconnect between their current, existing mindset and their new perspective,

"I come from a culture where giving advice is a sign of care. So, I never stopped to consider that when I just shoot out my opinions and advice, I thought of it as care, but the receiver might think of it as 'it's none of our business'. So that dissonance was bridged by this possibility of asking a quick question, "Can I say this?" And when the person says 'yes', it makes them a better listener, and it makes it safer for me to ask. So that's a very good concept I learned that I'll use a lot."

The quote highlights the idea of reflexivity, which is the process of examining one's own beliefs, attitudes, and practices to gain a deeper understanding of oneself. The participant shares their current understanding and perspective on the topic of giving advice, specifically how they come from a culture where giving advice is seen as a sign of care. This highlights the importance of acknowledging that everyone comes to the program with their own unique set of experiences, knowledge, and understanding. The participant recognizes that their current mindset may not be aligned with others' perspectives and acknowledges the need to bridge the disconnect by asking for permission before offering advice. This demonstrates a shift towards a self-reflexive stance, as the participant is taking the time to critically analyze their own beliefs and practices, leading to personal growth and development.

By identifying and understanding the participant's existing mindset, the circle and facilitator can better tailor the program to their needs and address specific challenges related to giving advice. Additionally, the participant's statement about the concept of asking for permission before giving advice shows that they have identified a specific area where they want to improve, and the program can help them to do so by providing them with the necessary tools and resources such as posing the question "Can I say this".

#### 5.2 Communication of Shared Experiences

The communication of Shared Experiences is the second phase of the participant growth model. Through sharing one's heroes and villains, participants share and discuss their own personal experiences and knowledge with the group. Recognition of common villains between participants leads to shared or common experiences through both structured or unstructured discussions, exercises, or activities. For example, "trying to cope with senses of loneliness" and "cope with senses of things like institutional betrayal" offer insight into the communal shaping of common villains.

Through this experience of identifying common villains (e.g., people, processes, promotion), participants' existing mindsets are challenged with diverse perspectives and new information. For example, one participant expressed,

"I think one thing I will share is being a junior faculty, and going through these circle meetings, I feel more comfortable talking about my problems and my issues with the senior faculty without worrying about, are they [going to] judge me? Does it mean I'm not a good faculty, or I shouldn't be here? So I think that just the practice of being here, and sharing, and listening to others share helped me kind of become more comfortable with my own sharing process."

This quote from the participant highlights the importance of the communication of shared experiences within a circle. The participant is discussing how participating in the circle meetings has helped them feel more comfortable sharing their own problems and issues with senior faculty members. The ability to share personal experiences and listen to the experiences of others helps build a sense of community and understanding among the group and helps to overcome the fear of judgment or imposter syndrome that the participant previously had.

The quote "I need to give people an opportunity to have a narrative that I hear and not just sit pretty with my own" emphasizes the importance of active listening in fostering a supportive and inclusive environment. By allowing others to share their experiences, participants not only gain a deeper understanding of their perspectives but also challenge their own beliefs and biases. As the second quote suggests, "If I look at it from their perspective, it is not as big as I thought," taking the time to listen to others can lead to a shift in our own perceptions and reduce misunderstandings. This highlights the transformative power of sharing experiences and actively listening to others within an omnidirectional mentorship program. This process of sharing experiences can lead to a transformation in the individual as they feel and experience safety in the group, exhibit feelings of empathy for others, and feel empowered to act on their problems through the community created.

## **5.2.1 Safety**

The first step in fostering shared experiences and promoting personal growth is establishing a sense of psychological safety. Safety enables individuals to feel comfortable sharing their experiences and expressing themselves freely. This sense of safety is established through shared experiences that build trust and understanding among participants. By sharing their personal experiences and perspectives, participants demonstrate vulnerability, which deepens the connection and trust within the group. Over time, participants develop a deeper level of comfort in being open and honest, further solidifying the safe and secure environment within the group. Participants often describe their experience as feeling "safe" and "not judged", fostering a nurturing and supportive atmosphere that encourages personal growth.

One participant expressed the importance of safety in creating an environment where individuals feel comfortable sharing their personal experiences and perspectives,

"It was amazing that I didn't have to watch what I was saying, or I didn't have to worry about, "Oh, should I bring this issue up or not?" because I felt like everybody was feeling that same safety and vulnerability. And I think at the end of every circle meeting, feeling empowerment, even though we may or may not have gotten [to] an exact solution, but knowing that I'm not the only one who goes through these issues"

Here we note the symbiotic importance of safety in the creation of an environment where individuals feel comfortable sharing their personal experiences and perspective indicating that Communication of Shared Experiences cannot occur without Safety, but also Safety is required

to Share Experiences. The participant expressed that they felt able to be open and authentic without worrying about judgment or censorship; this allows for an ever-deeper level of connection and understanding among the group. The feeling of empowerment that comes from feeling seen and heard is also noted. This is a key aspect of the safety established in the program.

