

# Equity in Physics Education: Organizing for Change as a Graduate Student



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# Underlying Premise

**Graduate students can successfully organize to make change in their departments to increase equity.**

How do I know?



**Student organizing** in the UC Berkeley physics department to co-create the Compass Project



**Postdoctoral research on institutional change** in the CU Boulder Center for STEM Learning

# Overall Goal

**Provide you with some lessons learned about how to be successful at departmental change.**

## Assumptions:

- You have recognized an equity issue that you want to address
- You have like-minded peers to work with
- You (perhaps) have started to work on the issue, but you have concerns: Will your work matter? Are you spending time on the right things? Can you really make a difference in the long term?

# An Example: The Compass Project



The screenshot shows a web browser window displaying the website for the Compass Project. The browser's address bar shows the URL [www.berkeleycompassproject.org](http://www.berkeleycompassproject.org). The website has a dark navigation bar with links for "About", "Courses & Programs", "People", "Compass + You", "Blog", "Store", and "Contact". A search bar is located on the right side of the navigation bar. Below the navigation bar, the website features the logo for "THE COMPASS PROJECT" on the left, which consists of a stylized blue compass icon and the text "THE COMPASS PROJECT" in blue and gold. To the right of the logo are social media icons for LinkedIn, Twitter, Facebook, YouTube, and RSS. The main content area is divided into two columns. The left column contains a black and white photograph of a large group of students posing in front of a building with large windows. Below the photograph is a caption that reads "Compass visits the Exploratorium". The right column contains a heading "Welcome to Compass." followed by a paragraph of text describing the project's goals and achievements.

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 THE COMPASS PROJECT



  
Compass visits the Exploratorium

## Welcome to Compass.

The Compass Project is a self-formed group of graduate and undergraduate students in the physical sciences at UC Berkeley. Our goals are to **improve undergraduate physics education**, provide our participants with opportunities for **professional development**, and increase **retention** of students, especially those from populations typically underrepresented in the physical sciences. Compass fosters a diverse, collaborative student community by providing a wide range of services, including a summer program, fall and spring semester courses, mentoring, a research lecture series, and other academic and social support. Our efforts have been recognized by the American Physical Society, who presented Compass with the [2012 Award for Improving Undergraduate Physics Education](#).

# Features of Successful Change Efforts

Some change is easy to enact.

Making physics departments more equitable is NOT this kind of change.

To maximize your chance of success:

- Develop a shared vision
- Recognize that change is a process (not an event)
- Explicitly focus on organizational sustainability
- Do not ignore culture

# Develop a Shared Vision

A **shared vision** is a deep understanding of what a group is trying to achieve, co-created and owned by the members of the group.

Shared vision is critical because it

- motivates individuals to commit to the group
- supports meaningful decision-making
- allows the group to measure progress

Principles that underlie Compass-inspired programs

1. foster supportive learning communities
2. engage students in the process of doing authentic physics
3. help students develop professional skills
4. empower students to take ownership of their education
5. increase diversity and equity in STEM

