



Mentoring Early Career STEM Education Researchers and Developers

Mentoring is a form of teaching and learning for individuals with experience and expertise in a given field (mentors) to provide support, direction, and feedback to aide in the professional and personal development of those who are relatively less experienced (mentees).¹ Effective mentoring requires commitment on the part of mentors and mentees. Following the tips below may help new mentors and mentees establish an effective and productive relationship. The first section includes tips for mentors; the second section includes tips for mentees.

TIPS FOR MENTORS

First steps...

- **Analyze what your mentee needs.** Rather than generalizing or making assumptions, remember that each mentee may differ in terms of needs and circumstances; therefore, learn about your mentees and work together to define an approach and plan suited for them. Understand how each mentee's experience with regard to race, gender, and other characteristics may influence his or her needs, strengths, and perspectives.² Though each mentee is unique, help them all achieve excellence.
- **Discuss possibilities for meeting.** Be explicit about how much time you can offer, and then make a plan for when and how often you will meet. If you are unable to meet in person as often as you or your mentees would like, consider options such as e-mail, online meetings, and phone calls. Help your mentees identify others with whom they can consult when you are not available. If you typically meet in the office, you might plan to occasionally meet at a different location. Whenever and however you meet, try to minimize interruptions; give mentees your full attention and listen carefully.³
- **Communicate expectations.** Be transparent about your expectations for the mentoring relationship: what your mentees can reasonably expect from you, and what you expect from the mentees. Encourage your mentees to do the same. Establish how often and what type of feedback you will provide. Constructive feedback includes concrete examples and evidence of successes and challenges, and then engages the mentees in developing a plan to improve in the future. Also, continually evaluate and

communicate what you can and cannot offer mentees. Part of mentoring effectively includes referring mentees, when appropriate, to others who might be better resources.⁴

- **Set boundaries and talk about confidentiality.** Pay attention to both personal and professional boundaries, and respect the mentees' boundaries as much as you expect them to respect yours.⁵ Offer your mentees strict confidentiality and discuss what this means in practice.

When working with a mentee...

- **Create a work plan.** Together, review your post-doc mentoring plan, if applicable. Build off of it to develop a work plan that includes short-term and long-term concrete goals and timelines. Review the plan periodically and adjust it when necessary. Studies show that a written plan helps direct mentees toward clear, achievable goals.⁶

[Sample Postdoctoral Mentoring Plan](#)

- **Provide an orientation, if appropriate.** If mentees are new to the institution and there are no other staff members with the responsibility of orienting them, provide tours of the department and campus and be sure they are familiar with policies, practices, and available resources. Don't forget to make introductions.
- **Create professional development opportunities.** Help mentees build and demonstrate their competencies. Involve mentees in collaborative activities with you such as writing, editing, presenting, and grant writing. Offer your mentees assistance in identifying and applying for fellowships, grants, and awards.⁷

[Watch a Video Conversation: Building a Supportive Mentor-Mentee Relationship](#)

- **Create networking opportunities.** Help your mentees develop additional professional relationships with those who may potentially provide support or become

collaborators. In addition to introducing your mentees to colleagues at your institution, help them meet colleagues—including other early career researchers and developers—beyond your institution. Organize events such as workshops and invite your mentees to participate.⁸ Take your mentees to conferences.

[Watch a Video Conversation: Creating a Community of Learners](#)

- **Support mentee teaching.** If mentees are interested in an academic career involving teaching, help identify opportunities for them to gain teaching experience and receive teaching-related mentoring. This may include co-planning lessons, conducting teaching observations, and providing constructive feedback on what is working well and what could be improved based on the goals of the lesson and the student outcomes.⁹
- **Consider publishing options.** Help identify opportunities and strategies for publication, including those that may arise within a project and from the mentees' research. Help them prepare articles for submission, but be sure to discuss issues and expectations relating to authorship before beginning any co-writing.¹⁰
- **Explore career paths.** Help mentees discover what they are good at, how those skills and qualities relate to various career options—whether in academia, industry, or nonprofit sectors—and what first steps they need to take to advance in those careers. Encourage your mentees to take advantage of career counseling and employment resources at your institution.¹¹ Review mentees' CVs, and look at the CVs of others on a similar career path. If asked to write a letter of recommendation, let your mentees know how much time you require, and what information and materials they need to provide.¹²

Keep in mind...

