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Best Practices for Developing a Virtual Peer Mentoring Community

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Best Practices for Developing a Virtual Peer Mentoring Community

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Alexandra Coso Strong is an assistant professor of systems design and engineering at Franklin W. Olin College of Engineering. Prior to starting a faculty position at Olin, she was a Postdoctoral Fellow at Georgia Tech's Center for the Enhancement of Teaching and Learning. She completed her Ph.D. in 2014 in Aerospace Engineering at Georgia Tech. Alexandra received her B.S. in Aerospace Engineering from MIT and her M.S. in Systems Engineering from the University of Virginia. Her research interests include engineering design education (especially in regards to the design of complex systems), student preparation for post-graduation careers, approaches for supporting education research-to-practice.

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Erin is an Instructional Assistant Professor in the Cullen College of Engineering at the University of Houston. She joined the University of Houston after completing a postdoctoral/lecturer position split between the General Engineering program and the Engineering & Science Education Department and a Ph.D. in Bioengineering from Clemson University. Before returning to graduate school for her Ph.D., Erin worked for Merge Healthcare as a Technical Support Analyst in Milwaukee, WI after completing her B.S. in Biomedical Engineering from Michigan Technological University. Erin's research interests include preparing students for their sophomore year, minority student engineering identity development, and providing mentoring relationships to help foster student growth and success.

Best Practices for Developing a Virtual Peer Mentoring Community

Abstract

This paper describes an approach for creating a virtual community for peer mentoring and provides insight, in the form of best practices, on how engineering faculty can elicit support through cross-institutional mentoring. The value of a virtual, peer-mentoring community is providing support that may be otherwise unavailable at one's institution; it can also minimize negative impacts that may be associated with institutional power dynamics. The best practices described herein are informed by six early-career engineering education faculty that developed and participated in a virtual community of practice over the last two years. We will describe best practices for identifying a shared vision, developing possible tangible outcomes, writing operating procedures, selecting an appropriate platform for communication, and facilitating reflection and changes to practice.

1. Introduction

The benefits of mentoring as a form of faculty professional development are well established, and there are many different structures in which mentoring can occur. The most traditional structure is that of a formal mentoring program, pairing senior and junior faculty. Although this traditional structure has many advantages, there is a hierarchy in the relationship that may prevent the mentee (i.e., junior faculty member) from sharing important challenges and concerns, especially if the mentor is involved in key decisions such as tenure and promotion (McGuire & Reger, 2003). Therefore, it can be advantageous to have a broader conceptualization of mentoring. Lottero-Perdue and Fifield (2010) present a conceptual framework for faculty mentoring in higher education composed of five dimensions: 1) intended beneficiaries, 2) locus of control, 3) relationship characteristics, 4) topics, and 5) actions. Because there is a need for mentoring across all stages of a faculty career, and across multiple aspects of faculty life, using this type of broad conceptualization can support explorations of mentoring structures beyond the traditional intradepartmental faculty pairs.

Kram (1985) defines mentoring as having two fundamental components: 1) career support and 2) psychosocial (i.e., personal and emotional) support. While both forms of support can be provided in traditional formal mentoring relationships, studies show that more effective mentoring often occurs during informal mentoring relationships (Zey, 1984). Informal mentoring relationships are established through a self-selection process as opposed to the contractual assignment by a third party such as a department head; the mentee often seeks out the mentor based on relational experiences and shared points of interest. While formal and informal mentoring relationships have similar benefits, informal mentoring relationships tend to be more long standing and most beneficial for both the mentor and mentee (Cole & Griffin, 2013; Jacobi, 1991; Roberts, 2000).

One of the common difficulties faced by faculty is finding an appropriate mentor—someone that is capable of meeting all, if not some, of one's professional and psychosocial needs. Due to the

nature of the emerging field of engineering education research, there is often a limited number of faculty at a single institution conducting engineering education research or similar research (e.g., scholarship of teaching and learning). As a result, there is a need to develop methods to facilitate cross-institutional mentoring for faculty from interdisciplinary fields.

