

Research Questions

1. To what extent do sustainability-focused and sustainability-inclusive courses at UM include themes or concepts from all three pillars of sustainability?
2. Do courses at the University of Montana impact student understanding, beliefs, attitudes, and intentions about sustainability?
3. From among the small group of sustainability courses sampled, are students' understanding, beliefs, attitudes or intentions impacted by course content?

Background & Methods

Course Inventory Assessment

- UM's 2021 Sustainability Tracking and Assessment Report (STARS) course inventory: 175 sustainability-focused and sustainability-inclusive courses
- Three pillars of sustainability
 1. Social: equity, ethics, environmental justice
 2. Environmental: ecology, climate change
 3. Economic: development and viability

Student Outcomes via Surveys

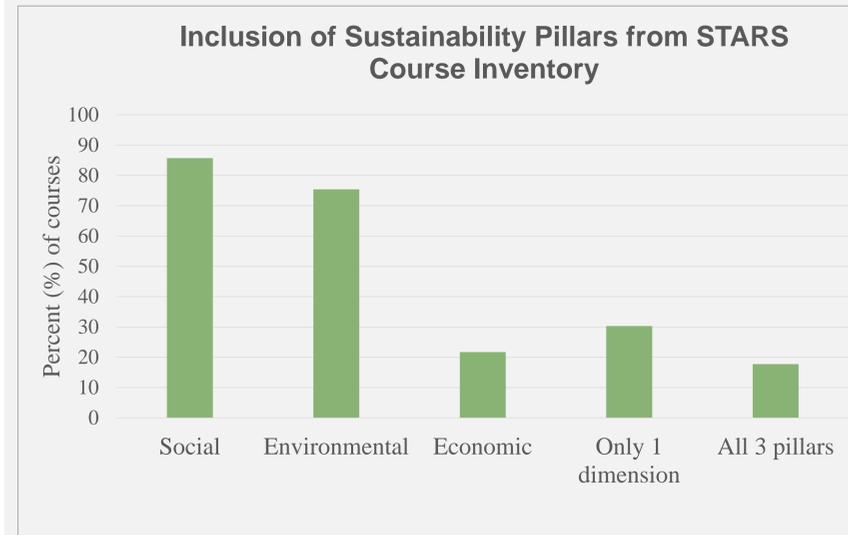
- 3 courses surveyed pre- and post-semester of fall 2021: *Ethics and Sustainability*, *Water and Sustainability*, and *Sustainable Business Practices*
- Student outcome definitions:
 - Understanding: knowledge, skills, and mindsets that allow students to become committed to building a sustainable future and making informed decisions
 - Beliefs: "govern the regime of a person's value, state of mind, and conviction which can be shaped by knowledge, culture, and upbringing." (Tang 2018)
 - Attitudes: "the expression of a person's belief demonstrated via actions and thoughts." (Tang 2018)
 - Intentions: "the state of mind that steers a person's future action." (Tang 2018)

Syllabi Assessment

- Sustainability Competencies Framework (Wiek et al. 2015):
 1. Systems Thinking: ability to analyze sustainability issues that impact different domains and scales
 2. Futures Thinking: ability to anticipate how sustainability problems might evolve over time and create desirable future visions based on development pathways
 3. Values Thinking: ability to apply sustainability values, principles, goals, and targets informed by concepts such as justice, fairness, and responsibility
 4. Strategic Thinking: ability to develop and test strategies toward sustainability while accounting for consequences and cascading impacts
 5. Collaboration: ability to engage with different types of collaboration and build skills such as in communication, negotiation, and leadership

Results

Course Inventory Assessment



Syllabi Assessment



Sustainable Business Practices:

- Collaboration, Strategic and Futures Thinking clearly integrated
- Values Thinking seemed to be lacking



Water and Sustainability:

- Systems, Strategic, and Future Thinking clearly integrated
- Collaboration seemed to be lacking



Ethics and Sustainability:

- Systems, Futures, and Values Thinking clearly integrated
- Collaboration seemed to be lacking