Another participant describes their experience in the program and the result of not having this opportunity for mentorship prior and how it affected their life,

"There were a lot of emotions and I think in a lot of ways it was pent up, hurt and anger from probably several years. And I know it's not a therapy session but in a lot of ways, I think just releasing that in a place and not having people judge or condemn or, you know, again, that safe, nurturing environment. That sense of I can let this out here finally. And actually receive some encouragement and some support to move forward, it was healing."

Here the participant is emphasizing the healing effects of being able to share in a safe environment. A shift in their mindset is noted as an expression of feelings about themselves; they receive encouragement. This quote emphasizes and highlights the importance of providing opportunities for mentorship and a safe space for individuals to share their personal experiences and perspectives, to facilitate personal growth and healing to move forward.

Safety is crucial for individuals to feel comfortable sharing their personal experiences and perspectives, leading to the establishment of trust and understanding within the group. The participants describe the feeling of safety as a nurturing and non-judgmental environment where they can be open and authentic. A participant commented on the group dynamics of the established community commenting, "the benefit and the beauty of being from different places across campus is that we're comfortable and it's easy to talk about things without feeling like someone's [going to] go share it." This highlights the value in the diversity of the group and the cross-collaboration of different departments into a singular mentorship community. The ability to share experiences and perspectives is seen as a key aspect of the safety established in the program, which allows for deeper connections and understanding among group members when sharing.

## 5.2.2 Empathy

Empathy is the next step in the process of shared experiences, building upon the foundation of safety established within the group. Through the act of sharing and being vulnerable, participants develop a deeper understanding of one another, allowing them to connect with the emotions and experiences of others. This heightened level of understanding leads to increased empathy, as participants can put themselves in each other's shoes and relate to their struggles and triumphs. This empathy results in improved communication, as participants become more attuned to the needs of others and actively listen to their perspectives. This increased empathy not only strengthens relationships within the mentorship community but also leads to more positive interactions outside of the group as well.

One participant described the development of empathy within the program, saying, "One of the stories that is still sitting with me and every time I think about it, it causes me some kind of dissonance in my head... is when one of us shared something about a physical disability. I don't know if I [would] call it [a] disability, but [a] situation that doesn't have a

label. And it still makes me feel awful because I want to come up with a solution. You know, that feeling, even though I didn't experience it, I still struggle on behalf of my friends."

The participant expresses their discomfort and the feeling of wanting to come up with a solution, even though they have not experienced the problem themselves. This demonstrates the participant's ability to put themselves in the shoes of others and feel their struggles, which is a key aspect of empathy.

Another participant expressed their thoughts on the stories shared and how it related to their own experiences.

"I left another bad situation. And so I wanted to arrive here and think of this as a place that had more things together. And so it was harmful to hear that, "Oh, no, it's not perfect". I do not want those stories to stop. I'm glad to hear them, but, in a sense the identifying part was it hurt me because I have people across campus in these situations. And so I did identify, but it wasn't necessarily in a feel-good way. It was a "I'm hurting with these people way.""

This participant is recognizing shared pain and empathy for others in the group. The participant is expressing that hearing about difficult situations on campus was hurtful, but it is important as it allowed this participant to identify with others and feel a sense of shared pain, a pain similar to their own in prior experiences. This highlights the power of shared experiences and stories in fostering empathy and a sense of community within the mentorship program.

Empathy among participants is established through their ability to connect with and understand each other's experiences and feelings. Sharing personal stories leads to deeper insight into others' perspectives, allowing for empathy and stronger relationships. Participants noted this as skill development where they prioritize others' needs and listen actively, leading to more positive interactions beyond the group.

## **5.2.3** Empowerment

Empowerment is the final step in the process of shared experiences and is achieved through the support and encouragement participants receive from the group. As they continue to share personal experiences and perspectives, participants develop a sense of confidence and inner strength. This confidence stems from the empathy they have developed for others and the trust established in the group. The supportive environment of the mentorship program provides participants with the necessary tools to overcome uncertainty and step out of their comfort zones, ultimately leading to their empowerment to act, whether it be trying new things or facing challenges.

