

Mentorship for Women in STEM

- Part 3: Mentorship and Student Success -



- *Why do Women leave STEM Fields?* -

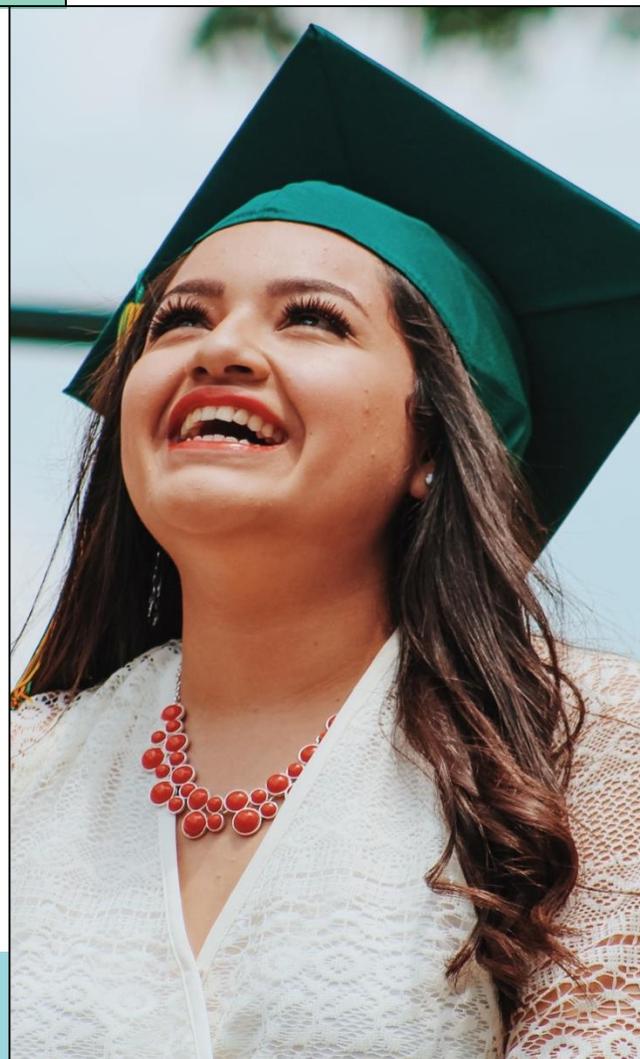
- “Women are more likely to leave Science, Technology, Engineering, and Mathematics (STEM) compared to men, in part because they lack similar role models such as peers, teaching assistants, and instructors.”¹
- Research shows us that women perform better academically when they have a female role model in the same field.²
- In this paper, we explore the impact role models have on women in STEM fields, and share best practices from an extensive literature review.

This is **Part 3** of Shearwater’s series on mentorship and student success. Contact Shearwater to receive the full series, including:

- ✓ Running An Effective Mentorship Program
- ✓ Mentorship for Underrepresented Minorities
- ✓ Keeping Volunteer Mentors Engaged
- ✓ And more.

What Makes A Role Model Important?

- Role models, in effect, are “modeling”³, or showing students how to approach a situation by way of example, which is a crucial method of generating **self-efficacy**.
- **Self-efficacy** refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments (Bandura, 1977, 1986, 1997).
- Academic research has uncovered **self-efficacy** as one of the most important drivers of student success.



What are the outcomes of self-efficacy?



Approach Vs. Avoidance ⁴

Self-efficacy drives the development of help-seeking behavior, like asking for help when faced with a difficult task.

Performance ^{4, 5}

Self-efficacy is associated with academic performance. Students with a lower sense of self-efficacy are known to choose goals that undermine their success, such as pursuing an easier major or leaving their institution.

Persistence ⁴

Students with a strong sense of self-efficacy demonstrate persistence in their college career because of their confidence in their ability to execute tasks.

Sources

1 Sarah D. Herrmann, Robert Mark Adelman, Jessica E. Bodford, Oliver Graudejus, Morris A. Okun & Virginia S. Y. Kwan Pages 258-268 | Published online: 19 Aug 2016 The Effects of a Female Role Model on Academic Performance and Persistence of Women in STEM Courses

2 Benjamin J. Drury, John Oliver Siy & Sapna Cheryan Pages 265-269 | Published online: 02 Dec 2011 When Do Female Role Models Benefit Women? The Importance of Differentiating Recruitment From Retention in STEM

3 Pajares (2002). Overview of social cognitive theory and of self-efficacy. <http://www.emory.edu/EDUCATION/mfp/eff.html>

How can institutions provide more female role models in STEM?

Mentorship provides an avenue for students to learn the essential skills needed to build a strong sense of self-efficacy and pursue demanding academic and career goals.

- **Faculty:** Professors and administrators are often willing to support the future generation of student in their field.
- **Student leaders:** Upper-class mentors (or “peer mentors”) can provide new students with authentic and practical suggestions for how to succeed in the school environment. ⁶
- **Alumnae:** Universities often have an untapped pool of successful female role models who have put their degree to practice in a professional setting.

What are some best practices for mentoring women in STEM?



Training Mentors should be trained by the institution or a partner. Mentorship is not always easy, making effective training all the more important.

- TIP:** Encourage mentors to normalize failure by recalling difficulties in their own studies, and share how they approached the situation. These tactics are proven to increase student resilience.
- TIP:** Avoid “mentor burnout” by normalizing the idea that mentors may need to reach out 3-6 times to schedule their first session with the mentee.

Effective matching: Perhaps the greatest driver of relationship success is match quality. Invest time in understanding important matching criteria for your mentors and mentees.

- TIP:** Shearwater’s research shows that giving students agency over their match (i.e., selecting criteria they care about) leads to the best outcomes around persistence and academic success.

Track and analyze trends: Understanding when pairs meet, what they discussed, and engagement trends allows administrators to improve existing programming and make targeted interventions.

- TIP:** Running a large-scale mentoring initiative without software support is extremely time-intensive. Consider exploring collaborators to engage in your work.

Share Best Practices

Shearwater collaborates with 50+ institutions to support mentoring programs focused on holistic student success. If you would like to share best practices or learn more from our research, please contact Maria Van Thienen at maria@shearwaterintl.com.



Sources

4 Bandura, A. (1997). *Self-efficacy: The exercise of self-control*. New York: W.H. Freeman.

5 Hsieh (Pei-Hsuan), P., Sullivan, J. R., & Gurerra, N. S. (2007). A closer look at college students: Self-efficacy and goal orientation. *Journal of Advanced Academics*, 18(3), 454-476

6 Randy Poon (2006) *A Model for Servant Leadership, Self-Efficacy and Mentorship*, 7