Culturally Responsive Mentoring: The S-STEM Program at WPU

A summary of research findings from 2021-2024 related to CRM

What Works Conference, William Paterson University

December 16, 2024

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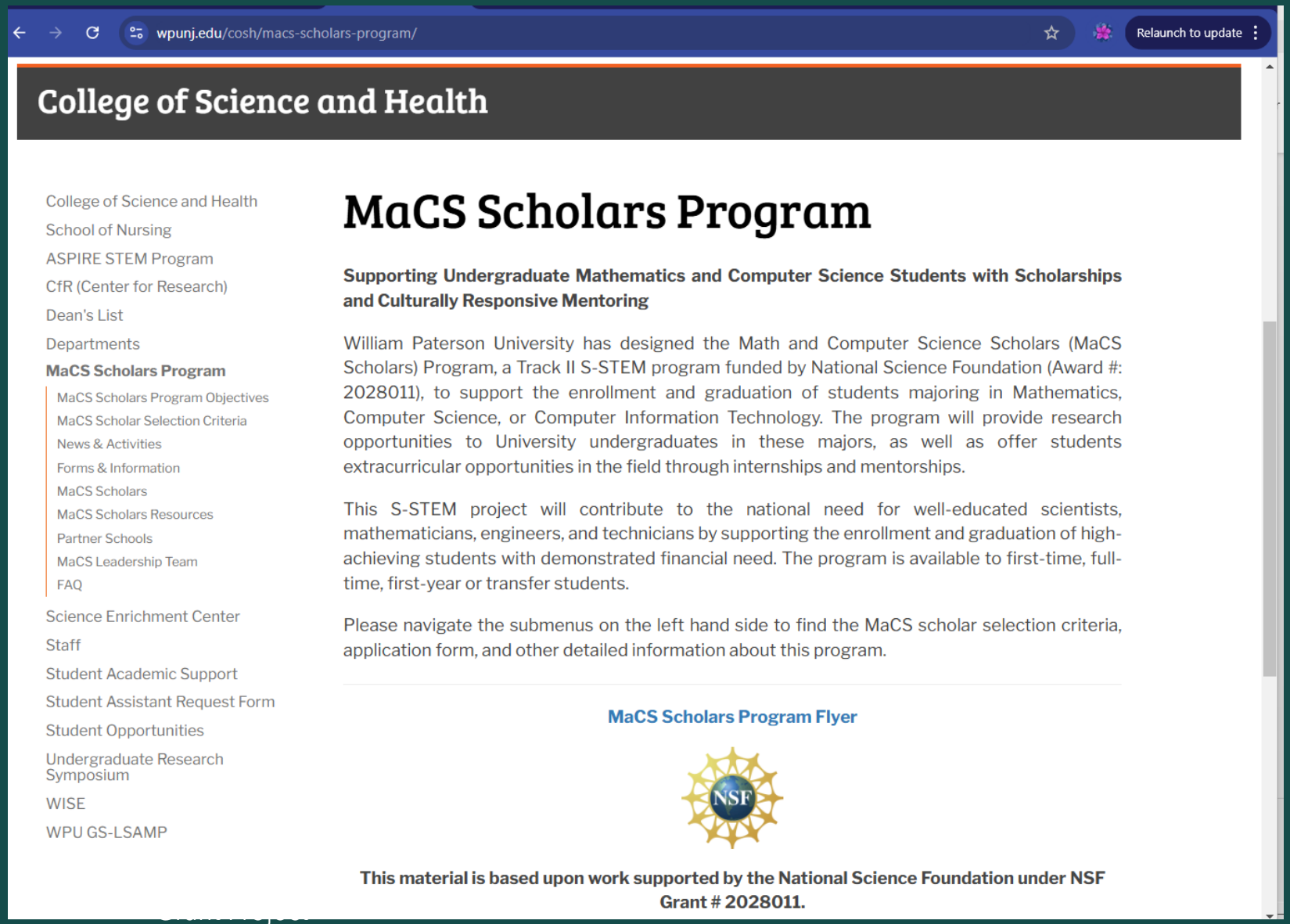
and Dr. Jyoti Champanerkar, Project Director

This research is supported by the National Science Foundation under NSF Grant #2028011 Supporting Mathematics and Computer Science Scholars Through Financial Support and Culturally Responsive Mentoring

S-STEM Project at William Paterson University

Program Overview

- https://www.wpunj.edu/cosh/macs-scholars-program/



MaCS Scholars

Scholarship Summary					
Academic Year	**Semester**				**Yearly Total**
	Fall	**Winter**	**Spring**	**Summer**	
2024 - 2025	17	-	-	-	17
2023 - 2024	16	2	14	4	36
2022 - 2023	9	0	10	2	21
2021 - 2022	9	1	11	5	26
2020 - 2021	-	-	3	-	3

RESEARCH QUESTION

What is the Impact of Culturally Responsive Mentoring on MaCS Scholar Persistence?