One participant reflected on the impact of the mentorship community and established network, relating and reflecting on how it impacted their professional career. The participant explains,

"She's sitting at a different point in their career and offered to meet with me over the summer. help me prepare for that [promotion] and give me some outside eyes if I need them periodically, just to kind of help me move forward. And I just remember how much that floored me. And part of that I think is because when I talk about it in my program and my department, everyone's [says], "Hey, good luck." And I just sort of feel like that's it? [...] But it's that sense of, she has nothing to do with my program and she's outside of my, everything except for this program. And she's willing to say, "Hey, no, I can read it and proofread it and fine-tune it, I'm happy to give you some suggestions or just be a support or an

encouragement." And to feel that from this group, when I've been working in my program for, five years now. The contrast was shocking to me."

This quote highlights the sense of support and encouragement that the participant feels from other members of the program. This participant is surprised and empowered by the support and encouragement they received from a member in the mentorship community who had no prior relationship or connection to them but offered to help with their possible promotion. This experience challenged the participant's existing mindset and gave them the confidence to take risks and step out of their comfort zone to continue applying and become more motivated to do so.

Another participant discussing the topic of a career change and the struggles they are experiencing in their current position explained,

"I have been root-thinking, as have many people about a career change. I don't [want to] leave you know, I love teaching and the students. But I've been struggling with do I fit? Where do I fit? And can I do this any longer? And some of that's related to online learning. But a lot of that is the bigger question of feeling like an outsider and a fraud and imposter syndrome and all of those things. And seeing others and hearing their stories of the challenges and going, oh yeah, I have that same kind of challenge where I feel pressured to say "yes" to everything. And guess what I did. I said "no", and I felt good about it. [...] it's more just a reaffirmation maybe of some things I had known and forgotten. [...] But, it helped me realize that this is what I [want to] do and I'm going to have some of my own criteria, my own why, my own mission and my own space that I'm going to carve out [to] say, this is how I'm [going to] make it work."

The participant faces challenges when considering a career change; internally they battle their own metaphorical villains: a feeling of imposter syndrome and being an outsider. The supportive environment of the program provides this participant with the confidence to take risks and step out of their comfort zone, helping them to gain validation and acceptance of their own struggles. The participant's decision to say no and establish their own space was an act of self-empowerment and determination to make the career work for them. This realization helps the participant to reaffirm their desire to continue and to find ways to succeed, by creating their own criteria, mission, and space.

In a mentorship program, participants are empowered by the supportive environment to overcome uncertainty and step out of their comfort zones. Through sharing personal experiences and perspectives, participants are exposed to new ideas and challenges in their existing mindset, which inspires them to act and achieve their goals. Participants felt a sense of support and encouragement from the mentorship community and network, which helped them feel confident in taking risks and making changes. The program also helped participants battle their own insecurities, such as imposter syndrome, and gain validation and acceptance of their own struggles, leading to self-empowerment and determination.

## 5.3 Changed Mindset

The final phase of the participant growth model is a shift in the participant's mindset. With openness and connection, comes a new understanding and perspective. As participants become more open, authentic, willing to take risks, and motivated to change and face challenges, they may develop a sense of personal and professional growth [10,15].

In this phase, participants integrate the new information and experiences into their existing mindset, leading to personal growth and development. For example, one participant describes their realization that growth and change had occurred in the following passage answering Question 1 of the focus group questions relating to designing their life in the future,

"I actually designed two things that I would like to do, which were bizarre. They were just ideas, and I didn't think I would ever do them. But once I put it down on a piece of paper saying, "I'd like to be a life coach," I actually had a client who paid me \$40 to do it. Once I received the \$40, I [thought], "Oh, this is a reality. It can actually happen". [...] So something that was just a crazy idea is now starting to become tangible."

This quote from the participant highlights the impact that participating in an omnidirectional mentorship program can have on one's mindset and personal growth. By sharing their personal experiences and ideas with the group, the participant was able to gain a new understanding and perspective on their own potential. Through the program's open communication and emphasis on personal growth, the participant was able to overcome their own self-doubt and turn a "crazy idea" into a tangible reality.

This is an example from the final phase of the program, in which participants integrated the new information and experiences they had gained into their existing mindset. We saw that this led to authentic personal growth and development where, in the context of this program, participants became more open, authentic, willing to take risks, and motivated to change and face challenges.

