Diversity Beyond Content: Examining Physical and Life Science Fields

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Problems

- Lack of diversity in STEM
- Narrow view of diversity (race, gender, class)
- Moving beyond representation
- Viewing diversity beyond content
- Questioning the "STEM" umbrella

How do the following vary across subgroups of STEM fields?

- Student demographics?
- Student perceptions of culturally engaging pedagogies?
- Student perceptions of institutional commitment to diversity?

Looking within STEM fields and specific STEM majors!

Major Fields

Biological Sciences, Agriculture, & Natural Sciences
- Biology (general)
- Agriculture
- Biochemistry or biophysics
- Biomedical science
- Botany
- Cell and molecular biology
- Environmental science/studies
- Marine science
- Microbiology or bacteriology
- Natural resources and conservation
- Natural science
- Neuroscience
- Physiology and developmental biology
- Zoology
- Other agriculture and natural resources
- Other biological sciences

Physical Sciences, Mathematics, & Computer Science
- Physical sciences (general)
- Astronomy
- Atmospheric science (including meteorology)
- Chemistry
- Computer science
- Earth science (including geology)
- Mathematics
- Physics
- Statistics
- Other physical sciences

Engineering
- Engineering (general)
- Aero-, astronautical engineering
- Bioengineering
- Biomedical engineering
- Chemical engineering
- Civil engineering
- Computer engineering and technology
- Electrical or electronic engineering
- Industrial engineering
- Materials engineering
- Mechanical engineering
- Petroleum engineering
- Software engineering
- Other engineering

Methods: Measures

Course Emphasis

During the current school year, how much has your coursework emphasized the following?

Response options: Very much, Quite a bit, Some, Very little
- Developing the skills necessary to work effectively with people from various backgrounds
- Recognizing your own cultural norms and biases
- Sharing your own perspectives and experiences
- Exploring your own background through projects, assignments, or programs
- Learning about other cultures
- Discussing issues of equity or privilege
- Respecting the expression of diverse ideas

Institution Emphasis

How much does your institution emphasize the following?

Response options: Very much, Quite a bit, Some, Very little
- Demonstrating a commitment to diversity
- Providing students with the resources needed for success in a multicultural world
- Creating an overall sense of community among students
- Ensuring that you are not stigmatized because of your identity (racial/ethnic, gender, religious, sexual orientation, etc.)

RQ1: Proportional Representation in STEM

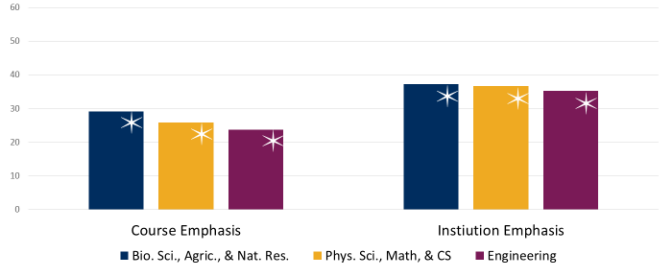
	AI/AKN	Asian	Black	Latina/o	NH/PI	White	Another	Multi
Bio. Sci., Agric., Nat. Res.	+	−	+	+				+
Phys. Sci., Math, CS		+		−		−		
Engineering			−			+	+	−

Often representational diversity investigations stop here.

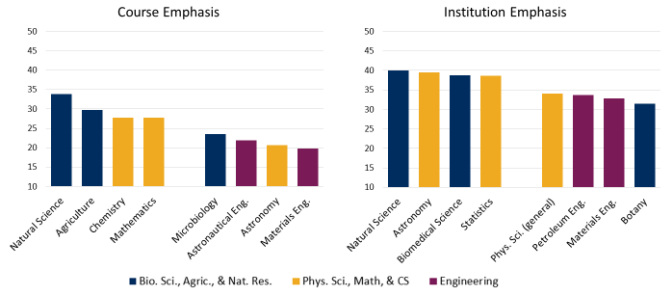
RQ1: Proportional Representation in STEM

	Man	Woman	Non-binary	First-Gen	LGBQ+	Straight	Disability
Bio. Sci., Agric., Nat. Res.	−	+	−	+	+	−	+
Phys. Sci., Math, CS	+	−	+		+	−	+
Engineering	+	−		−	−	+	−

