CULTIVATING EQUITY
Learning Assistants (LA) Training Course

Lessons to foster science identity and sense of belonging in STEM courses

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Development of the Cultivating Equity Training Course was supported by the University of Florida Racial Justice Research Fund. The curriculum was developed by a team of disciplinary and teaching experts in biology, physics, biomedical engineering, culturally responsive education, and educational technology, with an Advisory Board of Black leaders from UF, including members from African American Studies, Science Education, and Multicultural and Diversity Affairs. Along with their disciplinary expertise, the Advisory Board contributed critical perspectives on their lived experiences as Black students and scholars. In addition, they guided research that supported our project objectives.

In this project we collected the following data to inform the design of the LA training course:

- Surveys and interviews of Black undergraduate STEM students with focus on perspectives of self-efficacy, identity, and community involvement as important components of a supportive and inclusive undergraduate STEM learning environment.

- Interviews and focus groups with undergraduate LAs, exploring their views on equity in instruction, effective mentorship, anti-racist pedagogy, and cultivation of STEM identity and sense of belonging for students currently underrepresented in STEM.

- Interviews with Black STEM instructors and leaders exploring challenges of reforming undergraduate STEM education with a focus on inclusivity and equity.

**PROJECT OBJECTIVES**

- Transform undergraduate STEM instruction at UF by equipping Learning Assistants (LAs) with knowledge and skills to enact antiracist, inclusive, and equitable practices.

- Develop, test, and refine a transferable, adaptable model for reforming undergraduate STEM education through antiracist, inclusive pedagogies.

- Create and disseminate a repository of professional development materials through open-access channels aimed at infusing anti-racist, inclusive, and equitable practices in undergraduate STEM education.
Assets. Black students who thrive should not be considered “special” and we should not assume Black students need extra help. Students’ unique values, cultural practices, and ways of thinking and understanding are assets, and do not need to be reshaped to fit into the dominant (White) box.

Spaces. “Black spaces” are crucially important social support structures for Black students to thrive. Yet, our classrooms should be safe and welcoming spaces for all students, not just “White spaces.”

Systems. White students have extra advantages, abundant comfortable spaces, power, and access to the “systems” structured for White people. While we cannot affect all systems, our goal should be to level educational opportunities by ensuring that all students understand and can access and navigate academic and support systems within reach. Research shows that existing inequities in education, health, a criminal justice are primarily attributable to systemic structures relating to race.

Personal history and family status. Effort should be made to learn about individual students’ backgrounds and this information should bear upon our teaching. No group of students should be treated as a monolith.

Role models and recognition. Black role models and mentors are crucially important but scarce in science due to systemic structures leading to inequities. Recognition from others is important as a means to identify and succeed as a “science person.” Black faculty and leaders at UF are overtaxed with mentoring Black students. White people can be mentors and role models to Black too. Meaningful recognition can come from many different people who are part of our students’ lives. We must consider restructuring policies to acknowledge and reward faculty who engage in this work.

Awareness. Faculty and learning assistants should become aware of racist policies and ideas that prevent equity in science. Faculty and learning assistants should become more culturally aware. Black students and faculty are too few at UF, especially in science.

While our focus is on Black students in STEM, and we use this term throughout, the ideas and lessons that follow can be applied to marginalized and minoritized groups that may identify as BIPOC, URM, or other names.
NOTES AND SUGGESTIONS FOR INSTRUCTORS USING CULTIVATING EQUITY MATERIALS

It is common to feel underprepared to tackle concepts like antiracism, inclusivity, and teaching to promote equity. As academics, we often feel helpless or unqualified to instruct others on topics in which we do not consider ourselves experts. The truth is, very few STEM teachers could consider themselves well-versed in antiracist pedagogy. Still, the effort to get started is worth every ounce of discomfort. Allow yourself to be humble and learn from your students, your LAs, and your TAs. Make it clear that you care about these issues and give them the opportunity to openly share their own experiences, expertise, and ideas to improve the classroom environment. Here are some suggestions:

• Include a personalized diversity, equity, and inclusion statement in your syllabus.
• Schedule office hours that accommodate working students.
• Provide opportunities for students to give anonymous feedback on your course and your classroom environment.
• Consider diversity when creating teaching materials.

