Women in STEM in Higher Education

Bibliography covering the recruitment and retention of women in Science, Technology, Engineering, and Math in the United States (2007-present). #STEM #WomeninIT #WomeninSTEM

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Welcome to the Women in STEM Research Guide. This guide will help you identify important resources including:

- scholarly articles,
- books,
- e-books,
- theses/dissertations,
- government documents.

Open Access materials have been included as often as possible to enhance accessibility by linking to OA publishers and to library repositories for theses and dissertations. If the item is behind a pay wall, please contact your institution's library or your local public library to request access to this item.

If you need help or would like a publication to be considered for this bibliography, please email Dr. Heidi Blackburn at hblackburn@unomaha.edu.

This project was funded by an American Library Association Carnegie-Whitney grant (2018) and builds on the study "The Status of Women in STEM in Higher Education: A Review of the Literature 2007–2017" (Blackburn, 2017).

The lives and accomplishments of three women of color in STEM are profiled in this documentary: Jewel Plummer Cobb (a cancer research pioneer and university president), Alice Augusta Ball (who found the initial treatment for leprosy), and Evelyn Boyd Granville (NASA Mathematician behind three space missions). This film was written, directed, and produced by students at Lawrence Technological University.
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Wang, M., Degol, J., & Ye, F. (2015). Math achievement is important, but task values are critical, too: Examining the intellectual and motivational factors leading to gender disparities in STEM careers. Frontiers in Psychology, 6, 36.


**Pipeline**

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Proceedings, 2017-June.


Stamm, K. E. (2009). Stereotype threat and implicit attitudes: Implications for the leaky pipeline of women in science (Ph.D.). University of Rhode Island DigitalCommons@URI.


Pathways

Some citations may be abbreviated for space.


• Finkel, L. (2017). Walking the path together from high school to STEM majors and careers: Utilizing community engagement and a focus on teaching to increase opportunities for URM students. Journal of Science Education and Technology, 26(1), 116-126.


Two-year programs

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K-12th Grade

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Recruitment and Calls for Action

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• Huryn, D. M., Bolognesi, M. L., & Young, W. B. (2017). Medicinal chemistry: Where are all the women? ACS Medicinal Chemistry Letters, 8(9), 900-902. 10.1021/acsmedchemlett.7b00321.

Retention

Retention

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Learning Communities

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• Lane, T. B. (2015). "It's not just one thing!" examining the role of a STEM enrichment program in facilitating college readiness and retention among underserved students of color (Ph.D.), MSU Libraries Digital Repository.
Mentoring and Role models

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• Finkel, L. (2017). Walking the path together from high school to STEM majors and careers: Utilizing community engagement and a focus on teaching to increase opportunities for URM students. Journal of Science Education and Technology, 26(1), 116-126. 10.10
• Santiago, C. (2012). Faculty as institutional agents for low-income latino students in science, technology, engineering, and mathematics fields at a hispanic-serving institution (Ed.D.). USC Digital Library.
Persistence

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Campus efforts

Attrition

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Barriers

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Stereotypes and Perceptions

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- Banchefsky, S., Westfall, J., Park, B., & Judd, C. (2016). But you don't look like a scientist!: Women scientists with feminine appearance are deemed less likely to be scientists. Sex Roles, 75(3-4), 95-109. 10.1007/s11199-016-0586-1


• Shapiro, J. R., & Williams, A. M. (2012). The role of stereotype threats in undermining girls' and women's performance and interest in STEM fields. Sex Roles, 66(3-4), 175-183. 10.1007/s11199-011-0051-0.
• Wells, H. M. (2012). Picture a scientist: A visual rhetoric approach to the problem of gender disparity in STEM fields (Ph.D). OhioLINK.

Biases

Some citations may be abbreviated for space.

• Hall, K. J. (2016). "They believe that because they are women, it should be easier for them." Subtle and overt sexism toward women in STEM from social media commentary (Ph.D.). VCU Scholars Compass Repository.
• Osei-Kofi, N., & Torres, L. (2015). College admissions viewbooks and the grammar of gender, race, and STEM. Cultural Studies of Science Education, 10(2), 527-544. 10.1007/s11422-014-9656-2

Campus culture

Some citations may be abbreviated for space.

• Johnson, D. R. (2007). Sense of belonging among women of color in science, technology, engineering, and math majors: Investigating the contributions of campus racial climate perceptions and other college environments (Ph.D.), U of M Repository.
• Lawson, K. M., Kooiman, L. Y., & Kuchta, O. (2018). Professors' behaviors and attributes that promote U.S. women's success in male-dominated academic majors: Results from a mixed methods study. Sex Roles, 78(7-8), 542-560. 10.1007/s11199-017-0809-0.
Classroom experiences

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• Holmes, K. M. (2013). The perceived undergraduate classroom experiences of African American women in science, technology, engineering, and mathematics (STEM) (Ph.D.). Digital Repository at the University of Maryland.


• Khan, A., & Wei, Y. (2017). Free talk zone: Inclusive pedagogy to encourage women in computer science. 2017 International Conference on Computational Science and Computational Intelligence (CSCI), 1108–1114.


