

# Development of a Faculty Learning Community to Foster Inclusive Research Mentoring

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*Undergraduate research can be a rewarding experience for both students and mentors. However, when students are from underrepresented and underserved groups, non-inclusive research mentoring may increase stereotype threat and a deflated sense of belonging. To promote inclusive research mentoring, a learning community for STEM faculty was designed based on difficult discussions, assignments, and written reflections. The majority of faculty who participated in the learning community gained increased awareness and appreciation for inclusion efforts within their research groups. This learning community has the potential to be a scaffold for initiatives dedicated to institutional change.*

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## Introduction

STEM FACULTY ARE IMPORTANT agents of change within academic institutions (Macdonald et al., 2019). They have the potential to impact a student's sense of belonging, stereotype threat, and engagement in science (Killpack & Melón, 2016). Studies have demonstrated that positive faculty interactions with students in learning environments, such as the classroom or in a research experience, increase student persistence in STEM majors, especially for underrepresented minority (URM) and underserved students (Aikens et al., 2017; Umbach & Wawrzynski, 2005; Watkins & Mazur, 2013). Structured research experiences in particular, provide opportunities for URM students to develop a science identity (Gasiewski et al., 2010) and enhance their sense of belonging in academia (Eagan et al., 2013; Estrada et al., 2018; Hunter et al., 2007). Therefore, it is important that research faculty engage in inclusive mentoring and training practices to help create an authentic sense of belonging in their students with various experiences, backgrounds, and cultures.

It is crucial to recognize that *all* faculty have both the ability and the responsibility to create these inclusive research environments. A broader responsibility reduces the burden on faculty of color and women, who often take on the majority of diversity and inclusion efforts (Jimenez et al., 2019). While it is important for students to have diverse role

models in academia that they can relate to (Dee, 2004; Marx & Ko, 2012; Marx & Roman, 2002), other studies have demonstrated that role models for students do not have to be ethnically similar or gender-matched to promote student success and belonging (Ehrenberg, Goldhaber, & Brewer, 2004; Schinske, Perkins, Snyder, & Wyer, 2016). Faculty mentors who are able to learn cultural competency (Estrada et al., 2016) and incorporate it into their mentoring practices, can create inclusive research environments for their students irrespective of personal identities. In other words, all faculty mentors can and should prioritize learning inclusive mentoring practices. This effort, however, may be thwarted by a lack of resources, awareness, and training opportunities (Brownell & Tanner, 2012; House et al., 2018).

Given the limited resources on *inclusive* research mentoring practices (Parent et al., 2016), there is a need to engage research mentors with effective training to promote cultural competency. Here, we present the development of a Faculty Learning Community (FLC) to increase faculty awareness of various cultures and identities, as well as the potential barriers URM students face in STEM and academia. The FLC accomplishes this goal by employing three approaches: 1) small group discussions, 2) assignments that highlight evidence-based practices, and 3) seminars from guest speakers who are experts in inclusion and diversity

efforts. The material provided in the FLC has been refined over three years based on faculty feedback. It has promoted an overwhelming recognition of increased awareness from faculty participants. This FLC in particular, can be easily adapted at any institution for those who mentor students in research. By increasing faculty awareness on a range of identities, we aim to empower all faculty who mentor students in research to reflect and work towards greater inclusion in STEM.

### ***Faculty Learning Community Development***

Rochester Institute of Technology was awarded an Inclusive Excellence (IE) grant from the Howard Hughes Medical Institute through the Science Education Program to increase diversity and inclusion among STEM undergraduate majors by providing resources and training opportunities for students and faculty. In particular, faculty from the College of Science were recruited to participate in an IE initiative aimed at promoting inclusive research environments for URM student researchers. We defined “URM” broadly to include: LGBTQ+, deaf and hard-of-hearing, neurodiverse, first generation, and transfer students, as well as students of color. The research mentoring aspect of the initiative has been refined over the past three years based on feedback from faculty participants.

The foundation of the FLC was built on bi-weekly 1-hour workshops during the academic year that provided faculty with resources and the opportunity to reflect on mentoring skills and practices. In addition to the workshops, faculty completed reading, video, or podcast assignments and short written reflections before each session (see Supplemental Material). The workshop materials provided to faculty were centered on social inclusion and social justice theories (Brown, 2004; Comstock et al., 2008; Theoharis, 2007) and used peer-reviewed literature to emphasize evidence-based practices (see Supplemental Material). Lastly, invited experts in diversity and inclusion were incorporated into the FLC for their expertise and connections to resources on campus.