While many institutions offer mentoring in some capacity, there are limitations and challenges associated with these existing support structures. Some common challenges are scheduling a time to meet, navigating institutional power dynamics, and identifying individuals with shared interests and goals (Lottero-Perdue & Fifield, 2010). Furthermore, these relationships can be harder to develop among women and minorities in the science, technology, engineering, and math (STEM) fields due to the lack of diversity and the importance of role modeling, which is an additional component of mentoring. It is important to see oneself in a role model and feel that you can emulate their values and/or behaviors. In response to these limitations, the work presented herein proposes best practices for the development of an innovative, peer-mentoring community that addresses many of the known challenges and builds upon our shared commitment to the advancement of engineering education to form a community of practice.

2. Conceptual Framework

A community of practice is one model that can be adapted for peer mentoring between individuals that are geographically disparate from one another. As defined by Wenger, Trayner, and de Laat (2011), a community refers to a group of individuals that have a common interest and develop an identity around this connection. The connection could be a topic or a series of challenges depending on the type of community (Lave & Wenger, 1991; Wenger et al., 2011). Community of practices are important because they provide individuals with an avenue to form connections, discuss situations they are undergoing, share ideas and best practices, and generate new knowledge based on the outcomes from the discussions they have with the community (Cambridge, Kaplan, & Suter, 2005; Pimmel, McKenna, Fortenberry, Yoder, & Chavela Guerra, 2013). Although many communities of practice occur in person, there exists a history within the engineering education field of virtual communities of practice. For example, ASEE was involved in a virtual community-of-practice project that was designed to help support faculty members in the implementation of active learning principles within their classes (Pimmel et al., 2013). Through this project, two types of virtual communities of practice were developed: (1) those focused on a particular course content and (2) those that were disciplinary in nature. Results obtained from these communities seemed to vary and were dependent on the level of commitment of the participants to being actively engaged in the community (Farrell et al., 2015; Pimmel et al., 2013). To support the continued improvement of virtual communities of practice that support faculty within engineering education and in engineering more broadly, it is important to share additional examples of these communities.

3. Purpose

The purpose of this paper is to describe how we, a group of six engineering education researchers at different institutions, created a virtual community of practice to provide ourselves with a structure for addressing challenges and issues we encountered as we transitioned into new faculty positions in diverse contexts. Our aim is to provide engineering faculty members with resources and feedback based on our experiences that might be helpful in allowing others to create their own virtual communities of practice as a source of cross-institutional mentoring.

4. Background

At the 2015 ASEE Annual Conference, a subset of our group participated in the PEER Collaborative National Workshop (Pawley et al., 2014), an event organized to provide mentoring opportunities to early-career engineering education faculty and researchers. A collaborative reflection exercise at the workshop prompted a discussion among four of the six group members. Each of us would begin a faculty position in the fall of 2015 and, thus, were facing similar concerns in our upcoming positions—even though we would be in dissimilar positions at diverse institutions. Based on our circumstances, we decided that setting up a virtual community of practice could be beneficial in providing support during our transitions. By the end of summer 2015, we established a virtual community of practice that included the four engineering education researchers that attended PEER along with two other colleagues that were facing similar transitions.

As a collective group, we represent both non-tenure and tenure-track faculty positions at institutions ranging from public research-intensive universities to private undergraduate institutions. We are also diverse in the situation of our positions. As engineering education researchers, some of us have positions that are embedded in disciplinary departments, some of us have positions that are at the college level focused on first-year programming, whereas others are part of engineering education departments. One of the reasons we believe our virtual community of practice works as well as it does is that, despite all of our differences in context and positions, we face similar challenges as new engineering education researchers seeking to find our voice and make an impact within the engineering education field.

5. Best Practices

To assist other engineering education researchers with establishing such a community, we assembled a list of best practices based on our experiences with our virtual community of practice. These practices include making sure: (1) group members have a common goal and are at similar career stages; (2) there are established relationships between group members; (3) group members are at different institutions; (4) there are established ground rules; (5) participation is consistent; (6) responsibility for leading meetings is shared; and (7) there is an alignment with scholarship. We discuss the best practices in further detail in the following sections. These suggestions are based on practices that have worked for us, but each community may find that it needs to establish its own rhythm and procedures to be successful.