You may find it helpful to do some preparatory work before using the lessons described here. Following is a list of great training resources for inclusivity, antiracism, and racial healing:

Best Advocacy Movement (BAM!) - https://counseling.ufl.edu/resources/bam/
BAM! is a series of asynchronous, online trainings on multiculturalism and social justice.

UF Aspire consultations - https://counseling.ufl.edu/outreach/aspire/aspire-consultations/
Diversity and inclusion experts can tailor workshops to your needs.

Vanderbilt’s Center for Teaching has put together tips for negotiating discussions about race with your students.
INTRODUCTION TO THE CULTIVATING EQUITY TRAINING COURSE

ORGANIZATION
The Cultivating Equity curriculum is organized into four lessons described on the following pages. The lessons require students to review resources prior to meeting with the course instructor, participate in classroom discussions and activities that explore or expand upon the resources, design ways to apply what they learned to their interaction with students in the classroom, and reflect upon their experiences.

GENERAL APPROACH
- Use scenario-based activities, historical context, and real-world experiences to promote discussion and critical thinking about equity issues.
- Provide instruction on antiracist principles and link them with pedagogical ideas and best practices.
- Provide a framework for translation to LA’s classroom practice.
- Provide scaffolding to allow and encourage LAs to develop unique approaches to their work with students.

The Cultivating Equity Learning Assistants (LA) Training Course provides instruction on principles and techniques to foster STEM identity and a sense of belonging among marginalized students in STEM courses by linking antiracist principles with pedagogical ideas and best practices. A key theme of the training course is the focus on helping LAs translate these practices in the classroom and helping students access and build social supports for learning.

While we have developed this set of lessons specifically with the LA Model in mind, we believe they are adaptable and would be equally beneficial for graduate teaching assistants and faculty.

Each lesson contains a number of activities that can be chosen based upon the instructor’s time available and preference.
1) **Implicit bias, “safe spaces”, and cooperative learning.** Upon completing this lesson, participants will be able to:
- Identify their own implicit biases and the ways in which this might affect their teaching.
- Identify characteristics, benefits, and limitations of “safe spaces.”

2) **Asset-based thinking and cultural responsiveness.** Upon completing this lesson, participants will be able to
- Compare deficit vs. asset-based thinking and language and their consequences.
- Discuss and implement ways to empower individual student’s strengths and historical/family backgrounds to support their learning.

3) **Role models, meaningful recognition, and inclusive science.** Upon completion of this lesson, participants will be able to
- Discuss and implement ways to provide historical and current examples of culturally relevant role models.
- Discuss the importance of meaningful recognition for inclusive science.

4) **Becoming an ally in the classroom.** Upon completing this lesson, participants will be able to
- Create a plan for speaking up and taking action to promote inclusion and equity in the classroom.
- Discuss techniques to identify discriminatory policies and ideas that limit student success, and develop language to discuss this with professors and peers.

All undergraduate assistant programs utilizing the LA Model include a pedagogy course for new LAs. The Cultivating Equity curriculum is designed to fit within an existing pedagogy course as a series of insertable lessons. Following is an example of one way in which the four lessons might fit into a typical LA pedagogy course order of topics.

Week 1 - Orientation, introductions, and preparing to teach
Week 2 - Learning theory
**Weeks 3 and 4 - CE lesson 1. Implicit bias, exploring “safe spaces”, and cooperative learning**
Week 5 - Questioning and discussion techniques
**Weeks 6 and 7 - CE lesson 2. Asset-based thinking, culturally responsive teaching, and universal design for learning**
**Weeks 8 and 9 - CE lesson 3. Role models and inclusive science**
Week 10 - Metacognition, self-regulation, and self-efficacy
Week 11 - Student resistance
**Week 12 and 13 - CE lesson 4. Becoming an ally in the classroom**
Week 14 - Evaluating your teaching practices
LESSON 1: IMPLICIT BIAS, "SAFE SPACES", AND COOPERATIVE LEARNING

LEARNING OUTCOMES
LAs will be able to
- Identify their own implicit biases and the ways in which this might affect their teaching.
- Discuss characteristics, benefits, and limitations of "safe spaces".
- Create, implement, and manage inclusive science learning spaces while honoring and exploring "safe spaces."