### ***Results of FLC Development and Feedback from Faculty***

#### **Learning Community Logistics**

Out of 32 faculty recruited across 3 years, 28

completed the FLC workshops with an average participation in 90% of the workshops and completion of 90% of the assigned written reflections. The participants came from a range of faculty ranks (15 Assistant Professors, 8 Associate Professors, 2 Full Professors, and 3 Non-Tenure-Track Professors). The learning community originally included faculty from Chemistry, Life Sciences, and Physics, but then later expanded to other departments, such as Math and Color Science.

To evaluate the FLC, we interviewed 23 faculty participants and analyzed 14 final written reflections. In the interviews and written reflection prompts faculty were asked: 1) How was your experience with this learning community? 2) What parts of the learning community worked well for you? 3) What parts could use improvement? 4) Were there any topics in particular that stood out for you? Interviews were transcribed, and, in conjunction with the reflections, a coding scheme (Sutton & Austin, 2015) was created based on the above questions. Emergent themes were identified based on faculty responses to the workshops, guest speakers, assignments, and structure of the FLC. After the themes were generated, the coder (Wyatt) evaluated whether or not faculty commented positively or negatively on those FLC aspects to determine what worked well and what areas could use improvement.

#### ***Faculty Feedback***

Across all three years, faculty mentioned the gender diversity workshop of the FLC as particularly helpful. Other workshops that stood out to participants were those on microaggressions, stereotype threat, neurodiversity, and science identity (see Supplemental Material). Overall, faculty asked for more specific resources, tips/tools on inclusive research mentoring practices, clearer expectations/structure from the FLC, increased discussions on racism, more opportunities to talk in small groups, and more tangible feedback from fellow mentors. There was also a request to modify the assignments to be more mindful of experience level in mentoring and the various identities of research mentors.

To improve the FLC and address areas of concern, a syllabus with group expectations was created, assignments became required, and feedback was provided to faculty on their written reflections. Additionally, use of research-specific case

studies increased, and changes to the assignments and written reflection prompts included replacing videos/podcasts/readings that a majority of faculty commented were not relevant or impactful with other resources that were more specific to research environments. Lastly, minimizing the number of guest speakers ultimately led to the most positive feedback from faculty.

### **FLC Impact on Faculty**

Without being prompted, 93% of faculty interviewees stated that the workshops provided them with increased awareness on various aspects of identity, which made them feel more comfortable in creating safe and welcoming research environments for their students. This awareness was mainly attributed to the small group discussions between faculty, but some commented that the assignments were also helpful. A sample quote below highlights the common theme of increased awareness from the faculty.

*“I feel like I have learned so much at least about topics I didn’t know much (or anything) about. Going into this I hoped it would help with student mentoring, but I really did not expect that it would help me with teaching as well, and I am starting to articulate things previously I never would before. It has even helped strengthen a research collaboration.”*

However, many interviewees had a difficult time thinking of specific instances where they used their increased awareness (such as correct pronoun usage, addressing microaggressions, setting clear and specific expectations, etc.). Many assumed they would use their increased awareness in the future if a situation would arise. Only 33% discussed using their newfound awareness directly in their mentoring. Two participants in the first two years of the FLC said they specifically implemented inclusive practices in their mentoring, compared to the five participants who did so in the most recent year of the FLC. This increase is likely due to increased efforts at providing faculty with more specific research mentoring tips and tools in the FLC.

### **Discussion**

Professional development activities to enhance inclusive research mentoring practices can be an important step in creating more inclusive research environments. Through the development and evaluation of this FLC, we found that a majority

of participants gained increased awareness on inclusive research mentoring practices primarily due to conversations with other faculty. These conversations were supported by having a dedicated time and space to discuss mentoring techniques. The conversations were guided by assignments given in advance and input from experts in diversity and inclusion. However, there were challenges faced when designing and implementing the FLC, as well as some important lessons learned that will promote the use of this FLC at other institutions.

### **Making the Commitment**

Most faculty mentors are already overcommitted, overworked, and overwhelmed. Asking them to commit to another significant professional development workshop series may seem like a daunting task. However, based on three successful years of recruiting faculty, several strategies are worth mentioning. Faculty who were known to be committed to diversity and inclusion efforts, and thus willing to make the time and commitment to participate, were recruited first. Alumni of the FLC then nominated fellow faculty for the upcoming year. In addition to the nominations, the dean and department chairs *strongly encouraged* all new faculty to participate. Lastly, incentives to encourage participation were provided through funding. These incentives included the opportunity to receive full support for a summer research fellow, funding for research-related supplies and travel, and food at the workshops. It is important to note that these incentives were not the primary motivation for participation based on interviews with faculty. The main drive for faculty participation was to connect to a community of peers who shared a common goal of becoming better mentors. Thus, it may be feasible to implement the FLC without incentives.

