The $(STEM)^2$ Network

Systems Change Theory and Theory of Change

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With thanks to Dr. Emily Gates and Clara Shim, Boston College

Agenda

Session 1

12:00 - 12:10 Introductions

12:10 - 12:25 Systems mapping

- 12:25 - 1:15 Exercise: Draw Rich Pictures
- 1:15 - 1:30 Debrief

Break

1:30 - 2:30 Break

Session 2

2:30 - 2:35 Systems change framework

- 2:35 - 3:05 Exercise #1: Aligning change theory and actions
- 3:05 - 3:15 Debrief

3:15 - 3:20 Theory of change

- 3:20 - 3:50 Exercise #2: Theory of change
- 3:50 - 4:00 Debrief

Systems Change Framework

Goal: Identify one area your team thinks should be transformed and relate to the systems change framework

Deliverable: Completed systems change alignment with identified actions for change

The Iceberg

A Tool for Guiding Systemic Thinking

Events
What just happened?
Catching a cold.

React

Patterns/Trends
What trends have there been over time?
I've been catching more colds when sleeping less.

Anticipate

Underlying Structures
What has influenced the patterns?
What are the relationships between the parts?
More stress at work, not eating well, difficulty accessing healthy food near home and work.

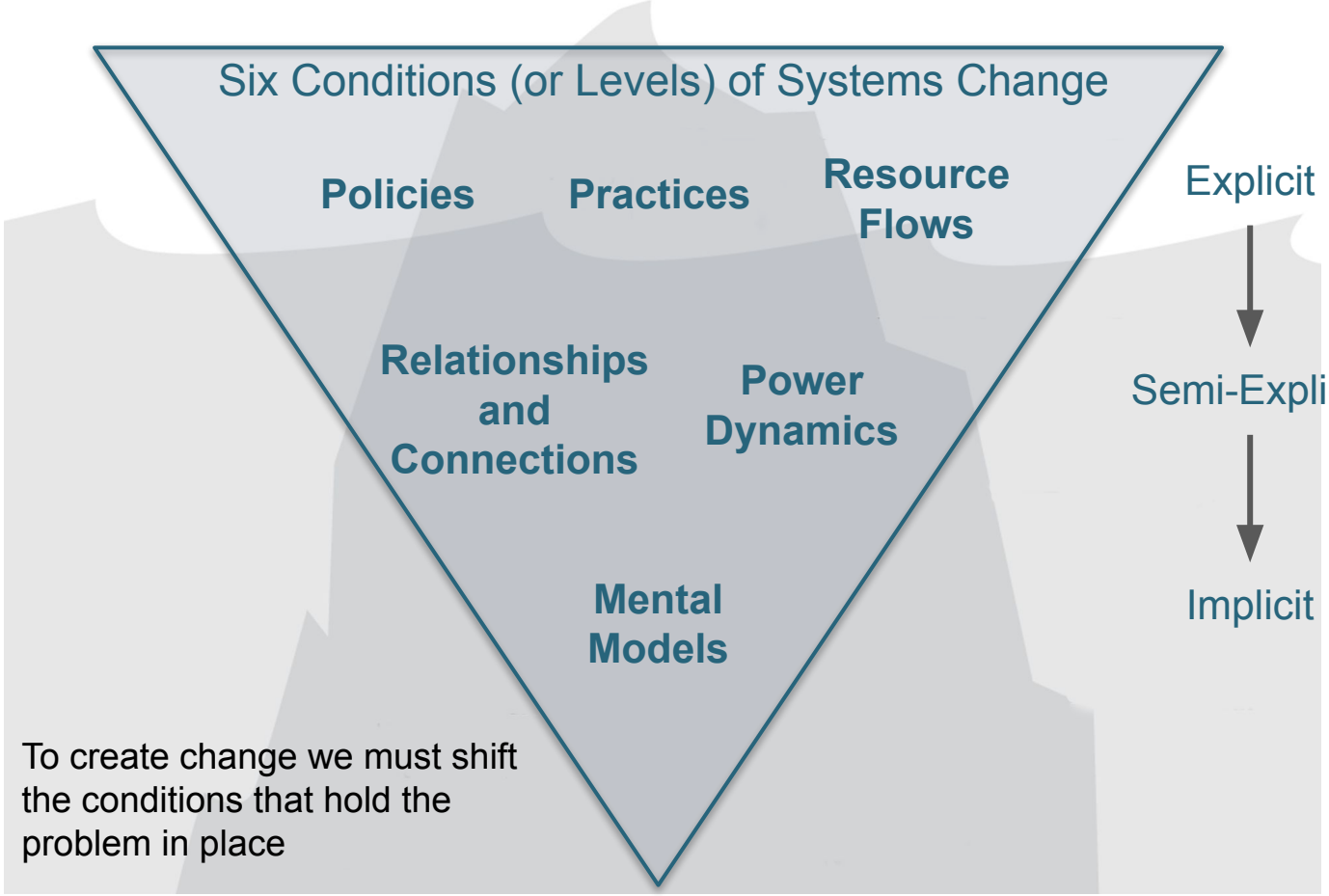
Design

Mental Models
What assumptions, beliefs, and values to people hold about the systems?
What beliefs keep the system in place?
Career is the most important piece of our identity.
Healthy food is too expensive. Rest is for the unmotivated.

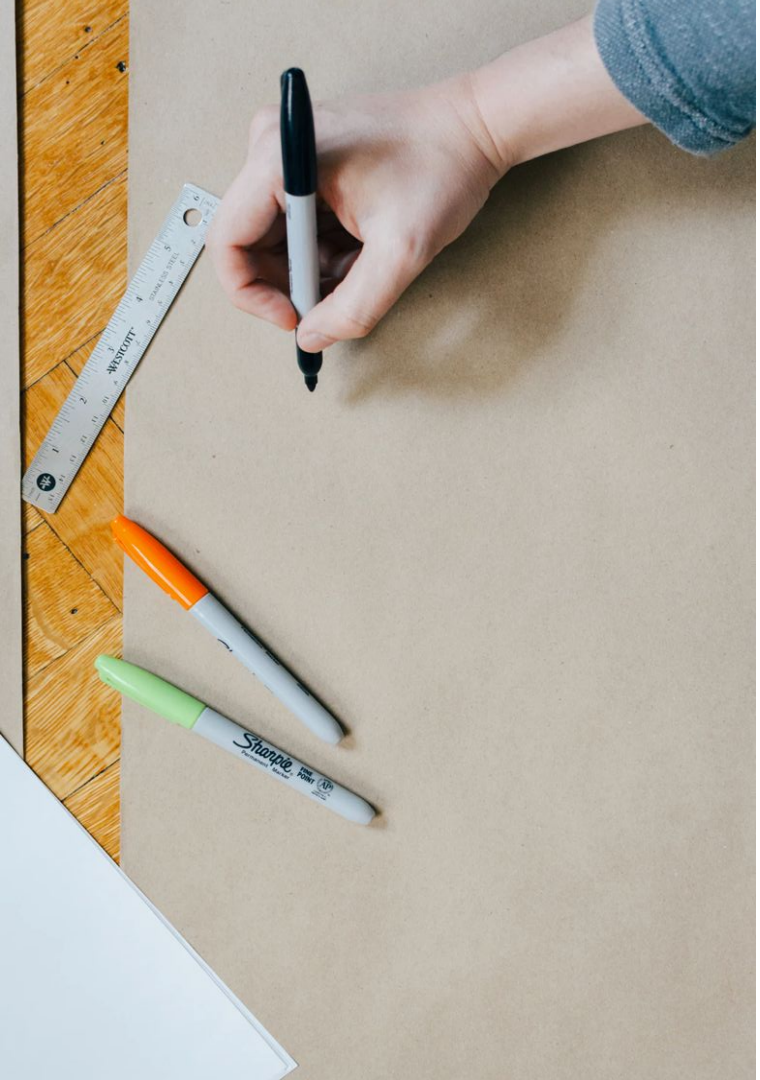
Transform

The Iceberg

A Tool for Guiding Systemic Thinking



To create change we must shift the conditions that hold the problem in place



Exercise #1: Aligning change theory and actions (30 minutes)