#### 6 Discussion

## 6.1 Individual Meaning Found From Participation in the Program (RQ 1)

Participants in the omnidirectional mentorship program experienced a deep sense of individual meaning through their participation. This meaning was driven by the safety and vulnerability fostered in the program, which allowed participants to share their issues and concerns without fear of judgment, leading to a sense of empowerment and freedom.

Participants mentioned feeling empowered to share their issues and concerns without fear of judgment, and in doing so, they realized they were not alone in their experiences. This sense of belonging and validation was incredibly powerful and helped to change the way participants viewed themselves and their experiences, both internally and externally. They learned new concepts, such as the importance of asking for permission before giving advice, which helped to improve communication and relationship building. This allowed for a deeper understanding and respect for other people's perspectives, leading to an increase in understanding and empathy for others and their experiences.

The program helped participants to feel more comfortable sharing their problems and issues with others leading to new-found empowerment to pursue their ideas and goals. For all participants, the program appears to have created a space where they could share their concerns and learn from others across disciplines and departments based on similar, shared experiences.

Overall, the program provided a safe and nurturing environment that allowed participants to release pent-up emotions, receive encouragement and support, and make positive changes in

their personal and professional lives. This can be seen in statements such as, "It was healing. It was cleansing." And, "It was a shift in where I am, mentally and emotionally. And, in my thoughts about who I am as a member of the faculty here and where I hope to go as I continue to move forward." Overall, this program created a space where individuals could reflect, grow, and learn about themselves, their actions, and their values through the sharing of different perspectives from other participants.

These findings align with the postulated advantages of an omnidirectional mentorship program mentioned in the background literature review per [1,8,10,15]. For example, in the following quote, we take note of "just being able to connect outside of the usual group [...] you know, concerns and issues that I've been facing. And it's been amazing to see that I'm not alone, that we do share so much." The piloted program reinforces the claim that through this mentorship approach, one can foster a culture of mutual learning and development that leads to a more inclusive and dynamic experience for everyone involved.

## 6.2 Individual Impact Found From Participation in the Program (RQ 2)

The impact described by participants in this program is identified and discussed as the "what" and "how" change occurred as a result of participation in the program. For example, one participant shared that it was "really amazing" to be in a safe and nurturing environment where they didn't have to worry about how their words would be received. This feeling of safety and vulnerability allowed them to share their issues and problems more openly, leading to a sense of empowerment and freedom they did not previously have. They felt that they were not alone in their struggles and that others had gone through similar experiences.

Another participant shared that they came from a culture where giving advice was seen as a sign of care, but they had never stopped to consider that the receiver might not see it the same way. The program's emphasis on asking for consent before giving advice helped bridge this dissonance and made it a safer experience for all parties involved. The participant felt that this was a valuable concept they would continue to use in the future.

A junior faculty member shared that going through the circle meetings helped them feel more comfortable talking about their problems and issues with senior faculty members without worrying about being judged or feeling like they didn't belong in their role. The practice of being open and sharing in the program helped them become more comfortable with their own sharing process. Some participants had ideas that they didn't think they would ever pursue, but through the program, they were able to turn those ideas into tangible realities.

Participants also found a sense of support and encouragement from individuals outside of their program and career. This was in contrast to the support they received from their program and department. One participant shared that a person in a different place in their career offered to meet with them over the summer to help them prepare for a promotion, which was an unexpected and shocking contrast to the individuals' prior experiences.

The program helped participants to release pent-up emotions and feelings in a safe and nurturing environment without fear of judgment. Discussions over these common shared experiences, both negative and positive, allowed individuals to identify and express related struggles, causing

participants to feel less isolated in an academic environment. The community building generated as a result allowed members to find new connections across campus, rediscover joys in their work, and reflect and realign their actions to advance towards personal and professional goals.

These findings align with the postulated advantages of an omnidirectional mentorship program mentioned in the background literature review per [1,8,10,12,13]. For example, in the following quote, we take note of "As I was preparing to share, what is it that I want mentoring on, or what's going to be my today's topic when I was in the spotlight, it kind of forced me to think through, you know, is this really an issue? Or what is the issue? [...] I think it helped me get out of my own head and think about the issues in a different perspective and a different, larger scheme of things with the problem-solving mindset.". The piloted program affirms that the approach leads to a more diverse range of perspectives, ideas, and resources available for mentees, allowing them to better align their learning needs with the resources provided. Additionally, the program results in a more personalized learning experience and helps mentees find a mentor they feel comfortable with and can relate to.