Conclusions & Recommendations

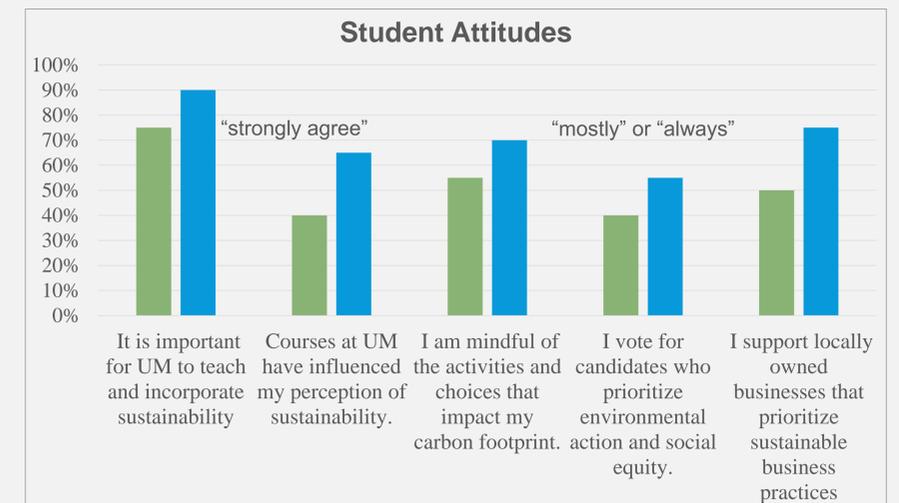
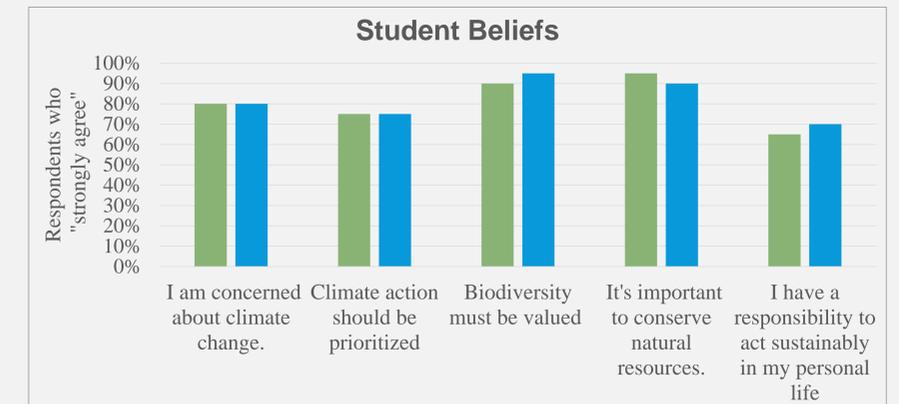
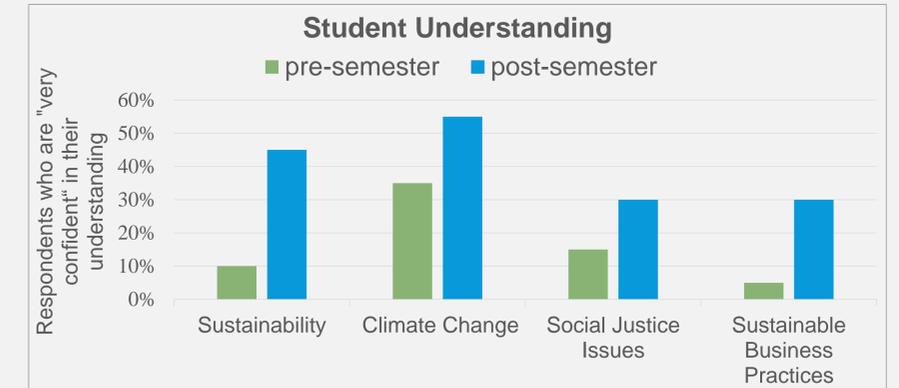
Key Takeaways:

- Only 18% of sustainability courses at UM integrate all three pillars of sustainability.
- Student attitudes shifted the most between pre- and post-semester surveys, while beliefs tended to stay the same.
- Syllabi content and tools varied. It was difficult to assess and compare courses.

Looking Forward:

1. Create a campus-wide collaborative and interdisciplinary strategy for curricula development with a common framework and definition(s).
 - Utilize leaders and efforts on campus
 - Integrate values thinking
2. Create a standardized way to quantify and measure sustainability courses across campus.

Student Survey Outcomes



Literature Cited

- Tang, K. H. D. (2018). Correlation between sustainability education and engineering students' attitudes towards sustainability. *International Journal of Sustainability in Higher Education*, 19(3), 459-472. 10.1108/IJSHE-08-2017-0139
- Wiek, A., Bernstein, M., Foley, R., Cohen, M., Forrest, N., Kuzdas, C., Kay, B., & Withycombe Keeler, L. (2015). Operationalising competencies in higher education for sustainable development. In: Barth, M., Michelsen, G., Rieckmann, M., Thomas, I. (Eds.) (2015). *Handbook of Higher Education for Sustainable Development*. Routledge, London. pp. 241-260.

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