To what level does culturally responsive mentoring activities correlate to student persistence, graduation, and STEM-related employment or graduate work?

Culturally Responsive Mentoring

Culturally responsive mentoring consists of the following elements:

- helps students make connections between their community, national, and global identities;
- proliferates a sense of efficacy; and,
- acknowledges the impact of systemic oppression, marginalization, and inequality

(Han & Onchwari, 2018; Mass Mentoring Partners, 2016; Salas, Aragon, Alandejani & Thompson, 2014; Villasenor, Reyes, and Munoz, 2013).

MaCS Mentor Participants

Year 1: 2021-2022

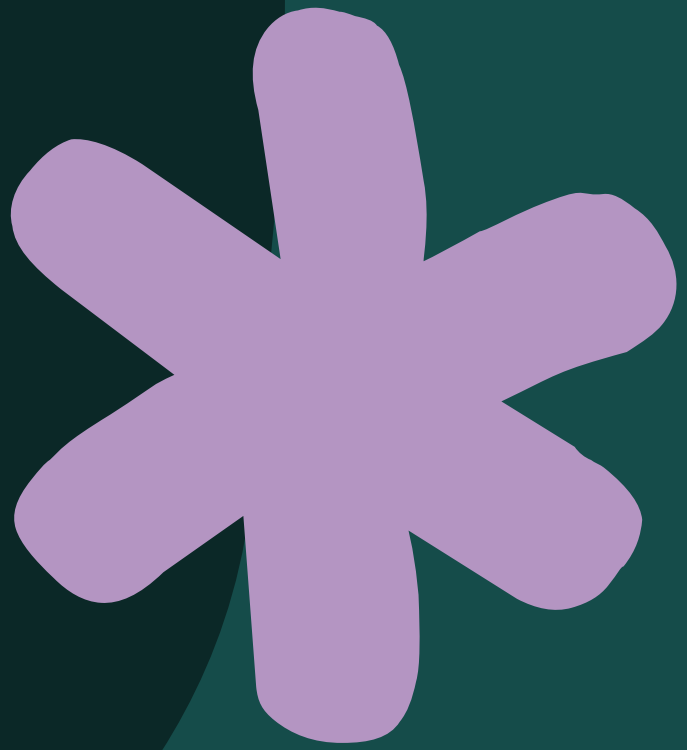
- 5 participants: Female = 1; Male = 4

Year 2 and 3: 2022-2024

- 3 participants: Female = 1; Male = 2

Research Methodology

- Mentors
  - Mentor training
    - MaCS Mentoring 101
    - WPU Community Dialogues (topics: “Awareness of self and others”, “Decolonizing curriculum”, “Allyship”)
    - MaCS Book Talks
  - Annual survey (Cultural Responsiveness Assessment, Mass Mentoring Partners, 2016)



Mentoring 101: Strategies for Mentoring Undergraduates

MACS MENTOR WORKSHOP SERIES
SUPPORTING MATHEMATICS AND COMPUTER SCIENCE SCHOLARS THROUGH FINANCIAL SUPPORT AND CULTURALLY RELEVANT MENTORING

THIS MATERIAL IS SUPPORTED BY THE NATIONAL SCIENCE FOUNDATION UNDER NSF GRANT #2028011

Dispositions of Effective Mentors

Effective mentors are those who

- Are receptive
- Provide a caring presence
- Challenge
- Listen
- Provide structure
- Provide insight
- Are available
- Express positive expectations for the student
- Help students see themselves in new ways
- Serve as a sounding board for new ideas
- Are both part of and apart from the environment of the student

Applying Culturally Responsive Mentoring

Supporting Mathematics and Computer Science (MaCS) Scholars Through Financial Support and Culturally Responsive Mentoring