1. Choose one area from the rich picture on which to focus (3 min)
2. Complete the table in the Google slides:
    - Discuss the area through the lens of each condition (level) of systems change
        - Record examples of the context of your area as it relates to each condition (level) of systems change (12 min)
    - Identify actions for transformation, things that your team could take action to change
        - Record these in the ‘actions’ column (10 min)
3. After completing the table, discuss which action(s) your group thinks are most important and feasible to address
    - Circle or put an asterisk next to these (5 min)

Exercise #1

Our identified area is: _____

Condition (Level) of Systems Change	Examples of the current context of your area as it relates to each condition (level) of systems change	Action(s) for Transformation
Policies		
Practices		
Resource flows		
Relationships and connections		
Power dynamics		
Mental models		

Example of Exercise #1

Our identified area is: Increase student learning, engagement, and retention and recruitment in introductory STEM courses

Condition (Level) of Systems Change	Examples of the current context of your area as it relates to each condition (level) of systems change	Action(s) for Transformation
Policies	Priorities on & prestige for research publications & funding	*Get dean(s) on board; generate NSF funding
Practices	Team teaching not a practice	*Propose team teaching for intro course as pilot
Resource flows	Minimal access to and use of educational research	*Partner across STEM and education schools
Relationships and connections	Minimal cross-department & cross-school relationships	***Form communities of practice (CoP) within and across departments
Power dynamics	Tenured faculty have most power; adjuncts with less power teach intro courses	*Involve multiple faculty roles on teaching teams
Mental models	Intro courses are for 'weeding out' students who can't succeed in STEM & are 'easy' to teach	**Shift to intro courses as 'gateway' for success making most difficult and essential to teach with aim of all passing successfully

***Super Important **Really Important *Important

Exercise #1

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Policies		
Practices		
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Relationships and connections		
Power dynamics		
Mental models		

Debrief

Theory of Change

Explains how activities targeting specific areas move from the current to the desired situation

Science “theory” vs systems change “theory”

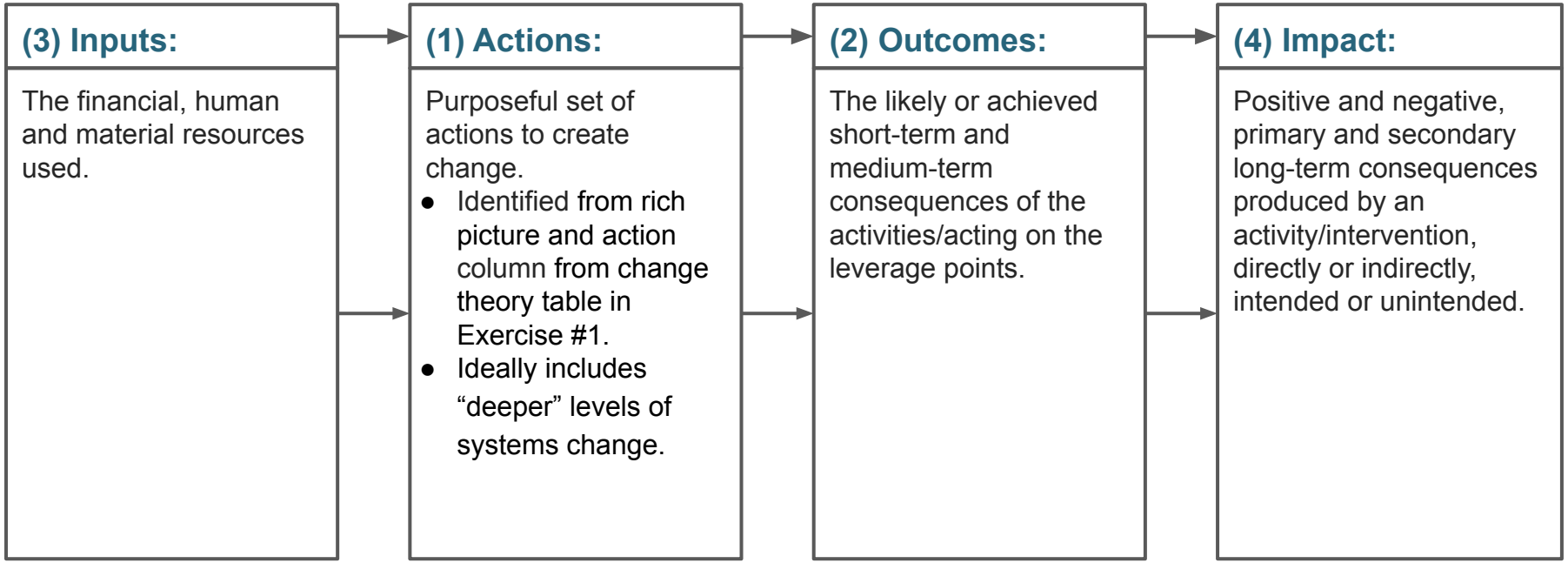
One way to develop and represent a theory of change: logic model