- **Be committed to the mentoring relationship.** Be available, prepared to listen and support your mentees, share your own experiences and expose the mentees to the experiences of others, offer a wide range of opportunities, and occasionally push mentees to move beyond the boundaries of their comfort zone so that they can grow.
- **Nurture self-sufficiency.** Help mentees determine when to seek assistance and when to be more independent. While risk taking can lead to what mentees first perceive as failure, it may also lead to a productive learning experience. Encourage your mentees to expand their skills and introduce new ideas.¹³ Keep in mind that the role of a mentor is to facilitate growth; ultimately though, mentees are responsible for making their decisions based on their own values, capabilities, and goals.¹⁴

[Watch a Video Conversation: Giving the Mentee Space to Learn](#)

- **Address challenges head-on.** Don't assume that mentees will always come to you when they need help. Remind mentees they are welcome to discuss issues with you.¹⁵ Help mentees anticipate and respond to negative responses to their ideas, especially if those ideas push the boundaries of the discipline.¹⁶
- **Acknowledge mutual benefits.** Share your experiences and what you've learned about your profession over the course of your career. At the same time, though, let mentees know what you have learned from them.¹⁷

TIPS FOR MENTEES

Finding a mentor...

- **Identify potential mentors** through a variety of means. Seek out people who have relevant characteristics (such as age, gender, and cultural background)¹⁸ and experience, and have advanced along the career path that you want to follow. Ask other colleagues

about their mentoring relationships. Discuss your interests and needs with them and seek suggestions for potential mentors. At large universities in particular, you may need to seek out faculty members and initiate conversation. It is important to be visible within your department. Participate in departmental or institutional activities, or visit a class that a potential mentor teaches. Casual hallway conversations allow you to informally build relationships, while visiting potential mentors in their offices may allow for more focus on your conversation and goals.¹⁹

- **Identified someone? Learn more about your potential mentor.**
 - ✓ How does this person approach mentoring? How does his or her approach correspond to what you need?
 - ✓ Can the mentor provide you with opportunities to teach, publish, and present?
 - ✓ Does the mentor have access to relevant professional networks and relationships with colleagues who could be helpful to your career development, whether academic or non-academic?
 - ✓ What opinions do others hold regarding the prospective mentor's work? What have been the professional outcomes for others mentored by this individual? How do these outcomes align with your goals?
 - ✓ How will the mentor's other responsibilities and plans effect his or her commitment to mentoring?
 - ✓ Are you comfortable with this person's personal and professional style?²⁰
- **Establish a mentoring network.** Carefully selecting a team of mentors increases the likelihood that you will have the range of support you need. It will also be beneficial to have more colleagues who are knowledgeable about the quality of your work. When building your team, consider what kinds of support you want and then be creative in finding people who can provide aspects of that support. Consider retired STEM education researchers, developers, and faculty; faculty and staff from other

departments and institutions; and those in other professions.²¹

[Watch a Video Conversation: Finding the Right Mentors](#)

When working with a mentor...

- **Clarify your respective roles and responsibilities.** Determine what you need and expect from your mentors, and then discuss those needs and expectations with them. Be specific and clear. Understand that you are responsible for engaging proactively in the mentoring relationship so that your needs are met. Learn about your mentors' expectations, too. Mentors want to work with mentees who are eager to progress to the next level of their professional growth. Inquire about reading, coursework, research projects, and professional training opportunities that might help you reach these goals. Explore the ways in which your interests may intersect with your mentors' and what opportunities may arise from that.²²
- **Create a work plan.** Follow the guidelines in the tips for mentors above. Does the plan clarify whether and/or to what extent the mentors are willing to help you publish your own work? If applicable, discuss the mentors' expectations of what drafts should look like. Ask about criteria for co-authoring articles and if the mentors are willing to collaborate with you on other projects.²³ Does the plan outline additional opportunities that the mentor will offer (e.g., to teach, present at a conference)?

- **Accept responsibility for guiding the meetings.** Be prepared with an agenda of topics to be discussed when you meet with your mentors. At the conclusion, summarize any agreements you have made.²⁴
- **Keep in regular contact with your mentor to discuss your progress.** Establish the role of the mentors in providing feedback to you. How often will you receive feedback? What will be the nature of the feedback? You do not have to agree with everything your mentors say about your work, but consider their point of view. Education is about exchanging and debating ideas.²⁵
- **Let mentors know that their time and effort is appreciated.** If your mentors are to continue to improve their mentoring practice, they need to know what works and what does not. Let them know in what ways their support has been helpful.

Keep in mind...

- **Pursue the additional training you need to achieve your professional goals.** Attend departmental activities, join professional associations, attend conferences and pre-conference workshops, and present your work inside and outside of your department. Use these activities as an opportunity to network with others, in addition to gaining skills and getting your work known.²⁶
- **Maintain your professional portfolio.** Portfolios might include your publications, presentations, awards, project videos, and news articles, which document your accomplishments.²⁷

WANT TO LEARN MORE?

Visit the CADRE website for additional resources on early career support for STEM education research and developers: <http://cadrek12.org/early-career-stem-education-rd>

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