RQ2 & 3: Perception Differences in STEM



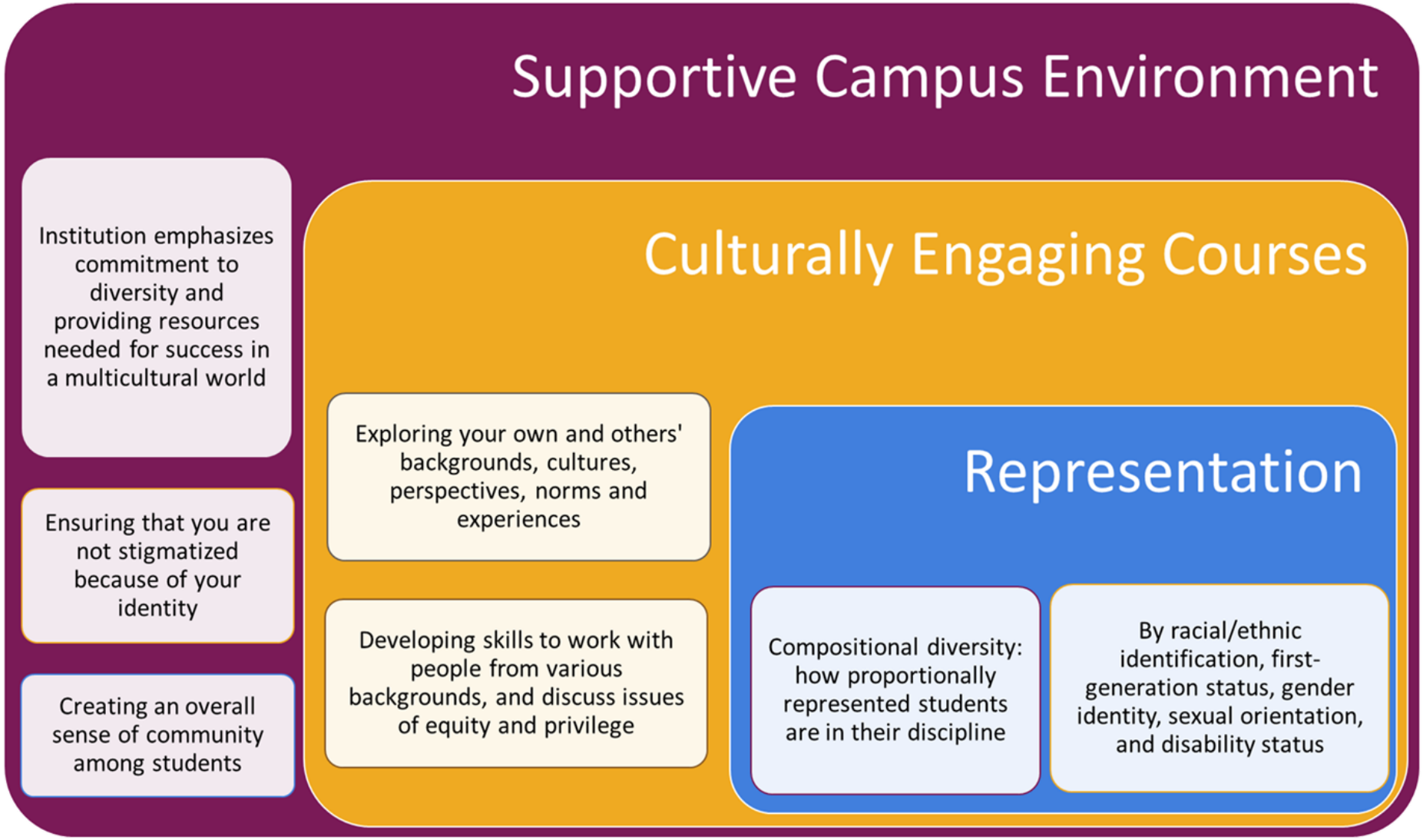
RQ2 & 3: Perception Differences Within STEM Majors



BrckaLorenz, A., Priddie, C., & Haeger, H. (2019). Diversity beyond content: Examining physical and life science fields. Program presented at the 2019 AAC&U's Transforming STEM Higher Education, Chicago.

Nested Model for Diversity and Inclusion

BrckaLorenz, A., Haeger, H., & Priddie, C. (2019). An examination of inclusivity and support for diversity in STEM fields. Paper presented at the 2019 Annual Meeting of the American Educational Research Association, Toronto, Canada.



