# Differences between students and teachers in the perceived relevance of a localized climate change unit

Problem: In climate education, locally consequential materials are needed that draw attention to actions students can take and that can support agency and hope (Lee & Grapin, 2022; Monroe et al., 2019).

Research Question: How do teachers and students perceive the relevance of a localized, phenomenon-driven climate change unit compared to teachers' business-as-usual approach to teaching about climate change?

|	Total Sample	BAU Sample	Localized Unit Sample
	2065	1123	945
	Total Classes	BAU Classes	Localized Classes
	143	77	66

Table 1. Overall BAU and Localized Unit sample sizes.
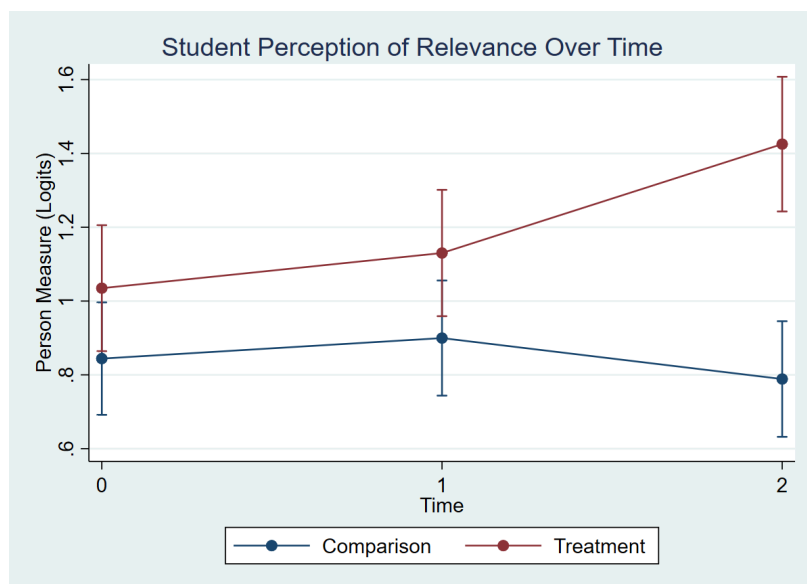
The localized unit **did not have a significant effect** on students' perception of relevance over time compared to the BAU (β = 0.19, p = 0.102). Students' perceptions remained relatively stable across both units with no significant changes at Time 1 (β = 0.06, p = 0.488) or Time 2 (β = -0.06, p = 0.491). A **significant interaction** effect between treatment and time emerged at Time 2 for the localized unit (β = 0.45, p < .001), indicating localized unit students reported higher relevance at the end of the unit compared to the BAU. There was **no significant interaction** at Time 1 (β = 0.04, p = 0.743).
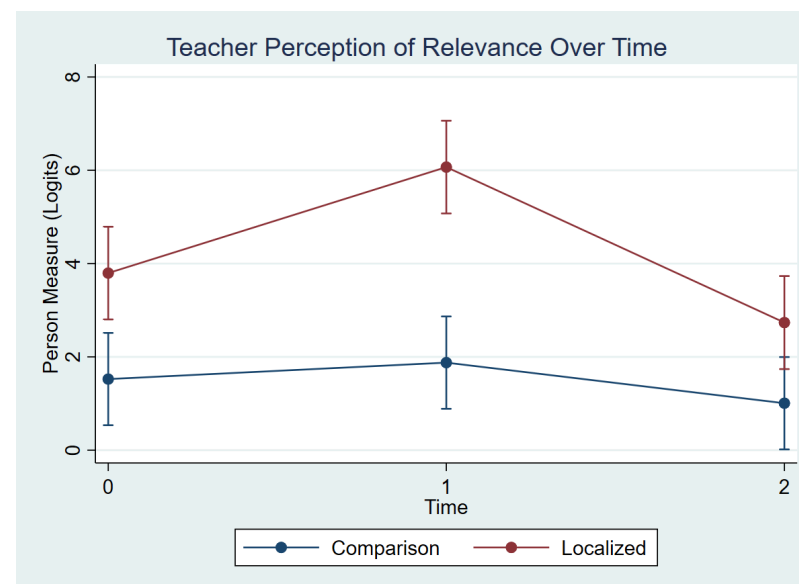
There was a **large, significant, and positive effect** of the localized unit on teachers' perceived relevance of the unit to students (β = 2.27, p < 0.001). Teachers' perceptions of relevance changed significantly over time in both units, with an increase at Time 1 (β = 0.35, p = 0.005) and a decrease at Time 2 (β = -0.52, p < 0.001). **Significant interaction effects** between treatment and time were observed, with a large positive interaction at Time 1 (β = 1.92, p < 0.001) and a **negative interaction** at Time 2 (β = -0.54, p = 0.005).