5.1. Common goal/Similar career stages

Despite being at different institutions and in a diverse set of roles when we started our group, we had a common goal—surviving the first year in our new faculty positions. This goal has evolved, now that we completed our first two years, to having an impact at our institution and in the field of engineering education. Initially, having a common goal helped us as we designed the initial structure of the group and it created the framework for our weekly discussions. On a weekly basis, having a common goal helps ensure that the time is valuable to all group members by framing our conversations and the areas we seek feedback from the group.

5.2. Bring a friend

As previously mentioned, the group formed when four of the members who were also starting new faculty positions engaged in a community building activity. A subset of these members each asked another person who was starting a new faculty position to join the group. This helped make it so that no one person felt like a total outsider, because we each had at least one “buddy” in the group.

5.3. Being at different institutions

For the six of us, it helps that none of us are at the same institution. This allows us to have discussions that we may not feel comfortable having with someone in our department or at our institution. The meetings are a space to get support for challenges that we are facing from others who are in or have been in a similar situation. These meetings also give us the chance to “step away” from our institutions and settings, often allowing us to view situations from a different perspective and/or decompress about what we are dealing with in a given week.

The other benefit of being at different institutions is that we are able to further develop our connections with the engineering education community. For some of us this has been extremely valuable, as we were/are the only engineering education researchers at our institution. These connections have been helpful for us as we expand our scholarship and teaching practices.

To facilitate our group meetings, we use the Google Hangouts platform. We selected Google Hangouts because it is readily available to individuals at no personal cost and has free mobile/landline calling. During meetings, Google Hangouts allows us to see a video of everyone that is participating and discuss additional items in the chat feature on the side of the main screen as points are raised that we would like to provide feedback on without interrupting the current speaker.

5.4. Group determined ground rules

One element that we believe helps us at different times in the year (especially when things get busy) is a set of ground rules that we created as a group. From the onset of starting our virtual community of practice, we thought it was important to establish a structure to ensure that each

member of our community was accountable and prioritized their participation in the weekly meetings. To create this structure, we co-constructed a set of rules of conduct and operating procedures. These rules include:

- information on reflections that we would complete as part of our participation
- the platform we would use for meetings
- how we would develop an agenda for the meeting
- when/how it would be determined if a meeting needed to be canceled
- who would be in charge of facilitating the weekly meetings
- the procedure for data collection associated with our study of our transition process

Once the rules were documented, we each reviewed and signed them to certify that we agreed with the policies and would follow these procedures as part of the community.

We feel that this structure has been beneficial to our group, but by no means, feel that our procedures will fit every community. It is important for each group to co-construct their own operating procedures and rules to help ensure that their group is accountable when the semester gets busy. We included our ground rules in the appendix of this paper, but we do not recommend taking them and running with them as is—they should be personalized for your group.

5.5. Consistency:

Each semester we set a day and time for our weekly meetings and keep this meeting time for the whole semester. We have agreed to only cancel meetings if more than half the group cannot make it—which has never happened, interestingly enough. Each semester we have used a scheduling tool (i.e., When2Meet.com) to help us set a time for our weekly meetings. This process allows us to determine everyone's availability and select a time that works for our entire group. Identifying a time for the weekly meetings has been easier some semesters than others due to how our teaching schedules aligned. It was particularly challenging to find a common time this semester; however, we were able to identify a time and alternative time for our meetings. The alternate time was selected, because two of our members have a periodic conflict with the regular meeting time. There have been a few instances when some of us have been traveling during a weekly meeting time. In these instances, we will utilize the Google Hangout feature that allows free mobile/landline calling.

In addition to a consistent meeting time, we have a standard structure for the weekly meeting (see the Appendix for our specific operating procedures) and consistent weekly reflections (for more details see section 5.7). Each weekly meeting begins with one of us volunteering to be the lead facilitator. Throughout the meeting, each of us shares about our previous week and the rest of us provide input and/or feedback. Once we have all shared our weekly update, the facilitator moves through the items that are included as discussion topics on the meeting agenda.