You are invited to participate in the following Community Dialogues and Workshops

October 15, 2020, 12:30 PM

WPU Community Dialogue on "Developing Your Capacity and Awareness of Self and Others". Sponsored by the Office of Employment, Equity and Diversity. Meeting ID: 263 483 5975 Passcode: 362551

October 16, 2020, 2:00 – 3:15 PM

Pedagogy Workshop: "What Might It Mean to Decolonize Our Curriculum and Teaching?" Sponsored by the Center for Teaching Excellence. Co-sponsored with the Social Justice Project. Panelists: TBA

Meeting Link: https://wpunj.zoom.us/j/9165988 7630

Meeting ID: 916 5988 7630

October 30, 2020, 2:00 – 3:15 PM

Pedagogy Workshop: "Bringing a Decolonizing Perspective to Disciplinary Content." Sponsored by the Center for Teaching Excellence. Co-sponsored with the Social Justice Project. Panelists: TBA

Meeting Link: https://wpunj.zoom.us/j/94888599228

Meeting ID: 948 8859 9228

November 19, 2020, 12:30 PM

Community Dialogue on "Strengthening Your Role as an Authentic Ally" Sponsored by the Office of Employment, Equity and Diversity.

Meeting ID: 263 483 5975 Passcode: 362551

Highly recommended for MaCS Mentors

These workshops are recommended for mentors of Math and Computer Science majors at William Paterson University.

All workshops are virtual. Just click the zoom link to get culturally responsive resources and tools!

This material is based upon work supported by the National Science Foundation under the NSF Grant # 2028011.

Supporting Mathematics and Computer Science Scholars Through Financial Support and Culturally Responsive Mentoring

You are invited to participate in the virtual 2-day Social Justice & Diversity Pedagogy Workshop

Monday, November 30, 2020

9:00am-12:00pm & 1:00pm-3:00pm

Tuesday, December 1, 2020

9:00am-12:00pm & 1:00pm-3:00pm

Facilitators:
Professor Wendy Christensen
Professor Danielle Wallace

Recommended for MaCS Mentors

This workshop is recommended for mentors of Math and Computer Science majors at William Paterson University. Workshops will be via Zoom. A link will be provided by the facilitator.

For registration and questions contact:

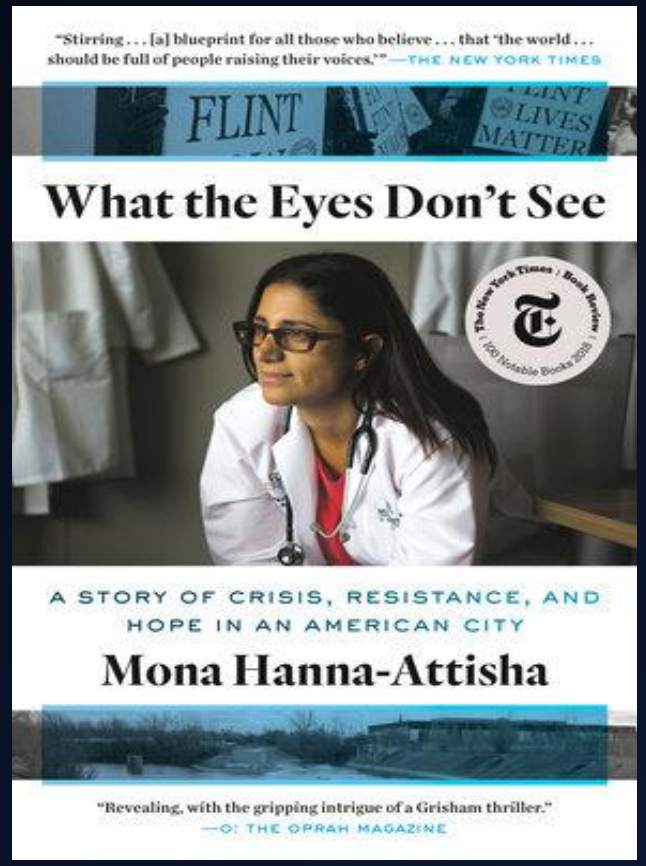
Dr. Danielle Wallace | wallaced12@wpunj.edu