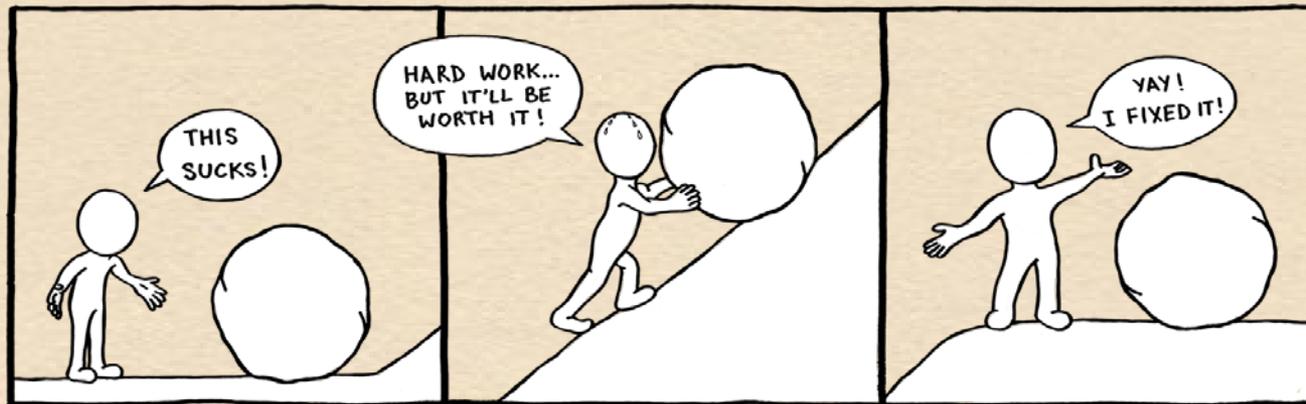
# Develop a Shared Vision

## Recommendations:

- Have vision-level conversations early and often (do not give into the temptation to just “do the work” without knowing that you are all trying to do the same work).
- Set aside explicit time to develop mission statements, agree on organizational values, etc.
- Don't know how to have a vision-level conversation? Ask the internet or folks in an organization you think is doing well.

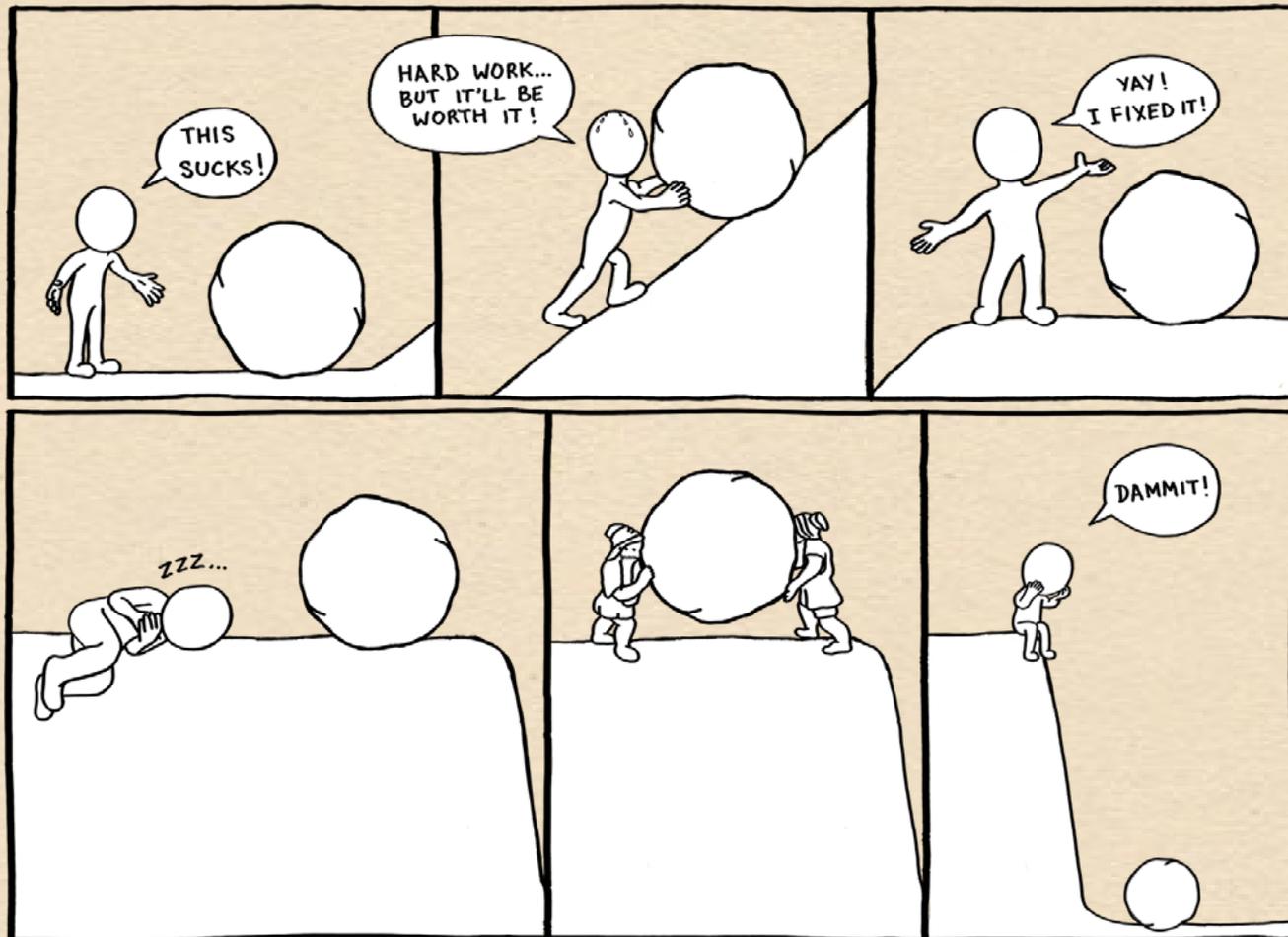
# Recognize that Change is a Process

How we wish that change worked.