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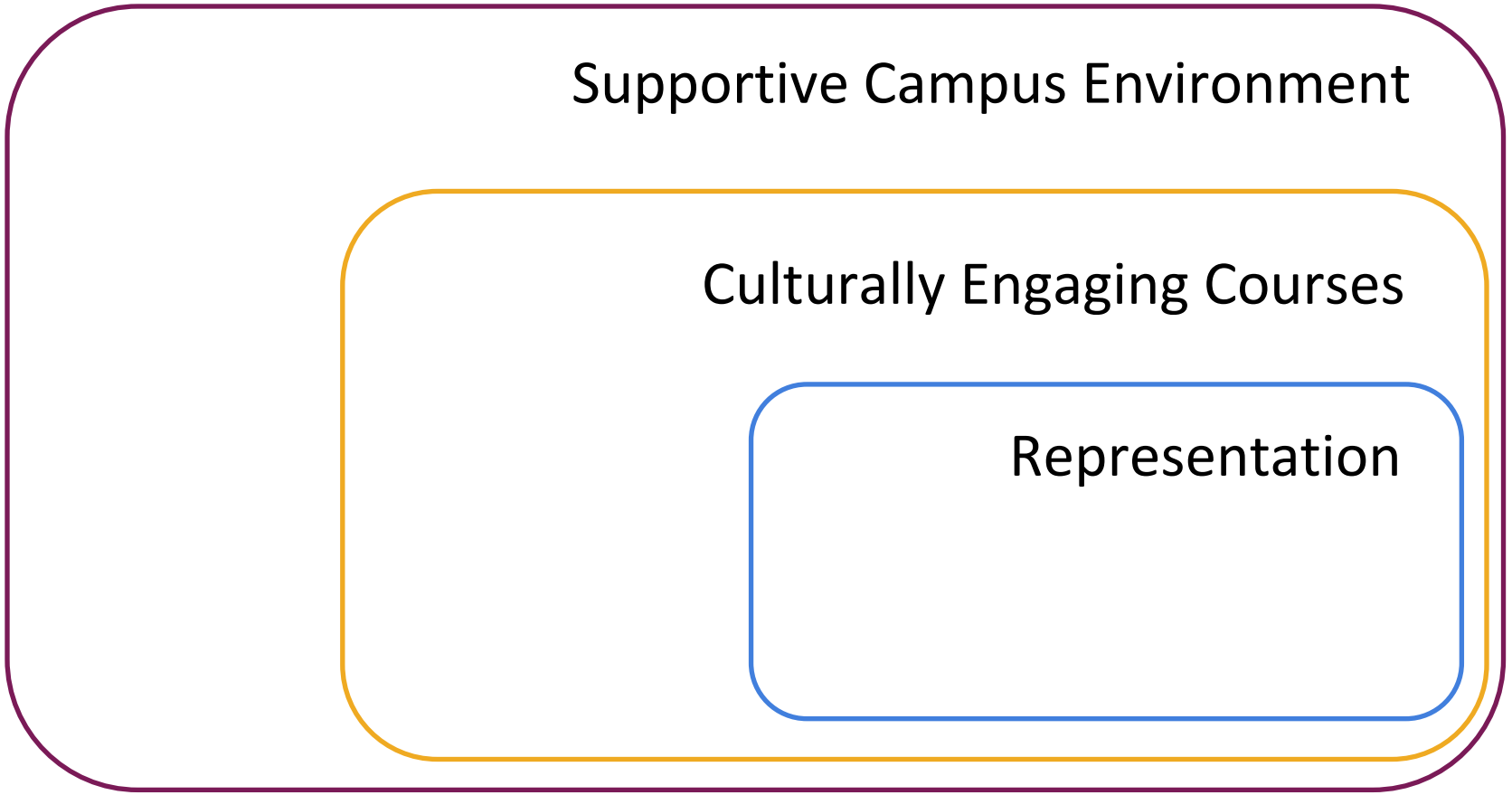
Nested Model for Diversity and Inclusion Activity

Reflecting on your own STEM departments/environments, think about how well you would describe your environments based on this three-tiered model. Think about the following questions.

- Overall, what do you believe your department/institution's focuses on in terms of diversity and inclusion in STEM environments? What areas are strong? What are some challenges you have experienced when trying to implement diversity and inclusion efforts? Identify any strengths and weaknesses in each tier for your STEM department/environment.
- Thinking about each lens for STEM students, how do you believe they would describe each tier at your institution? Would they say one tier is developed more than another tier? Would all STEM students respond similarly or would experiences differ by department?



