

Fostering Positive Cultural Changes in STEM Departments: Two Models of Institutional Change



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Overall Project Goal

“To influence the culture of STEM departments at AAU universities so that they will use sustainable, student-centered, evidence-based, active learning pedagogy in their classes, particularly at the first-year and sophomore levels.”

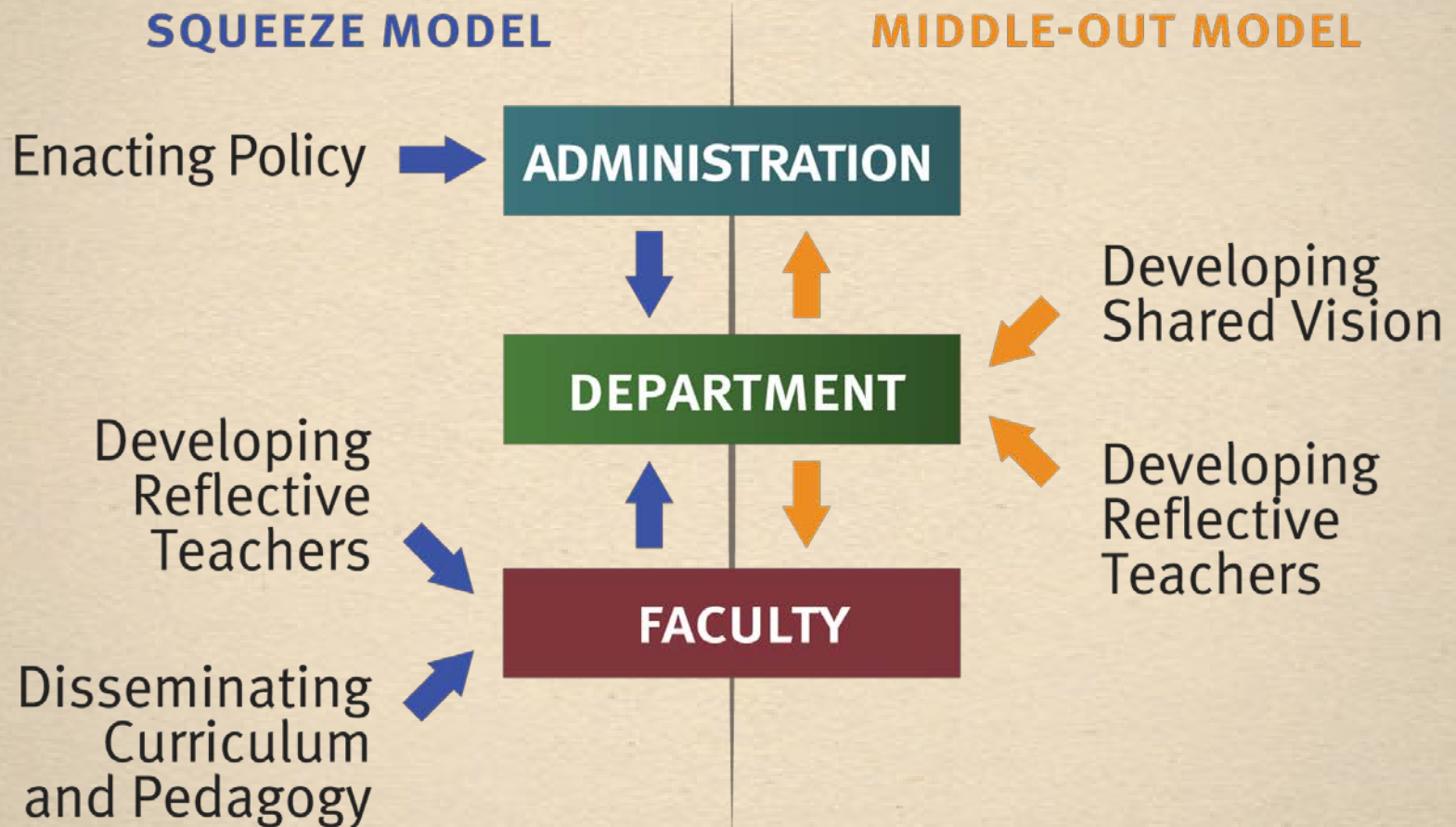
— Association of American Universities

Review of Change Literature

		INTENDED OUTCOME	
		PRESCRIBED	EMERGENT
ASPECT TO BE CHANGED	INDIVIDUALS	Disseminating Curriculum & Pedagogy 30.4%	Developing Reflective Teachers 33.5%
	ENVIRONMENTS	Enacting Policy 30.4%	Developing Shared Vision 8.4%

Henderson, Beach, and Finkelstein, *J. Res. Sci. Teach.* **48**, 952–984 (2011)

Two Models of Change



Squeeze Implementation

Use measures of student learning to engender evidence-based decision-making.