Our weekly meetings are an hour long, and we take great care in holding to this time. As a group, we are very cognizant of our busy schedules. For this reason, even if we have not covered all of

the discussion topics listed in the meeting agenda we will adjourn the meeting after our one hour meeting time. If there is a particularly pressing issue that we have not had the chance to discuss, the facilitator will ask the community members if they are able to participate in the meeting a bit longer to allow for it to be discussed. In most cases the issues can be tabled and added to the agenda for the subsequent week's meeting.

5.6. Shared facilitation

We take turns facilitating our weekly meetings. This gives everyone ownership of our meetings and helps us all feel that we have a similar stake within the group. It also prevents one person from having to take on more of the burden for the group than the others.

To further add to the shared facilitation of our weekly meetings we create our agendas within Google Docs. This platform allows each of us to contribute to the meeting's agenda as the meeting progresses. The agenda has a simple framework that captures attendance at each meeting, the topics the group would like to discuss after our general updates, and any upcoming deadlines that individuals within the group have. The purpose of the agenda is to ensure that we address concerns the group has while also being mindful of everyone's time commitments outside of our community of practice. It also provides an opportunity for us to keep a record of our meetings and topics of discussion. During each meeting, everyone in the group adds their comments and suggestions about the topics that were discussed. We believe that this collaborative structure helps keep everyone in the group invested in the community. It also provides all of us with a resource that we can turn to when we experience issues or challenges that were brought up at earlier meetings.

5.7. Alignment with Scholarship

During our early discussions, we identified that the virtual community of practice provided a novel opportunity for us to study the transition into our new positions (Faber et al, 2015). Because each group member was committed to engineering education research, it was important to us that we collected data on our experiences in addition to establishing the community. We utilized two qualitative methodologies (collaborative inquiry and collaborative autoethnography) to explore our experiences this past year and a half. We think that setting up our reflections and meetings as part of a larger data collection process helped with accountability. We each wanted to make sure we completed our reflections in a timely manner so that we would not mess up the data collection process.

Prior to the start of the fall semester, we complete a pre-semester reflection document. The goal of the pre-semester reflection is to encourage us to reflect on: our goals and priorities for the upcoming academic year; where we are in our career development; and how the next academic year will enable us to move forward towards our future career goals. The pre-semester reflection serves as both a reflection tool and source of data for our research study.

Once the semester starts and meetings resume, we complete weekly reflections on our experiences, challenges, and accomplishments. The weekly reflection provides a space for us to reflect on: how we are spending our time; our recent accomplishments; challenges we encountered; resources we have used; and how the virtual community itself is helping influence or change our practices based upon our participation in the weekly meetings. Each of us is responsible for completing our weekly reflections prior to our meeting, allowing us to each add topics to the agenda for the meeting based on our experiences from the past week.

In addition to pre-semester and weekly reflections, we each complete post-semester reflections at the end of each semester. These reflections are more intensive than the weekly reflections, but they give us the opportunity to synthesize all our experiences from the past semester. The post-semester reflection seeks to encourage reflection on: the impacts each of us had at their own institution; the accomplishments we are particularly proud of; the significant challenges we encountered; the goals we were able to meet; the impact that others' opinions of us and our position might have had; the resources that we used; and the advice we would give to graduate students that might be considering an academic position. We have found that the post-semester reflection provides us with more appreciation for everything we were able to accomplish and how we have worked through challenges that we faced. This type of reflection and appreciation is not always possible in the midst of these experiences throughout the semester.

6. Conclusion

Virtual, peer-mentoring communities can provide engineering faculty with support that might not be available at their own institution. In this paper, we described seven best practices for creating and maintaining a virtual community for peer mentoring, including making sure (1) group members have a common goal and are at similar career stages; (2) there are established relationships between group members; (3) group members are at different institutions; (4) there are established ground rules; (5) participation is consistent; (6) responsibility for leading meetings is shared; and (7) there is an alignment with scholarship. These best practices were derived from our own experiences with our own virtual community that we developed for support during our first few years as new engineering education faculty. We present these best practices as a guide, rather than rules, for developing other virtual, peer-mentoring communities. Based on our experiences, we believe that it is critical for each community to develop in alignment with their own goals and the individuals that will be participating. Additionally, we encourage early career faculty members to be creative in how they think about mentoring during the early stages of their career, as it is unlikely to find a single person at their institution who can provide them with all of the support they will need.