## 6.3 Insights Gained from the Omnidirectional Mentorship Program (RQ 3)

Participants valued the increased interactions with others in the omnidirectional program. It is demonstrated that the strengths of this program included a greater diversity of perspectives and experiences, increased opportunity for networking, and flexibility in mentors and mentees available to interact and communicate with. Having multiple mentors and mentees in the program allowed participants to build a broader network of connections and potential resources to pull and gain support from. When looking forward to the continuation of the program after a 3-month break period, participants stated concern and discomfort with the idea of exchanging members between circle group 1 and circle group 2 due to changes only in scheduling constraints. For example, this discomfort can be seen in the participants' statement,

"I don't know how I would feel about it. [...] I don't know if I'm super excited about the possibility of rebuilding the kind of relationship that we've kind of created in our circle, for example. [...] I feel like we are just at this place. Where we've gone really deep and there's so much, there's just so much more we can offer each other in our particular circle."

This fear of potential change in members is confirmed by other participants in the focus group, sharing,

"I would echo that there's a part of me that says it'd be nice to have another circle of people. But, again, that's a little overwhelming and scary, I'm starting to feel like these are the roots of a strong plant. And I don't [want to] just pull it out, stick it in some dirt somewhere else, but where it's fully established."

This idea of having to rebuild relationships with new people in a different group was seen as overwhelming and not as beneficial as being able to continue to grow and develop the relationships they have already established. This highlights the importance of continuity and stability in the mentorship relationships established for participants in the omnidirectional program. The opportunity to expand or change the existing mentors and mentees in a program may be difficult to implement once a program has been established.

The two circle groups may have shared similar objectives of professional and personal development, but how these objectives were achieved and the specific experiences that led to

these changes are shown to be different. This could be due to the different life experiences, cultural backgrounds, and personal perspectives of the individuals within each group. These differences can be a strength of the program, but also, if common physical or metaphorical heroes and villains do not exist among participants, these differences could be a weakness as participants seek to develop common and shared experiences.

While the constants between the two focus groups include the emphasis on professional and personal development goals, the length of time spent together, the structure of the program and discussions, and the group size, the differences are not trivial. The key is the utilization of the participant's knowledge and skills to support others in the program. While one group had individuals who were more willing to share their expertise and help others, the other had individuals more focused on their own personal growth. But beyond the circles, participants still found community in their cohort. For example, a participant stated "she's sitting at a different point in their career and offered to meet with me over the summer. And, you know, help me prepare for that [promotion] and, and give me some outside eyes if I need them periodically."

Another key difference between the two focus groups is the utilization of participants' perspectives and backgrounds to support others in the program. One group had individuals who were more open to sharing their personal experiences and perspectives, while the other group seemed to have more reserved individuals. This concept is captured in the quote, "Different perspectives open different windows" and "this is one of the advantages of actually sharing with each other". These ideas are important because it emphasizes the importance of diversity and sharing in thought and encourages the consideration of multiple viewpoints to gain a more comprehensive understanding.

Lastly, the interaction between members in the program, both in and outside of the program, may have been different between the two focus groups. One group may appear to have had more social interaction and bonding, while the other may have had a more formal and structured discussion. For example,

"There are two things I'm thinking about right now that were really meaningful to me. After my first spotlight, as we were walking out, Sarah said, "Hey, my office is right over there, and I have a book with a chapter that connects to what you talked about." So walked over to their office and borrowed the book. [...] Another connection after one of Jane's spotlights she wrote an email of kind of gratitude to everyone who was in the circle. [...] And I think those two things taken together just showing me like there's [a] relationship outside of this formal room that we're in. The relationship is enduring. It's not just, we meet for 90 minutes every other week. It's kind of given me hope for what it can evolve into."

These highlighted similarities and differences demonstrate how the experiences participants can change based on the specific interactions, and while these didn't seem to impact the success of the program for the participants, we perceive that these differences could negatively impact the level of safety, empathy, and empowerment achieved through the experience.

For the first semester cohort of eight participants, there is almost certainly selection bias in that all participants responded to an email request to join a mentorship program being run by four faculty in an engineering department. Further, the response sought participants who desired more out of mentorship than was available in their prior experiences. Likely this inclination to join led

to an increased willingness to be a part of a mentorship program and to "buy in" to all that was afforded through this experience. Though, even with this affinity toward being in such a program, we note for these eight participants that there was a strong sense of value obtained through this experience.

#### 7 Conclusion and Future Work

For participants of a formal mentorship program, finding a voice is both rewarding and encouraging. Through a formal omnidirectional mentoring program, participants learn that they are not alone.