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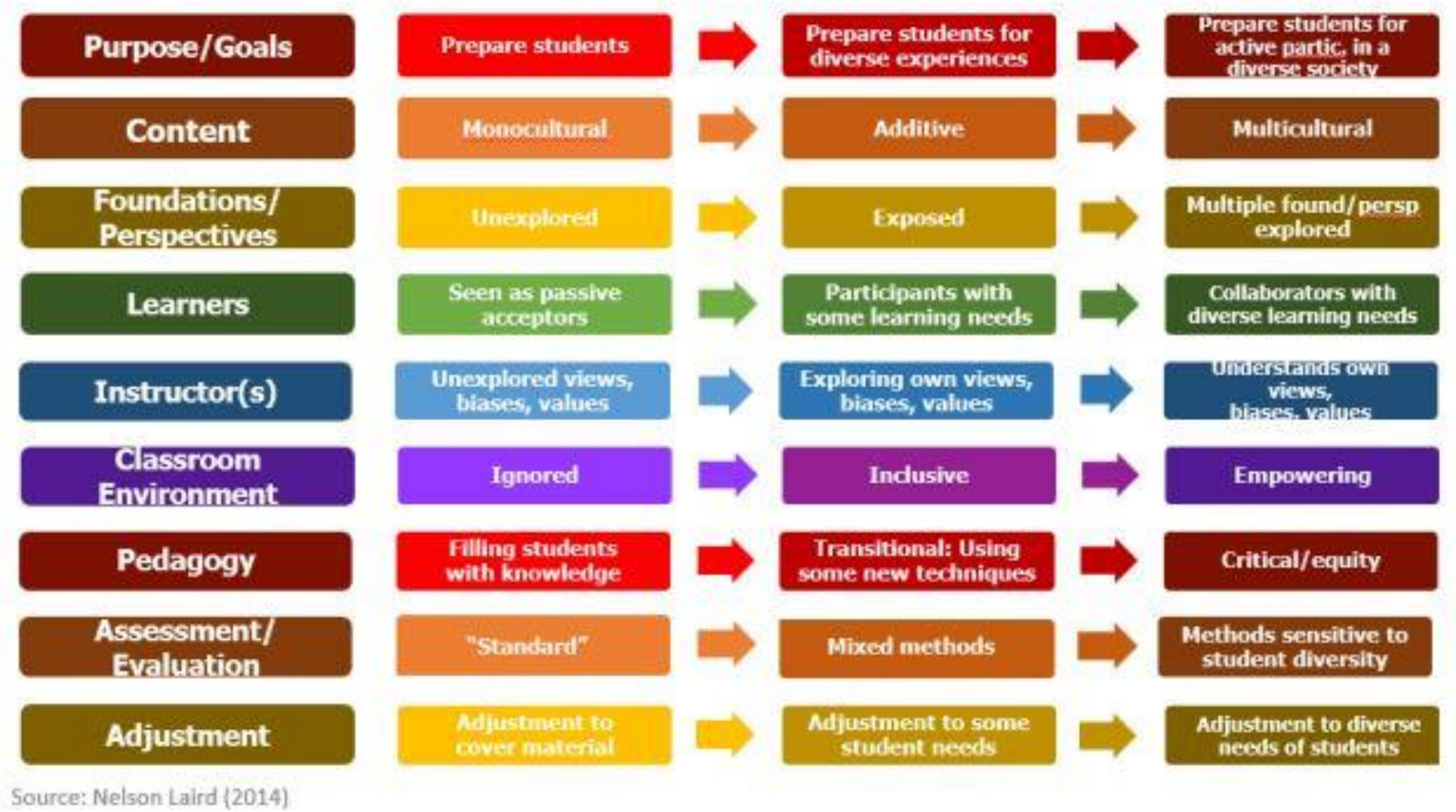
Diversity Inclusivity Model



Source: Nelson Laird (2014)

Nelson Laird, T. F., Hurtado, S. S., Yuhas, B. (2018, April). *Measuring the diversity inclusivity of college courses: An update.* Presented at the American Educational Research Association Annual Meeting, New York, NY.

Nelson Laird, T. F. (Fall 2014). Reconsidering the inclusion of diversity in the curriculum. *Diversity & Democracy*, *17*(4).

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