Book Discussions Year 1 –

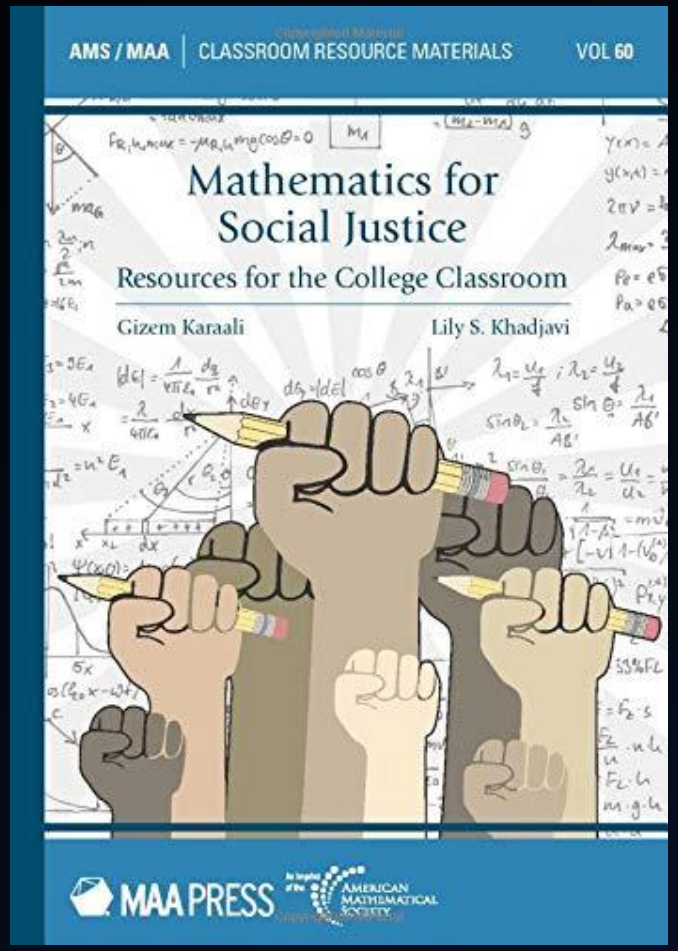
What the Eyes Don't See by Mona Hanna-Attasha

Chosen and discussed with mentors and mentees. Some of the students mentioned themes such as persistence, fighting for justice, and belonging. Students connected the text to their everyday lives and experiences as future scientists.

Mentors and mentees were also able to see the environmental justice connections to their own communities. The reading of the water crisis in Flint, spurred us to conduct research on water in NJ counties.



Book Discussions Year 2 - *Mathematics for Social Justice: Resources for the College Classroom* by Karaali and Khadjavi



"Social justice may be broadly understood as the fair and compassionate distribution of the fruits of economic growth."

We agreed that what we do and say in the classroom has power.

While faculty noted that it is difficult to include issues of social justice in everyday classroom sessions, they found the specific case studies to be helpful in thinking about how to revise course syllabi.

We also felt that we usually experience "silent" student resistance when there is an attempt to include justice in STEM classes. We decided to include academic support and counseling information on syllabi and on our MaCS website.

Book Discussions Year 3 – *More than a Glitch* by Meredith Broussard

Discussion themes included:

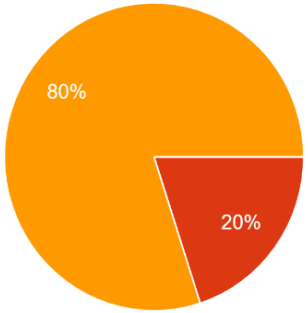
- **We are human and therefore biased;**
- **Race as a social construct;**
- **"Who is telling me, how do they know, what are they trying to sell?";**
- **The need to know data sets and how to educate students about them;**
- **Being aware of the consequences of data bias; and,**
- **Representation of women in math and computer science.**

Findings: Culturally Responsive Mentoring Assessment

2022 - 2024

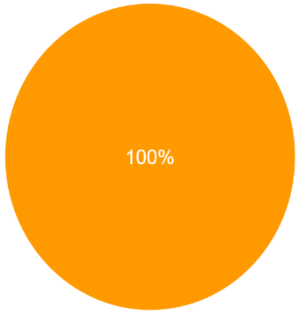
I work to give my mentee to have a voice and c