This omnidirectional mentorship program run at a Mid-Atlantic comprehensive university for faculty provided a space for eight faculty participants during the first semester to be vulnerable and share their experiences in a safe and nurturing environment. Participants expressed feelings of safety, empathy, and empowerment. They noted greater self-awareness and self-reflection, which helped participants to better understand themselves, their actions, and their values. The community building generated as a result allowed members to find new connections across campus, rediscover joys in their work, and reflect and realign their actions to advance towards personal and professional goals.

Future work on the omnidirectional mentorship program could focus on evaluating its effectiveness in supporting underrepresented faculty in academic settings and using the results to inform future iterations of the program. By offering necessary training and support to help individuals succeed both personally and professionally, the program has the potential to provide a valuable resource for underrepresented faculty, helping to address the challenges they may face and increase their chances of success in their academic and career paths. This can be achieved by expanding the program to reach a larger number of individuals, providing additional resources and support, and actively involving underrepresented communities in the program's design and implementation.

Moving forward, additional data collected at the conclusion of the year-long project will be analyzed. This qualitative research study provides the groundwork to identify the meaning, impact, strengths, and weaknesses of participation in an omnidirectional mentorship program. Next steps may include following the trajectories of participants in their career fields as well as conducting semi-structured interviews with each to understand how they have become leaders or Leaders.

While this is one instance of an omnidirectional mentorship program being implemented in a higher education setting, it can serve as a baseline for guidance toward the extensions, limitations, and results of the mentorship program. These results and discussions of this study can allow researchers and practitioners to fully understand the capabilities of this mentorship approach, and to make informed decisions on how best to implement it.

#### 8 Acknowledgements

This content was created in part through the author's work with the Kern Entrepreneurial Engineering Network (KEEN) and ASU Mentorship 360. For more information and additional shared content, go to <a href="EngineeringUnleashed.com">EngineeringUnleashed.com</a>.

#### References

- [1] E. Clapp, *Omni-Directional Mentorship: Redefining Mentorship as a Reciprocal Process of Teaching and Learning*, 2011 Mentorship Conference, 2011. [Online]. Available: https://scholar.harvard.edu/files/edwardclapp/files/clapp\_odm\_unm.pdf.
- [2] M. L. Dahlberg and A. Byars-Winston, Eds., *The Science of Mentoring Relationships: What Is Mentorship?*, in The Science of Effective Mentorship in STEMM, 1st ed., Policy and Global Affairs, Board on Higher Education and Workforce, National Academies of Sciences, Engineering, and Medicine, Eds. Washington (DC): National Academies Press (US), Oct. 30, 2019, ch. 2. [Online]. Available: https://www.ncbi.nlm.nih.gov/books/NBK552775/.
- [3] MENTOR National, *Mentoring Impact*, [Online]. Available: https://www.mentoring.org/mentoring-impact/.
- [4] L. T. Eby et al., "Does Mentoring Matter?" A Multidisciplinary Meta-Analysis Comparing Mentored and Non-Mentored Individuals, J. Vocat. Behav., vol. 72, no. 2, pp. 254–267, Apr. 2008, doi: 10.1016/j.jvb.2007.04.005.
- [5] L. Inzer and C. Crawford, *A review of Formal and Informal Mentoring: Processes, Problems, and Design*, J. Leadersh. Educ., vol. 4, no. 1, 2005. [Online]. Available: https://journalofleadershiped.org/wp-content/uploads/2019/02/4 1 Inzer Crawford.pdf.
- [6] M. L. Dahlberg and A. Byars-Winston, Eds., *Mentorship Structures: What Forms Does Mentorship Take?*, in The Science of Effective Mentorship in STEMM, 1st ed., Policy and Global Affairs, Board on Higher Education and Workforce, National Academies of Sciences, Engineering, and Medicine, Eds. Washington (DC): National Academies Press (US), Oct. 30, 2019, ch. 4. [Online]. Available: https://www.ncbi.nlm.nih.gov/books/NBK552769/.
- [7] T. J. Plyley, J. M. Cory, and A. M. Flexman, *Near-peer mentorship compared with traditional mentorship in the University of British Columbia anesthesia residency program*, Can. J. Anesth., vol. 67, no. 12, pp. 1655–1657, Dec. 2020, doi: 10.1007/s12630-020-01739-9.
- [8] E. Collins, *360 Degree Mentoring*, Harvard Business School Publishing, 2008. [Online]. Available: http://www.citadel.edu/root/images/commandant/assistant-commandant-leadership/ld-1-6-360-degree-mentoring-article.pdf
- [9] R. Nagel, K. Gipson, and M. Caulfield, *Work in Progress: Exploring Different Models of Mentorship Towards Developing Evidence-based Mentorship Programs*, presented at the 2022 ASEE Annual Conference & Exposition, Minneapolis, MN, 2022. [Online]. Available: https://peer.asee.org/41763.
- [10] S. García Mazari, N. Binnie, J. Espinoza, D. Leyton, and R. Woodbrook, *Cultivating Critical Mass: Building an Omnidirectional Peer Mentoring Community*, in L.J. Rod-Welch and B.E. Weeg (Eds.), Academic library mentoring: Fostering growth and renewal, vol. 2, pp. 433-452, ACRL, 2022. https://dx.doi.org/10.7302/3708
- [11] R. A. Bausell et al., *Improving Soft Skills Through Mentorship*, Chemical Engineering Progress, vol. 116, no. 12, pp. 16-21, Dec. 2020.
- [12] National Academies: Science, Engineering, and Medicine, *Mentoring Could Improve Diversity and Inclusion in STEMM But Needs More Attention in Colleges and Universities, Says New Report, Which Identifies Effective Mentoring Practices*, Oct. 2019. [Online]. Available: https://www.nationalacademies.org/news/2019/10/mentoring-could-improve-diversity-and-inclusion-in-stemm-but-needs-more-attention-in-colleges-and-universities-says-new-report-which-identifies-effective-mentoring-practices. [Accessed: Feb. 19, 2023].

