



Written by
The Barthwell Group

Mentorship is critical to the development of all professionals. Mentorship allows junior individuals to enhance profession-specific competencies, understand their career trajectory, access resources and opportunities, and most importantly build a sense of belonging. Within the science, technology, engineering, mathematics, and medicine (STEMM) field, mentorship is often considered a catalyst for an individual's potential to discover, research, and participate in meaningful contributions to science and society.

Mentorship may apply across all ranks, but have different goals depending on level or function. Types of focus areas may include professional development, preparing for tenure tracks, advancement in academia and research, and progression into leadership positions. Regardless of the focus, mentoring relationships are intended to provide holistic benefits to the mentee, mentor, institution, and science overall.

However, in practice, not all successful practitioners or researchers have had mentors or positive experiences with mentorship.

Challenges of Mentorship through a DEIA Lens

Mentorship is not only a matter of professional development, but can also be a tool that can strengthen the commitment to, and advancement of a diverse, equitable, inclusive, and accessible (DEIA) environment. Mentoring programs or initiatives endeavor to ensure that all members have access to support and learning opportunities. This is particularly important for individuals from underrepresented groups (e.g., gender, race / ethnicity, sexual orientation, gender identity, first-generation status, ability status, etc.), who are least likely to receive mentoring and career advice.



STEMM professions continue to grow, but marginalized groups in STEMM contexts are still highly underrepresented. These individuals often face unique challenges that hinder their ability to successfully integrate and succeed in STEMM environments. Common challenges include:

- Social isolation and possible exclusion from informal social networks
- Additional responsibilities and overburdening service that does not always translate into career advancement (e.g., supporting other individuals from underrepresented groups, serving on DEIA committees / panels, among others)
- Unconscious biases or microaggressions from others
- Devalued scholarship if they work on issues of importance to their specific identity groups
- Lack of mentorship, especially with identity-congruent mentors
- The strain of biculturalism or codeswitching.

To be effective, mentors must be aware of the challenges and issues that diverse individuals may face, learn to advocate on behalf of underrepresented mentees and colleagues, and build competencies in mentoring effectively across differences.

Strategies for Advancing DEIA in Mentorship

Expanding DEIA in research leadership and mentorship roles is important to ensuring that the sciences reflect and address the needs of diverse populations. Below are suggested strategies for promoting DEIA within research leadership and mentorship.

Explore various types of mentorship structures:

Mentorship should not be structured using a single approach. When developing a mentorship program, use an

approach that might best fit the needs of the individuals involved. Some potential mentorship structures include:

Bridge Mentorships

Bridge mentorships intentionally connect individuals of different backgrounds. These programs usually address cultural differences, but may be applied to any marginalized identities relative to the institution's majority group. Bridge mentorship seeks to close the knowledge gap. It also builds cultural competencies and awareness of challenges commonly faced by mentees of underrepresented groups. This allows both the mentor and mentee to develop stronger cross-cultural communication skills and foster empathy.

Reciprocal Mentorship

Reciprocal mentorship focuses on building partnerships rather than a one-dimensional mentoring relationship. This mentorship structure allows mentors and mentees to learn from each other. This creates stronger relationships, knowledge, and skills in both directions. This approach also drives cultural change and reduces generational divides.

Team Mentoring

Team mentoring is growing in popularity as the recognition that one-on-one mentorship may not always be sufficient. A single mentor is unlikely to be able to, and should not be expected to, meet all of a mentee's needs. Mentees benefit from having a dedicated team of three to five mentors, who each bring a unique skill set or perspective. Each mentor may have a particular area of expertise, experiences, or identity characteristics. Over the course of a mentee's career, needs will change and the levels of engagement with their mentors will range. It is critical to develop a strong group of mentors that evolve with the mentee.



Ensure mentors are equipped with training on effective mentorship skills:

Research shows that only one third of mentoring relationships succeed without training. However, with training the success rate increases to two thirds. Training should prepare mentors for structuring sessions, sharing common challenges, and discussing best practices for effective mentorship.

Discuss how DEIA relates to the work within STEM and research:

DEIA should be a major focus of mentoring conversations. Mentoring should include discussions of how to advance DEIA within the field, incorporate inclusive research practices, consider the potential impact of research outcomes on marginalized communities, etc. The entire research process (including design, dissemination, analysis, grant-writing, etc.) should be viewed through a DEIA lens. Promoting representation among researchers is a start, but both mentors and mentees must consider how to advance equitable practices and inclusive work processes.

Advocate for equitable resources:

Access to resources (e.g., social networks, opportunities for professional development, grants, etc.) is a major barrier to members of underrepresented groups. Mentorship can be a powerful tool for promoting more equitable outcomes. Advocacy by mentors may level the playing field in supporting underrepresented scholars, researchers, and health care practitioners. Mentors, particularly those of majority groups, can advocate on behalf of their mentee to promote their work, assist in seeking research funding, improve diverse talent recruitment, and build an inclusive environment. In addition, mentors may widen the mentee's network through introductions or recommendations, provide

support for grant-writing, recommend opportunities for professional development, and more. Promoting equity in the availability and access to resources begins with advocacy.

The Importance of DEIA in Research Leadership and Mentorship

Advancing DEIA in research leadership and mentorship is essential in fostering inclusive research environments and addressing the needs of diverse populations. By developing customized mentorship approaches, ensuring constant learning, and enhancing awareness of the importance of DEIA, both mentors and mentees can contribute to enhancing diversity in the STEM field overall. As we continue to advance in the field of scientific research, promoting DEIA must remain a central focus to ensure research efforts are impactful, relevant, and reflective of the diverse society we live in.

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