7. Acknowledgement

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Appendix

Rules of Conduct / Operating Procedures

Weekly Meeting Guidelines:

- *Tuesdays 3 – 4 pm EST on Google Hangout from September 1st until December 8th, 2015*
- *Attendance:*
 - Everyone is expected to attend at least 75% of all weekly meetings.
 - If a member we will be absent, he or she will need to record/note absence within the Agenda (i.e., Google Agenda doc) prior to the weekly meeting so to notify other participants.
 - At least 2 participants members must be in attendance/available for a weekly meeting to occur.
 - Those Members who are absent from a weekly meeting may select, if they would like, to schedule an additional meeting with other absent members outside of the designated meeting time. Said members will update those who attended the regularly scheduled meeting on anything important discussed.
- *Agenda:*
 - Agendas will be created informally via a Google doc prior to weekly meetings to include any points of discussion relevant for upcoming meeting
 - Agenda items may need to be updated until midnight (local time) the prior to Sunday before the meeting at midnight local time
 - Agendas will be updated with participant notes during the weekly meeting
 - Agendas will serve as informal data gathering of and collect the the summary of key topics from each meeting
- *Meeting Structure:*
 - We will meet in a single Google Hangout each week unless otherwise notified
 - Changes to the meeting structure can be made with approval by a majority of the group

Reflection Guidelines:

- *File Name:*
 - “WeekNumber (#) +Periodic Reflection+Initials”
- *Pre Reflections:*
 - To be completed by the first day of class for each respective participant
- *Weekly reflections:*
 - Automatic reminder will appear for weekly reflections each Friday (8am/9am) and Sunday for posting reflection to Dropbox folder (8am/9am)
 - Post to Dropbox folder using appropriate file name by Sunday at Midnight (your time zone) each week

- Participants will be expected to answer all the questions (in some way shape or form) each week unless otherwise indicated.
 - Participants are not required to read other participants' reflections
- *Post Reflections:*
- To be completed before December 25th, 2015
 - Complete all questions first, re-read pre-survey reflections and then add any additional insights gained to reflection document

Procedural Validation Considerations:

- Changes to the weekly questions requires approval by a majority of the group (at this point, 4 members)
- Keep an audit trail (audit log via Dropbox) of any changes to the questions approved by the group via email or at the weekly meeting.

Special Points of Consideration:

- *Negative experiences:* Discuss approaches to ensuring negative experiences are included in a manner that does not raise additional issues (i.e., use measures to reduce chance of identifying individuals) and think of ways to use these negative experiences to improve our individual experiences.
- *Safe Spaces:* We will be discussing our experiences, thus we need to acknowledge that this will be a safe space with which to discuss them.

Human Subjects Considerations:

- You can choose to withdraw from the study at any point.
 - If you choose to withdraw from the study, your data is automatically removed from the study data set.
 - For data to be re-added to the data set, retroactive consent must be obtained if researcher agrees to remain a "subject". Need to get IRB approval for this from at least one individual's institution.

Data Analysis Guidelines: To be developed as a group in advance of any formal analysis at a later date that is to be determined

Publication Guidelines:

- Author Order Process (*opt in/opt out)
 1. In charge of submitting and leading the writing
 2. Substantially involved in analysis for particular paper
 3. Substantially involved in analysis for particular paper
 4. Least contributors; alphabetical order
 5. Least contributors; alphabetical order
 6. Least contributors; alphabetical order
- ***Bare minimum work to be an author is revising; everyone has option to opt-in; those who opt-out will be listed under acknowledgements**

- Everyone gets opportunity to read everything before published and “Ok” anonymity
- If individuals (i.e., non-authors) could be identified, share article (or text segments) with them and work collaboratively to address any areas of concern prior to publication or presentation of the work. (ensures ethical validation as per Q3 framework)

By initialing below, I acknowledge that I participated in formulating these operating procedures and rules of conduct. If circumstances change and I feel that they need to be modified, I will discuss potential modifications with the group at a weekly meeting.