



An Examination of Inclusivity and Support for Diversity in STEM Fields

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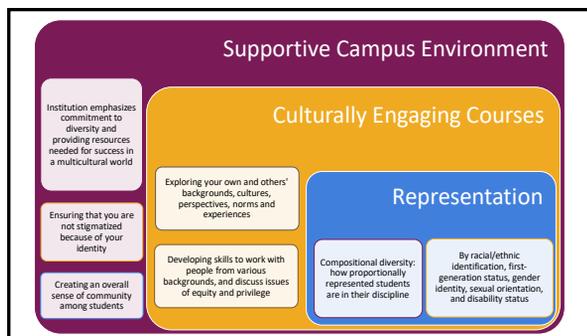
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Problem

- Lack of diversity in STEM
- Narrow view of diversity
 - Race
 - Class
 - Gender
- Beyond the numbers
 - Looking at diversity and inclusion in a nested model

What do you think of when you think of inclusive and culturally engaging courses and environments?



Research Questions

1. How proportionally represented are students in STEM fields by racial/ethnic identification, first-generation status, gender identity, sexual orientation, and disability status?
2. How does perceptions of institutional commitment to inclusivity and culturally engaging coursework compare for STEM and non-STEM students?
3. Within STEM fields, how do students with different identity characteristics perceive institutional commitment to inclusivity and culturally engaging coursework?

Methods: Data

- 2017 administration of the National Survey of Student Engagement (NSSE)
 - Administered to first-year and senior students at four-year colleges and universities
- 133 institutions that selected to administer the Inclusiveness and Engagement with Cultural Diversity (ICD) Topical Module
 - Coursework emphasis on inclusive and culturally engaging activities
 - Institutional emphasis on diversity and inclusion
- Over 23,000 first-years and 30,000 seniors

Major Fields

Non-STEM (n ~ 27,000)	STEM (n ~ 27,000)
• Arts & Humanities	• Biological Sciences
• Social Sciences	• Agriculture
• Business	• Natural Resources
• Communications	• Physical Sciences
• Media	• Mathematics
• Public Relations	• Computer Sciences
• Education	• Engineering
• Health Professions	
• Social Service Professions	

RQ1: Proportional Representation in STEM

		Non-STEM	STEM
Racial/ethnic identity	American Indian or AK Native	+	-
	Asian	-	+
	Black or African American	+	-
	Hispanic or Latino	+	-
	White	+	-
	Other	-	+
Gender identity	Man	-	+
	Woman	+	-
	Another gender identity	-	+

RQ1: Proportional Representation in STEM

		Non-STEM	STEM
Parental education	Not first-generation	-	+
	First-generation	+	-
Sexual orientation	Lesbian	+	-
	Queer	+	-
	Questioning	-	+
Disability	No	-	+
	Yes	+	-

RQ2: Perception Differences by STEM

Inclusive and culturally engaging coursework

- STEM students' coursework emphasized significantly ($p < .001$) and notably ($B = -.5$) less culturally engaging coursework content compared to non-STEM students

Institutional commitment to inclusion and diversity

- STEM students perceive significantly ($p < .001$) less of an institutional emphasis on supporting inclusion and diversity, but the difference is small ($B = -.1$)

RQ3: Differences within STEM

		Coursework Emphasis	Institution Emphasis
Racial/ethnic identification	Asian	+	
	Black or African American	+	
	White	-	
	Multiracial	-	
Gender identity	Man		+
	Woman	+	+
	Another gender identity		-
Disability	No	+	+
Sexual orientation	Straight	+	+
Class level	Senior	-	-
Parental education	First-generation	+	

Conclusion

- Nested understanding of diversity and inclusion on campus

Supportive Campus Environment Conclusions

Perception of campus commitment to diversity is not monolithic

STEM students were less likely to perceive an institutional commitment to diversity and inclusion

More work is needed to ensure that STEM students feel safe, valued and supported

Culturally Engaging Courses Conclusions

STEM students were less likely to experience culturally engaging curriculum

Experiences with culturally engaging courses varied by student characteristics

Representation Conclusions

Compositional diversity: Students hold many different **intersectional** identities

Students **underrepresented** in STEM: URM, first-generation, women, LGBTQ+, and students with a disability

Implications

- Campus leaders should proactively discuss the ways that messages about welcome, acceptance, and inclusion can extend beyond the current norm for STEM programs
- Culturally engaging coursework
 - Culturally engaging classes can have a dramatic impact on the retention of students of color in STEM (Aronson & Llaughter, 2016; Jackson, Galvez, Landa, Buonora, & Thoman, 2016)
 - Diversity Inclusivity Framework strategies beyond curricular content where courses can be more inclusive: having instructors explore and better understand their own views, biases, and values of the learners in their courses.

Implications

- As institutions work to improve their campus climate and demonstrate their commitment to diversity, they should consider this variability to ensure that interventions are culturally relevant to the full diversity of the student population.
- It is important that campus leaders proactively work toward making the support for students in STEM universal.

Questions? Thanks so much for joining us!

Find our slides as well as other information about NSSE at nsse.indiana.edu

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Analysis

1. How proportionally represented students are in STEM?
 - Chi-square tests
2. How do students' perceptions of institutional commitment to inclusivity and culturally engaging coursework compare for STEM and non-STEM students?
 - Regression equations where the dependent variable in the models was either the *Coursework Emphasis* or *Environment Emphasis* scales
3. How do students with different identity characteristics perceive institutional commitment to inclusivity and culturally engaging coursework within STEM fields?
 - Series of regression models
 - Limited these models exclusively to students with STEM majors