Change Over Time of Perception of Relevance
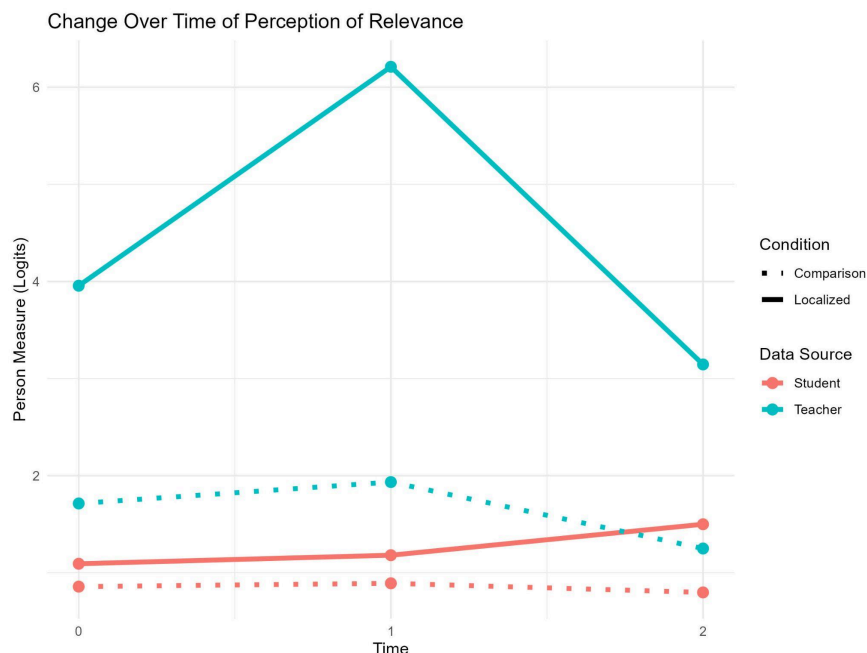
Teachers started with a higher overall perceived relevance of both the BAU and localized units than did students but did not perceive the localized unit to be as relevant as it was to students in the end.

Item 1: Today's science lesson was personally meaningful (to me/to my students).

Item 2: Today's lesson relates to a problem we have in our city/town/community that needs to be solved.

Item 3: If people in my city or town understood the science (we learned/I taught) in today's lesson, they would do something that could help make our city or town a better place.

	Time	Item 1 Student	Item 1 Teacher	Item 2 Student	Item 2 Teacher	Item 3 Student	Item 3 Teacher
BAU	0	2.96	4.20	3.72	3.80	3.48	4.24
	1	4.20	3.96	3.80	3.80	3.43	3.92
	2	3.06	4.44	3.48	4.28	3.38	4.52
Localized Unit	0	3.96	4.68	4.24	4.96	3.56	4.84
	1	3.02	4.80	3.57	4.96	3.58	4.80
	2	4.44	4.68	3.80	5.42	3.75	5.08

Table 2. Average perceived relevance scores on perceived relevance items.

Discussion Questions

- For the localized conditions (solid lines in the graph above):
  - What could be causing teachers to perceive the relevance of the localized unit to be decreasing while their students' perceived relevance is increasing?
  - What could be causing students to experience noticeably lower relevance than teachers in the localized condition?
- What are the broader implications of these findings for customizing curriculum to attend to local relevance?
- What are the broader implications of these findings for phenomenon-driven instruction intended to be relevant to students?

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