5 responses



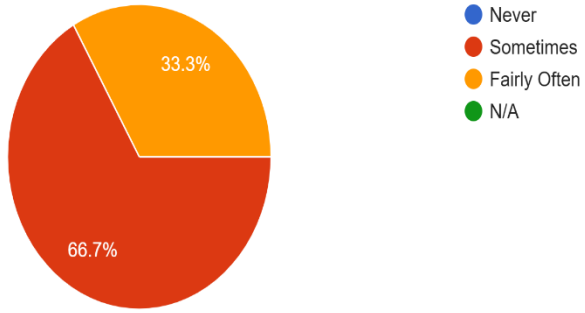
I work to give my mentee to have a voice and choice i

3 responses



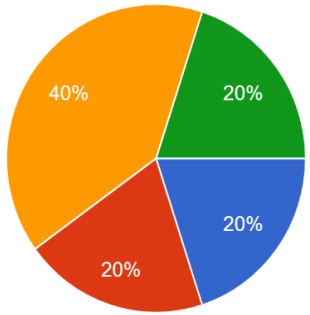
I work to give my mentee to have a voice and choice in what we do in the mentoring relationship.

3 responses



I understand that my various identities provide both

5 responses



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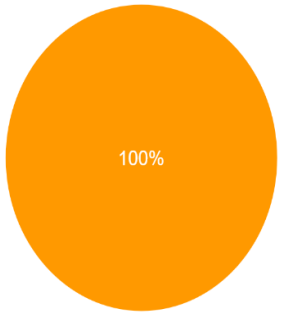
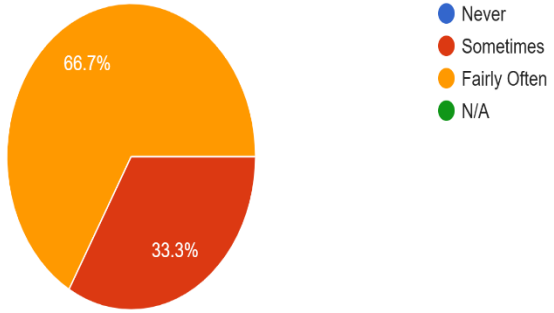


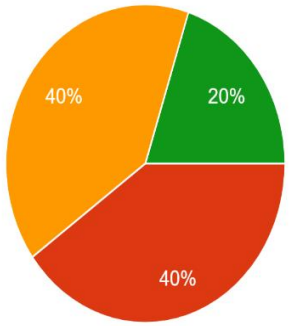
I understand that my various identities provide both power and privilege in different ways.

3 responses



Findings: Culturally Responsive Mentoring Assessment 2022 - 2024

I take steps to support my mentee in recognizing the s
5 responses



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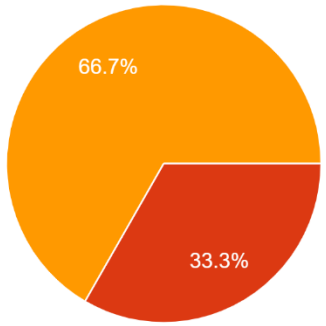
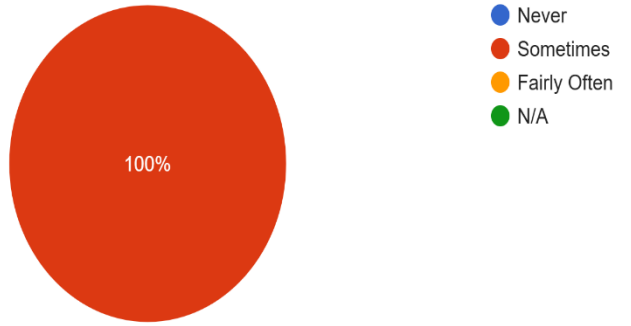
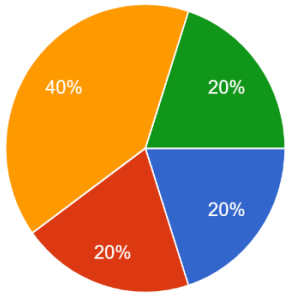


I take steps to support my mentee in recognizing the strengths in their cultural background.
3 responses



I take steps to support the promotion of equity and soc
mentee (or work with them on this).
5 responses