- [13] B. L. Montgomery and S. C. Page, *Mentoring beyond Hierarchies: Multi-Mentor Systems and Models*, Commissioned Paper for National Academies of Sciences, Engineering, and Medicine Committee on Effective Mentoring in STEMM, 2018. [Online]. Available: https://www.nationalacademies.org/our-work/effective-mentoring-in-stemm/activities/mentoring-beyond-hierarchies-multi-mentor-systems-and-models. [Accessed: Feb. 19, 2023].
- [14] Collaboration for Development, *What is a Sense of Community?* [Online]. Available: https://collaboration.worldbank.org/content/sites/collaboration-for-development/en/groups/communities4Dev/blogs.entry.html/2021/03/22/sense\_of\_community-wyUE.html. [Accessed: Feb. 19, 2023].
- [15] L. S. Eller, E. L. Lev, and A. Feurer, *Key components of an effective mentoring relationship: a qualitative study*, Nurse Education Today, vol. 34, no. 5, pp. 815-820, 2014. https://doi.org/10.1016/j.nedt.2013.07.020
- [16] S. Osborne and M. Hammound, *Effective Employee Engagement in the Workplace*, International Journal of Applied Management and Technology, vol. 16, no. 1, pp. 50-67, 2017. https://doi.org/10.5590/IJAMT.2017.16.1.04
- [17] K. E. Kram and L. A. Isabella, *Mentoring alternatives: The role of peer relationships in career development*, Academy of Management Journal, vol. 28, no. 1, pp. 110-132, 1985. https://doi.org/10.2307/256064
- [18] L. T. Eby, S. E. McManus, T. D. Allen, S. C. Evans, and T. Ng, *The relationship of mentoring and protege gender with career-related outcomes*, Journal of Applied Psychology, vol. 93, no. 4, pp. 835-846, 2008.
- [19] C. Hansman, *Critical Perspectives on Mentoring: Trends and Issues*, Available: https://www.govinfo.gov/content/pkg/ERIC-ED465045/pdf/ERIC-ED465045.pdf, 2002.
- [20] The University of Arizona, *Types of Mentoring: Advantages and Disadvantages*, Available: https://phoenixmed.arizona.edu/sites/default/files/faculty/career%20dev/academic-leaders/mentoring-types.pdf, 2019.
- [21] M. Tomko, M. Aleman, W. Newstetter, R. L. Nagel, and J. S. Linsey, *Participation Pathways for Women into University Makerspaces*, Journal of Engineering Education, vol. 110, no. 3, pp. 700-717, 2021. https://doi.org/10.1002/jee.20402
- [22] Engineering Unleashed, *The Entrepreneurial Minded Learning (EML) Framework*, Available: https://engineeringunleashed.com/framework, 2023.
- [23] Liz Lerman, *Critical response process: A method for giving and getting feedback*, Available: https://lizlerman.com/critical-response-process/, 2022.
- [24] B. Burnett, *Designing Your New Work Life*. London, United Kingdom: Random House UK, 2023.
- [25] Making Academic Change Happen (MACH), *Making Academic Change Happen*, Available: https://academicchange.org/, 2021.
- [26] S. Tracy, Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact, 2nd ed. Hoboken, NJ: Wiley, 2020.
- [27] W. F. Owens, *Interpretive themes in relational communication*, Quarterly Journal of Speech, vol. 70, pp. 274-287, 1984.