PREPARATORY HOMEWORK - ESTIMATED TIME TO COMPLETE 1.5 HOURS

Reading


Implicit bias assessment - choose two attributes of interest and take the corresponding IAT.

IN-CLASS ACTIVITIES - ESTIMATED TIME TO COMPLETE 1 HOUR

These in-class activities encourage LAs to think about how their own biases and comfort zones affect participation and group dynamics for this training course AND interactions with their peers. LAs will apply these ideas to establish guidelines to forming and managing student cooperative groups. It's important to consider why people may feel more comfortable in homogeneous groups, why heterogeneous groups are valuable, how safety differs from comfort, and how LAs can support heterogeneous group success.

"Safe spaces" are generally understood as environments where a person can feel free from discrimination, harassment, or harm. "Brave spaces", in the sense of Arao and Clemens, is understood as a space where a person allows themselves to feel uncomfortable and take risks in order to learn and grow. Safe spaces, where one may "let their guard down" and experience rejuvenation and comfort are important for everyone. Most classroom environments feel safe to White students, and not to Black students. Teachers and LAs must strive to create brave spaces where people of privilege are expected to push past feelings of discomfort to create a more inclusive and equitable environment. We must actively model and reward brave behavior and promptly act upon oppressive behavior and bias.

Suggested introductory large group discussion questions (15 minutes)
Were you surprised by what you learned from the implicit bias test?
How might implicit bias affect how you form and manage student group work?

Suggested small group discussion questions (think, pair, share - 15 minutes)
What was a time when you really felt respected by a teacher/professor?
What was a time when you really felt like a valuable member of a team?
How can we assemble and manage teams for an environment of mutual respect?
IN-CLASS ACTIVITIES - ESTIMATED TIME TO COMPLETE 1 HOUR (CONTINUED)

Suggested follow-up large group discussion (15 minutes)
Compare the guidelines outlined in Sensoy, Ö., & DiAngelo, R. (2014) to LA ideas from the think, pair, share:

- Strive for intellectual humility. Be willing to grapple with challenging ideas.
- Differentiate between opinion—which everyone has—and informed knowledge, which comes from sustained experience, study, and practice.
- Hold your opinions lightly and with humility.
- Let go of personal anecdotal evidence and look at broader group-level patterns.
- Notice your own defensive reactions and attempt to use these reactions as entry points for gaining deeper self-knowledge, rather than as a rationale for closing off.
- Recognize how your own social positionality (e.g., race, class, gender, sexuality, ability) informs your perspectives and reactions to your instructor and those whose work you study in the course.
- Differentiate between safety and comfort. Accept discomfort as necessary for social justice growth.
- Identify where your learning edge is and push it. For example, whenever you think, I already know this, ask yourself, How can I take this deeper? Or, How am I applying in practice what I already know?

AFTER-CLASS HOMEWORK - ESTIMATED TIME TO COMPLETE 1.5 HOURS

Reflection
Ask LAs to visit an on-campus social/cultural group meeting (e.g., LGBTQ+, Black, Latinx, Asian) to which they do NOT belong and privately respond to reflection questions.

Suggested reflection questions:
- What did you notice about your feelings as you attended the group?
- What did the group members do to make you feel included?
- What did you wish would have happened to make you feel included?
- Who might benefit from attending this group’s meetings? Who might not benefit?


Suggested reflection questions:
- What do you think Pam meant when she said, “I think Diverse Friends Day is for white people”?
- Pam told Mr. Carbondale that lunch is the only time during school when she can relax without feeling judged. Other than students of color, what sorts of students might share that experience with Pam?

Application
Ask LAs to work in pairs to create written guidelines for forming and managing student groups in the LA-assisted course.

FURTHER READING
Hershock, C. and Milkova, S. Guidelines for Using Groups Effectively Center for Research on Learning and Teaching (CRLT). https://crlt.umich.edu/gsis/p4_1_5
Lesson 2: Asset-Based Thinking and Cultural Responsiveness

LEARNING OUTCOMES

LAs will be able to
- Compare deficit vs. asset-based thinking and language and their consequences.
- Discuss and implement ways to empower individual student’s strengths and historical/family backgrounds to support their learning.