Theory of Change

Goal: Develop a theory of change that visually explains how and why acting on a specific area will impact your [insert discipline(s)] teaching & learning situation

Deliverable: A logic model that visualizes a theory of change to expand on, revise, and update as your work continues

Theory of Change: Logic Model Example



IF we have these inputs...

THEN we can do this action.

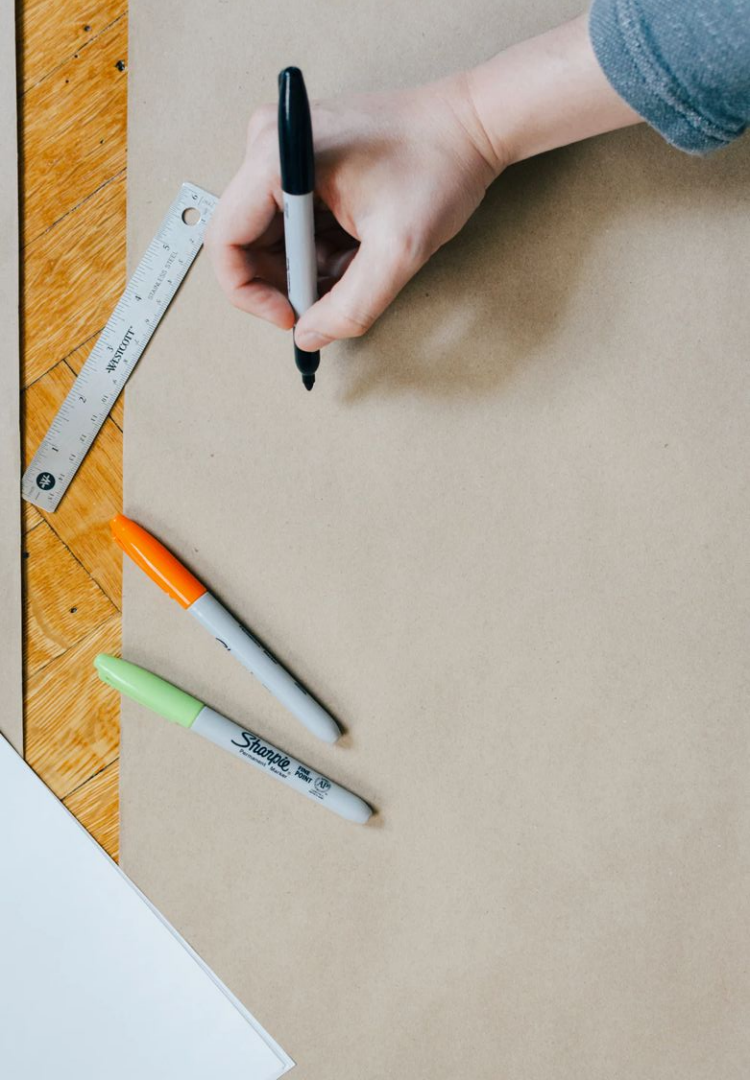
IF we do this action...

THEN (we hope) this outcome will happen…

Which will have this impact.