• Lawson, K. M., Kooiman, L. Y., & Kuchta, O. (2018). Professors' behaviors and attributes that promote U.S. women's success in male-dominated academic majors: Results from a mixed methods study. Sex Roles, 78(7-8), 542-560. 10.1007/s11199-017-0809-0


• Sanabria, T., & Penner, A. (2017). Weeded out? Gendered responses to failing calculus. Social Sciences, 6(2), 47. 10.3390/socsci6020047

Lived experiences

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Identity

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• Beals, R. A. (2016). "It was a whole new environment" – Transformative organizational culture and the development of science identity for underrepresented students in science, technology, engineering and math (STEM) (Ph.D.). UNM Digital Repository.


• Collain, M., & Trytten, D. (2019). You don’t have to be a white male that was learning how to program since he was five. Proceedings of the 50th ACM Technical Symposium on Computer Science Education, 968–974. https://doi.org/10.1145/3287324.3287383


• Liggett, J. B. (2014). Geek as a constructed identity and a crucial component of STEM persistence (M.S.). UNT Digital Library.


• Miller, C. B. (2002). To be or not to be an expert: Academic advising and mentoring and the construction of academic identity among students in two information technology programs (Ph.D.). Available from ProQuest Dissertations & Theses Global. (276340742)


158–179.

- Robnett, R. (2013). The role of peer support for girls and women in the STEM pipeline: Promoting identification with STEM and mitigating the negative effects of sexism (Ph.D.), UC Santa Cruz Repository.
- Tran, M. C. (2011). How can students be scientists and still be themselves: Understanding the intersectionality of science identity and multiple social identities through graduate student experiences (Ph.D.), Available from ProQuest.

**Sense of belonging**

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Success in STEM

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Garibay, J. C. (2014). Beyond traditional measures of success in STEM: Predictors of STEM bachelor's degree recipients' values toward using research and sociopolitical involvement to promote a more equitable society (Ph.D.). UCLA eScholarship.


Opare, P. B. (2012). Factors that female higher education faculty in select science, technology, engineering, and mathematics (STEM) fields perceive as being influential to their success and persistence in their chosen professions (Ph.D.). ProQuest.


Riegle-Crumb, C., Muller, C. (2012). The more things change, the more they stay the same? Prior achievement fails to explain gender inequality in entry into STEM college majors over time. American Educational Research Journal, 49(6), 1048-1073.


Self-Concept and Self-Efficacy
Some citations may be abbreviated for space.


Careers

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• Lee, J. E. (2013). Women in science, technology, engineering, and mathematics (STEM) fields: The importance of the need to belong and self-esteem on the intention to leave a job (M.A.). SJSU ScholarWorks.

Entering the Industry

Some citations may be abbreviated for space.


• Daldrup-Link, H. E. (2017). The Fermi Paradox in STEM: Where are the women leaders? Molecular Imaging and Biology, 19(7), 807–809. https://doi.org/10.1007/s11307-017-1124-4


Faculty Issues

Faculty Work-Life Balance

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Campus Climate: Careers, Tenure, and Leadership Issues

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• Blair-Loy, M., Cosman, P. C. (2017). Gender in engineering departments: Are there gender differences in interruptions of academic job talks? Social Sciences, 6(1)0.3390/soosci60100029


• Daldup-Link, H. E. (2017). The fermi paradox in STEM: Where are the women leaders? Molecular Imaging and Biology, 19(6), 807-809. 10.1007/s11307-017-1124-4


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• Opare, P. B. (2012). Factors that female higher education faculty in select science, technology, engineering, and mathematics (STEM) fields perceive as being influential to their success and persistence in their chosen professions (Ph.D.). DigitalCommons.

• O’Meara, KerryAnn & Templeton, Lindsey & Nyunt, Gudrun. (2018). Earning Professional Legitimacy: Challenges Faced by Women, Underrepresented Minority, and Non-Tenure-Track Faculty. Teachers College Record. 120. 1-38.

• Pascale, A. B. (2018). Supports and pushes: Insight into the problem of retention of STEM women faculty. NASPA Journal About Women in Higher Education, 0(0), 1–18.


Smith, J. L., Stoop, C., Young, M., Belou, R., & Held, S. (2017). Grant-writing bootcamp: An intervention to enhance the research capacity of academic women in STEM. Bioscience, 67(7), 638-645. 10.1093/biosci/bix050


Snyder, C. (2010). “We do not see things as they are. We see things as we are.” Capturing the transformation of career changing women from STEM fields to teaching (Ph.D.). Available from ProQuest Dissertations & Theses Global. (305238700).


Books

**Book Chapters**

Some citations may be abbreviated for space.


Books

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Government Documents

Reports and Government Documents

• Landivar, L. C. (2013). Disparities in STEM employment by sex, race, and Hispanic origin. American Community Survey Reports.
• United States Census Bureau. (2019). The Intersectionality of the STEM Workforce.

Policies and Strategies for Change

Policies and Strategies for Change


• Lim, N. . . . Giglio, K. (Eds.). (2013). Review of policies and strategies aiming to align DoD STEM and diversity goals with national priorities. In First Steps Toward Improving DoD STEM Workforce Diversity (pp. 7–16). RAND Corpora