Preparatory Homework - Estimated Time to Complete 1.5 Hours

Entrance Ticket - Reflective Writing

The purpose of this reflection is to get LAs thinking about the topic of equity and inclusion, with a focus on the assets they uniquely bring to our work together.

- What do you think when you hear the words diversity, equity, and inclusion?
- Go back to your responses to the first question. What was easy or difficult about writing this first response? What patterns do you notice in your responses? How does your background or training influence what you wrote?
- List the knowledge, skills, and experiences you bring to a conversation about diversity, equity, and inclusion. State the obvious and the not so obvious, including transformative experiences and stories. Make sure to include aspects of how you categorize yourself, including race, ethnicity, expertise, profession, position, and hobbies. Can you think of instances when these classifications were prominent or possibly altered a conversation or interaction?
- What is the UF’s commitment to DEI and to what extent do you feel like UF is diverse, equitable, and inclusive?

Explore Resources on Culturally Sustaining Pedagogy, and Asset-Based Thinking at Project READY: Reimagining Equity & Access for Diverse Youth, (Module 14) which highlights the work of Dr. Gloria Ladson-Billings and Django Paris, pioneers and leaders in this field. Watch the video in the middle of the page and answer the provided questions.

Reading


In-Class Activities - Estimated Time to Complete 1 Hour

The so-called “achievement gap” persisting between White and BIPOC students cannot be explained by commonly offered explanations such as disparities in socio-economic status and differential access to resources. The data show that even when you control for resources and socioeconomic status (SES), students of color perform at a lower level than their dominant peers. While resource
In what ways does structural racism manifest itself in STEM?

A core idea in McGee (2020) is the need to shift from common approaches aimed at “helping” minoritized students “assimilate into a flawed and biased system” toward “supporting systems that are more racially affirming.” Does the author suggest any ways to achieve this?

Give an example of a teaching practice that is culturally sustaining.

Why is culturally relevant and sustaining pedagogy important for your students?

How does culturally relevant and culturally sustaining pedagogy help students develop a sense of belonging?

How can asset-based thinking contribute to the success of a team?

access and differences in SES are certainly real, the best explanation for the basis of our inequities is that we live in a racially structured society. Rather than focus on perceived deficits, then, our approach should shift from the lens of traditional teaching, learning, and assessment (which tend to value only specific cultures), to new practices, thinking, and understanding. LAs will explore how asset-based thinking and culturally relevant and sustaining pedagogy can be used to approach this shift toward a classroom that values diverse voices and ways of thinking. LAs will apply their knowledge to student interactions, and develop a novel activity to learn more about their students’ assets and/or share their own academic assets.

Suggested introductory large group discussion questions (15 minutes)

- In what ways does structural racism manifest itself in STEM?
- A core idea in McGee (2020) is the need to shift from common approaches aimed at “helping” minoritized students “assimilate into a flawed and biased system” toward "supporting systems that are more racially affirming." Does the author suggest any ways to achieve this?
- Give an example of a teaching practice that is culturally sustaining.
- Why is culturally relevant and sustaining pedagogy important for your students?
- How does culturally relevant and culturally sustaining pedagogy help students develop a sense of belonging?
- How can asset-based thinking contribute to the success of a team?

Suggested small group discussion part 2 (think, pair, share - 15 minutes)


AFTER-CLASS HOMEWORK - ESTIMATED TIME TO COMPLETE 3 HOURS

Application

LA designed activity 1 - Discovering students’ assets - LAs will design an open-ended activity that leads students to explore self-identified strengths, areas to build upon, interests, disinterests, social and family values.

LA designed activity 2 - Sharing academic assets with students - LAs will design a demonstration/guided activity that provides explicit instruction on help resources for their course and discipline and involves LAs sharing personal experiences "navigating" to success.

FURTHER READING


Parker, C. B. 2015 (April 15). Teachers more likely to label black students as troublemakers, Stanford research shows. Stanford News.
LESSON 3: ROLE MODELS, MEANINGFUL RECOGNITION, AND INCLUSIVE SCIENCE

LEARNING OUTCOMES
LAs will be able to
- Discuss and implement ways to provide historical and current examples of culturally relevant role models.
- Discuss the importance of meaningful recognition for inclusive science.