## **Appendix 1: Omnidirectional Mentorship Case Studies**

- E. Collins, *360 Degree Mentoring*, Harvard Business School Publishing, 2008. [Online]. Available: http://www.citadel.edu/root/images/commandant/assistant-commandant-leadership/ld-1-6-360-degree-mentoring-article.pdf
- E. Clapp, *Omni-Directional Mentorship: Redefining Mentorship as a Reciprocal Process of Teaching and Learning*, 2011 Mentorship Conference, 2011. [Online]. Available: https://scholar.harvard.edu/files/edwardclapp/files/clapp\_odm\_unm.pdf.
- García Mazari, S., Binnie, N., Espinoza, J., Leyton, D., & Woodbrook, R. (2022). *Cultivating Critical Mass: Building an Omnidirectional Peer Mentoring Community* (Vol. 2). In L.J. Rod-Welch and B.E. Weeg (Eds.), Academic library mentoring: Fostering growth and renewal (pp. 433-452). ACRL.

## **Appendix 2: Focus Group Questions**

#### Warm-up:

Let's start our discussion today with an overall feeling about the mentoring program activities on the whole. If you were to offer a descriptive word – an adjective – about your experiences in the program so far, what word would you use?

<u>Probes:</u> What is a specific experience in the program that you most associate with that word? What emotions do you recall feeling during that experience?

1. Let's talk more specifically about the collaboratory (recall at the Ice House - or Catalysts in the EnGeo Conference Room) events in which you participated. What is a specific example of an interaction or activity in the collaboratory that you found to be particularly helpful to your understanding of your own growth as faculty? How so?

<u>Probes</u>: What did you like most? Dislike most about the events? Was there a particular focus (self, colleagues, community) which you preferred? Why? What are the strengths and limitations of the event?

- 2. Now let's talk more specifically about your circle meetings in which you have been participating. What were some feelings that you experienced in the circle meetings?

  Probes: How so? What were some specific moments in any one of the meetings that really highlighted that feeling? Was there a moment that was particularly meaningful to you?
- 3. Describe one or two moments from the circle meetings, if any, where you felt like you identified most with the attendees in your circle?

<u>Probes</u>: What was going on in that interaction at that time? What are the kinds of things that attendees said or did that impacted you in a way that you could identify with them? What sort of feelings did you sense that the attendees were expressing as they told their stories? How did you feel?

4. Describe a moment from the circle meetings, if any, where you least identified with the attendees in your circle.

<u>Probes</u>: What was it about that interaction that you couldn't identify with? What are the kinds of things that attendees said or did that made it difficult to identify with them? How did you feel?

5. When you were in a spotlight seat, how was this experience particularly helpful to your understanding of your own development as faculty?

<u>Probes</u>: What did you like most? Dislike most? How have engagements with each other changed over the semester? Was there a particular focus (self, colleagues, community) which you preferred? Why?

6. What is a specific example during circle meetings that you have found to be influential to building your relationships with one another?

<u>Probes:</u> What happened? What were specific things that people said and did that left you feeling supported? How might the group setting of the circle meeting have influenced relationships? Encourage people to share divergent and convergent experiences here, asking participants to share different moments and comment on the moments shared by others.

7. How about the journaling. Was there an aspect of journaling you found to be particularly helpful to your understanding of your own growth as faculty?

<u>Probes</u>: What did you find most useful? Challenging? What are the strengths and limitations of the journaling?

- 8. Now we are going to shift to discussing the personal development through mentoring.

  Describe something you learned about yourself that you might not otherwise have learned?

  Probes: What are some things that happened that you connect with his learning? What was the role of sharing your story toward learning about yourself?
- 9. Because of what you have learned about yourself, what might you do differently in the future?

Probes: What inspired this difference?

10. Do you have any recommendations for the Fall 2022 semester?

<u>Probes</u>: Of what should we do more? Of what should we do less?

11. Is there anything I haven't asked today about the event that you'd like to share?