# Recognize that Change is a Process

How change actually works.



# Recognize that Change is a Process

**The moral:** For complex systems (universities count!), changes do not sustain themselves!

- There is probably a long history that led to the boulder being at the bottom of the hill in the first place
- There are probably lots of gnomes (external pressures, perverse incentives, deeply-held beliefs) that will try to put the boulder back where it started.
- Compass example: Funding the summer program

## Recommendations:

- Assume that any major changes you make will require constant energy to maintain.
- Look for (and try to understand) the gnomes.
- Adrianna Kezar, *How Colleges Change: Understanding, Leading, and Enacting Change*

# Focus on Organizational Sustainability

**Organizations also don't sustain themselves.** This is particularly true for student groups (and is why administrators tend to assume they won't last).

- The “timescale” of a student-leader (even a grad student...) is short
- Student-leaders are (typically) volunteering their time
- Students (typically) don't have the power to create enduring structures (classrooms, committees, courses, etc)

# Focus on Organizational Sustainability

**Create explicit pathways and motivation for new student leadership.**

- Compass summer program as a recruiting tool for grad students
  - Annual curriculum redesign led to feeling of ownership over Compass
  - Deep connection with the students
- Deliberately creating small, concrete tasks for new leaders

**Take advantage of opportunities to create structures and align with existing structures when they arise.**

- Berkeley has a mechanism for students to teach for-credit courses. Compass used this to teach its courses.
- When the physics department hired a new fundraiser, Compass proactively set up meetings with her.

# Do Not Ignore Culture

Physicists' belief about physics culture: “a culture of no culture, which longs passionately for a world without loose ends, without temperament, gender, nationalism, or other sources of disorder—for a world outside human space and time.” (Traweek 1988)

This is nonsense. **Culture exists and matters.**

- **Basic Underlying Assumptions:** Unconscious, taken-for-granted beliefs and values. So unquestioned even insiders would struggle to articulate them.
- **Enculturation:** We all exist in an overlapping set of cultures that deposit numerous Basic Underlying Assumptions in our heads. **At least some of these assumptions are aligned with racism, sexism, classism, homophobia, transphobia, ableism, and so on.** This is unavoidable!

# Confront your own Enculturation

**For your group to be effective, you must all seek out and confront these assumptions.**

- This is particularly important the fewer dimensions of marginalization present in you and/or your group.
- Compass was fortunate to have (relatively) diverse leaders, but we didn't know it all "by default"

**Commit as a group to self-education about equity.**

- Find syllabi from intro Gender/Black/Latino/Queer Studies courses and read the basics.
- Talk to the staff at multicultural centers on your campus.
- Consume media created by marginalized people.
- Ask more experienced people for help!

# Final Thought: Why Equity?



“If you have come here to help me, you are wasting your time. But if you have come because your liberation is bound up with mine, then let us work together.”

—Aboriginal activists group, Queensland, 1970s.

**Thanks!**

# Questions for You

What are your main take-aways from this presentation?

What questions do you still have?

If you are part of a equity-focused change effort (or thinking of starting one), do any of these tips seem relevant to you?

- Develop a shared vision
- Recognize that change is a process (not an event)
- Explicitly focus on organizational sustainability
- Do not ignore culture

# Brief History of Compass

- Founded in 2006 by three physics grad students who recognized need to support underrepresented physics undergrads
- Started as summer program for incoming first years; PER-based curriculum, developed from scratch
- Quickly expanded to include mentoring program, research lecture series, office hours, social events; eventually 4 semester-long courses, high school outreach
- “Leaderless” organizational structure; flat hierarchy; focus on mission and values. Undergrad leadership starting in 2008 (when grad students became overwhelmed)
- Caught the attention of PER community in 2009; invited talks starting in 2010; PER publications starting in 2013