PREPARATORY HOMEWORK - ESTIMATED TIME TO COMPLETE 1.5 HOURS

Reading (choose at least two):


IN-CLASS ACTIVITIES - ESTIMATED TIME TO COMPLETE 1 HOUR

One goal of these in-class activities is to expose the lack of diverse science role models in teaching materials and classrooms, and how this may discourage diversity in science. Another is to think about how recognition from teachers, mentors, and other important human influences can encourage persistence and connection with an identity as a scientist. LAs will explore their own experiences of “meaningful recognition” and discuss their own role models. LAs will use these discussions, and resources for examples of diverse scientists, as a springboard for engaging with their peers.

Suggested introductory large group discussion questions (15 minutes)
- How did the Wood et. al article make you feel?
- Thinking back on your own experiences with science education, what scientists do you remember being featured in your courses? Did you ever wonder about this?
- Carlone and Johnson outlined three components as important for a person to identify as a “science person”: competence, performance, and recognition. Can you describe what the authors meant by these?
- What is stereotype threat? What is stereotype management? What are some ways in which teachers and LAs might mitigate these?
- What sources does Ortiz et al. reveal that can support students' STEM identities?
AFTER-CLASS HOMEWORK - ESTIMATED TIME TO COMPLETE 3 HOURS

Reflection
LAs will choose 1-several of the following resources to explore and choose something they loved to share:
- 500 Queer Scientists
- 500 Women Scientists
- Science and Disability
- SACNAS STEM+CULTURE Chronicle
- 1000 Inspiring Black Scientists in America
- Asian Women Scientists Who Slay

LAs will provide individual written responses to the following prompts.
- How can you provide meaningful recognition to your students in class?
- What, in your opinion, is the best way for teachers to highlight contributions of diverse scientists in class?

FURTHER READING
Lesson 4: Becoming an Ally in the Classroom

Learning Outcomes
LAs will be able to
- Create a plan for speaking up and taking action to promote inclusion and equity in the classroom.
- Discuss techniques to identify discriminatory policies and ideas that limit student success, and develop language to discuss this with professors and peers.

Preparatory Homework - Estimated Time to Complete 1.5 Hours

Reading
Masuwa, Phillip and Sharma, Marsha. Simple guide to allyship. Midlands Leadership and Lifelong Learning Academy. Familiarize yourself with allyship and the important terms that pertain to racial equity by reading pages 1-9.

Lamont, amélie. (2021). Guide to Allyship. Read about why being an ally is important and some do's and don'ts.


Reflection
Reflect on a situation where you witnessed a form of microaggression but didn't react. Thinking about it in retrospect, what would you have done differently? Write your thoughts down. Now, watch Marlon James' video about non-racism vs-anti-racism and read the action spectrum of advocacy[1]. In light of that video and the list of actions you learned,
- How would you change your reaction to the situation? Write your thoughts down.
- Imagine that you were the oppressed subject in the situation. Describe your feelings/emotions in both cases, when no one supported you and when someone actively stood up for you. How would this affect your sense of belonging and self-esteem?

In-Class Activities - Estimated Time to Complete 1 Hour

Suggested introductory large group discussion question (15 minutes):
What is an "ally"?

Suggested small group discussion questions (think, pair, share - 15 minutes)
Using the Speak Up at School Guide ("The Dynamic" section), discuss some ways in which you might speak to authority and limit risks to yourself.

Invite a guest speaker to discuss the rules and regulations of reporting acts of discrimination. Alternatively, review the following pages for reporting acts of discrimination or harassment:
Title IX Office
Compliance Hotlines
University Ombuds
AFTER-CLASS HOMEWORK - ESTIMATED TIME TO COMPLETE 3 HOURS

Application
Choose three scenarios from Appendix B of the Speak Up at School Guide. Write an action plan for what you, as an ally, could do in those scenarios.

Review Project READY: Reimagining Equity & Access for Diverse Youth, Module 13. Write an allyship pledge after reviewing the "Racial Equity Sidekick Pledge".

Ask the LAs to use the activity they designed in Cultivating Equity Lesson 2 (Discovering students’ assets) to explore their own assets and provide individual written responses to the following prompt:

- List your privileges and assets.
- How can you use your privileges and assets to strengthen your allyship? Give an example.

FURTHER READING