Encourage development of **administrative** structures that value student-centered education

FACULTY SENATE:

- Develop a **framework for teaching excellence** that can be adopted and contextualized by departments in promotion and tenure guidelines

SENIOR ADMINISTRATION:

- Require **evidence of student learning** in tenure and promotion decisions

Encourage **departmental** shifts from “above” and “below”

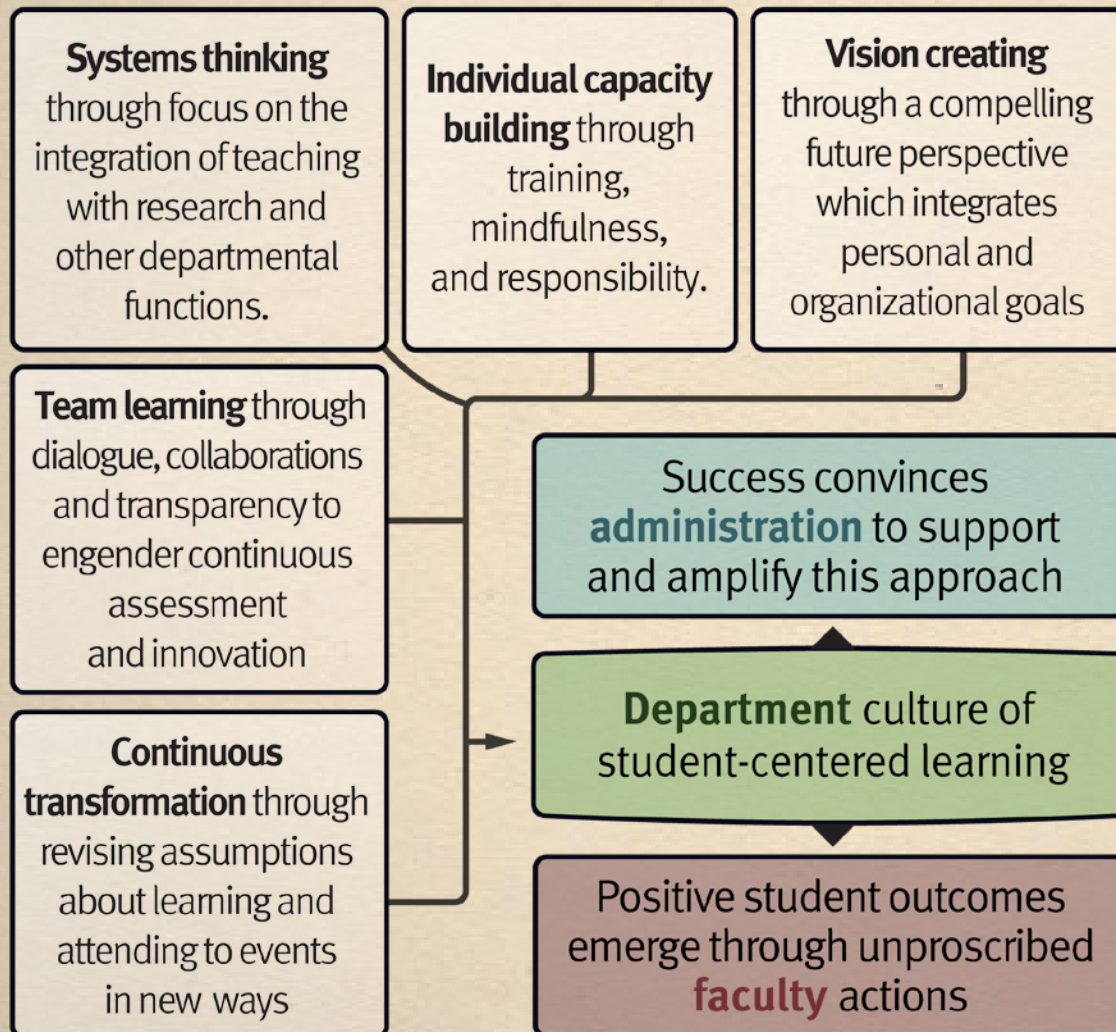
DEPARTMENTAL ACTION TEAMS (DATS):

- Work with **teams of faculty** over a year to identify and address common problems, with a focus on collecting data and building community/teamwork
- Achieve **stability** that allows DATs to continue after support is withdrawn, ideally integrating into departmental governance
- Draw from SoTL, FLC, and SEI knowledge

Encourage student-centered shifts in **faculty** beliefs and practices

Middle-Out Implementation

Organizational change process through departmental retreats and working groups.



Questions?

Come find me at my PERC poster: **P2-7.**

Change Principles

Effective change efforts:

1. align with or focus on changing the **beliefs** of the individuals involved
2. involve **long-term** interventions (a semester or more)
3. require design that is compatible with the **complex nature** of the university ecosystem.
4. have an **emergent** component, giving individuals or groups agency in the change process.
5. take the **department** as the key unit of change.
6. leverage and create **community** centered on teaching and learning
7. lead to difficult-to-revert **structural changes** aligned with the change effort
8. are maintained by **internally-driven processes** that lead to continuous refinement.