### **Considering the Faculty Participants**

As with most group activities, having a more diverse group enhances the experience for all (AlShebli et al., 2018; Antonio et al., 2004). The faculty cohorts were a mixture of more and less-experienced faculty mentors. Many of the less-experienced faculty mentors were interested in the stories of the experienced mentors. Less-experienced faculty contributed personal experiences from their graduate or postdoctoral years and in general, were more aware of diversity and inclusion

related topics. The more seasoned mentors enjoyed discussing past experiences and sharing valuable mentor lessons but were generally not as aware of certain diversity and inclusion related topics (such as gender diversity). The dynamic between experienced and less-experienced faculty allowed for robust conversation and learning in both directions. There are several recommendations to consider when implementing the FLC with a diverse group of faculty. These recommendations are focused on the three main components that the FLC was centered on (small group discussions, assignments, and guest speakers).

**Considering the faculty participants—small group discussions and guest speakers.** The small group discussions allowed faculty to explore their own biases, personal challenges to understanding, and past negative experiences. Therefore, it was crucial to create a sense of trust among the cohort participants, as well as a mutual agreement of confidentiality. To maintain trust, faculty members of all tracks participated in the cohorts, while department heads were not allowed to participate. Faculty were required to sign a confidentiality agreement and each cohort developed community expectations. Setting these expectations provided a space for faculty to feel comfortable sharing. However, some of that comfort was disrupted when invited speakers were asked to speak to the groups.

During the second year of the FLC, several external speakers from the university community were invited to lead workshop discussions on specialized topics. The speakers provided insights, advice based on their experiences with underserved student groups, and described the specific resources that were available on campus. Some invited speakers did an excellent job of building trust and created a dynamic workshop session (e.g., sessions on gender diversity, which is a possible reason why that workshop was most impactful for participants). However, most sessions often turned out to be mostly one-sided lectures, due to the wealth of information the speakers shared and the lack of established trust the faculty felt. In response to this component of faculty feedback, the number of workshops led by external speakers were limited in the third year, although many of the resources previously provided by those speakers were shared.

**Considering the faculty participants—assignments.** It is important to keep the various levels of faculty awareness of inclusion in mind. For example, being aware of the various experiences and background knowledge of the faculty was helpful when designing the written reflection prompts and providing readings/podcasts/videos. Some faculty felt that the assignments were too shallow, while others found the material to be new and complicated. It was a balance to challenge the mentors to go outside of their comfort zone (which led to more authentic learning), but also keep the mentors engaged in the discussion. Going too far on either side, led to complete disengagement and/or lack of growth.

While one component of the FLC's foundation was to provide faculty evidence-based practices, some faculty tended to go into critique mode of the literature provided—questioning the details and looking for problems with the methods, results, or analyses—rather than appreciate the insights provided. Thus, we transitioned the assignments from primary source papers to more mainstream articles, podcasts, and videos, which led to more fruitful discussions on those topics. For faculty who wanted to dive deeper into the topics, journal articles were listed as additional resources. For those mentors who already had a strong understanding and appreciation of inclusive mentoring, the case studies and written self-reflections provided a different context in which to apply their knowledge.

### **Challenges to Participation**

Credit and culture change were challenges to participation not only in this FLC but are currently a challenge to many diversity/inclusion programs across academia (Speed et al., 2019). In many universities, participation in diversity/inclusion programming would fall under the category of “service.” In the academic triad of professorial duties, service is typically undervalued, while research and teaching remain the dominant responsibilities, and as such, dictate most of the “credit” when it comes to tenure and promotion. It is known that service responsibilities are often lopsided, with weight being disproportionately carried by women and minoritized faculty (O’Meara et al., 2017; Turner et al., 2008). To remedy this imbalance, we encouraged faculty mentors to include their participation under research and/or teaching categories in their

annual reports with support from department heads and the dean.

## Conclusion

Research has demonstrated that a more welcoming and inclusive research culture can improve the recruitment and retention of URM students (Carlone & Johnson, 2007). Faculty learning communities, like the one described here, can play an important role in creating those inclusive research environments. While traditional research and teaching responsibilities may not change significantly in the upcoming years, the student population certainly will, underlining the need for inclusive mentoring programs, as well as both culture and policy change.

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