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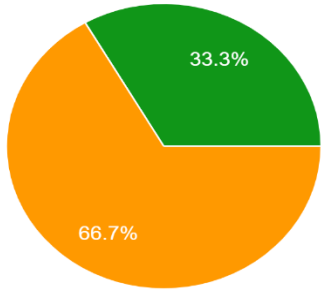
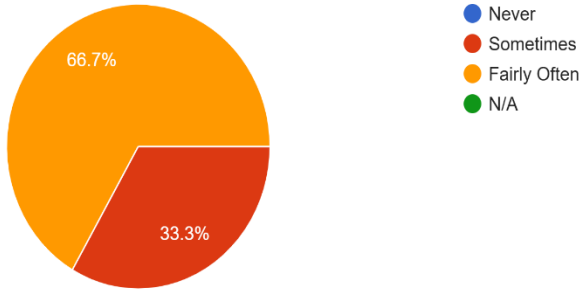


I take steps to support the promotion of equity and social justice and make this transparent to my mentee (or work with them on this).
3 responses



Research Findings: Culturally Responsive Mentoring Assessment

67% sometimes, gives their mentee a voice and choice in the mentoring relationship. This number is a decrease from last year at 100%.

67% fairly-often understand their various identities provide both power and privilege in different ways. This number is a decrease from last year at 100%

100% sometimes take steps to support their mentee in recognizing the strengths in their cultural background. This number is an increase from 33% in 2023.

67% fairly-often take steps to support the promotion of equity and social justice and make that transparent to their mentee. This number remained the same. In fact, in 2024, the reminder responded that they "sometimes take steps"

MaCS Culturally Responsive Teaching and Mentoring Outcomes

Adding student learning outcomes in syllabi, such as, "Advance diversity, equity, inclusion, or social justice through data science."

Adding assignments: "Analyzing Unemployment Data" as a homework project in College Algebra course.

To continue to unearth "hidden figures" in STEM, we agreed to include a quote by an under-represented scientist on our course syllabi.

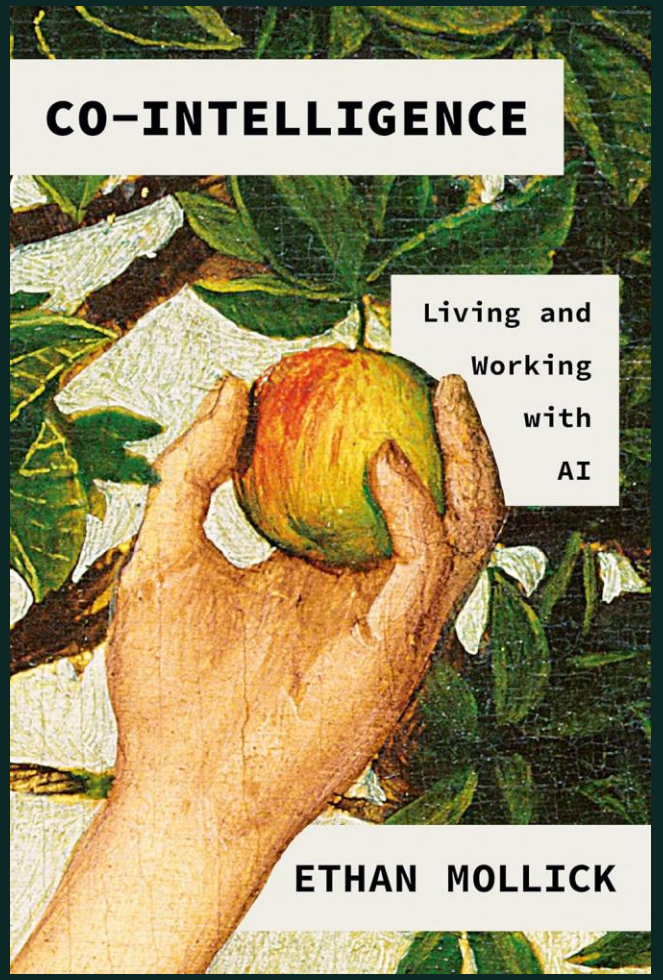
Include academic support and counseling information on syllabi and on our MaCS website.

Our Work Continues

Additional mentor training in the areas of power and privilege and in student's cultural backgrounds (webinars, lectures, trainings, book discussions)

Help mentors take steps to support and promote social justice and make it transparent

Support mentor participation in revising curriculum/courses to include social justice



Questions?

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