Each **BOX** can be examined for what data or evidence can verify whether and how much the changes are occurring

Each **ARROW** can be examined for leaps in logic, too big of assumptions, or concerning risks

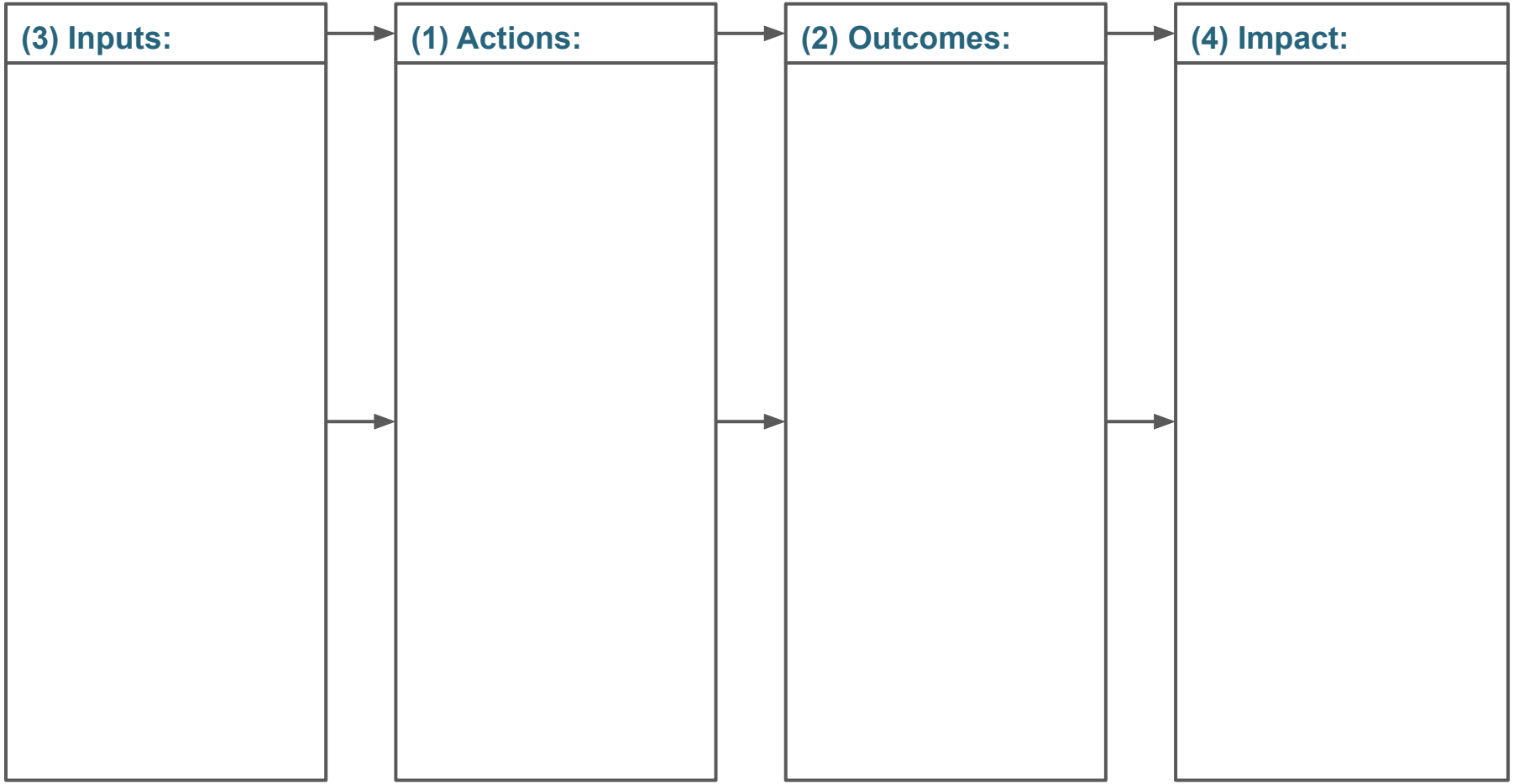


Exercise #2: Theory of Change (30 minutes)

1. Review the actions you circled as priorities from Exercise #1.
    - Pick ONE to build a theory of change.
2. Put this action in the ‘activities’ box
3. List outcomes of the action in the ‘outcomes’ box
4. List required inputs in the ‘inputs’ box
5. List potential impacts in the ‘impacts’ box
6. Talk through the logic model and list what data or evidence would verify whether and how much change is occurring

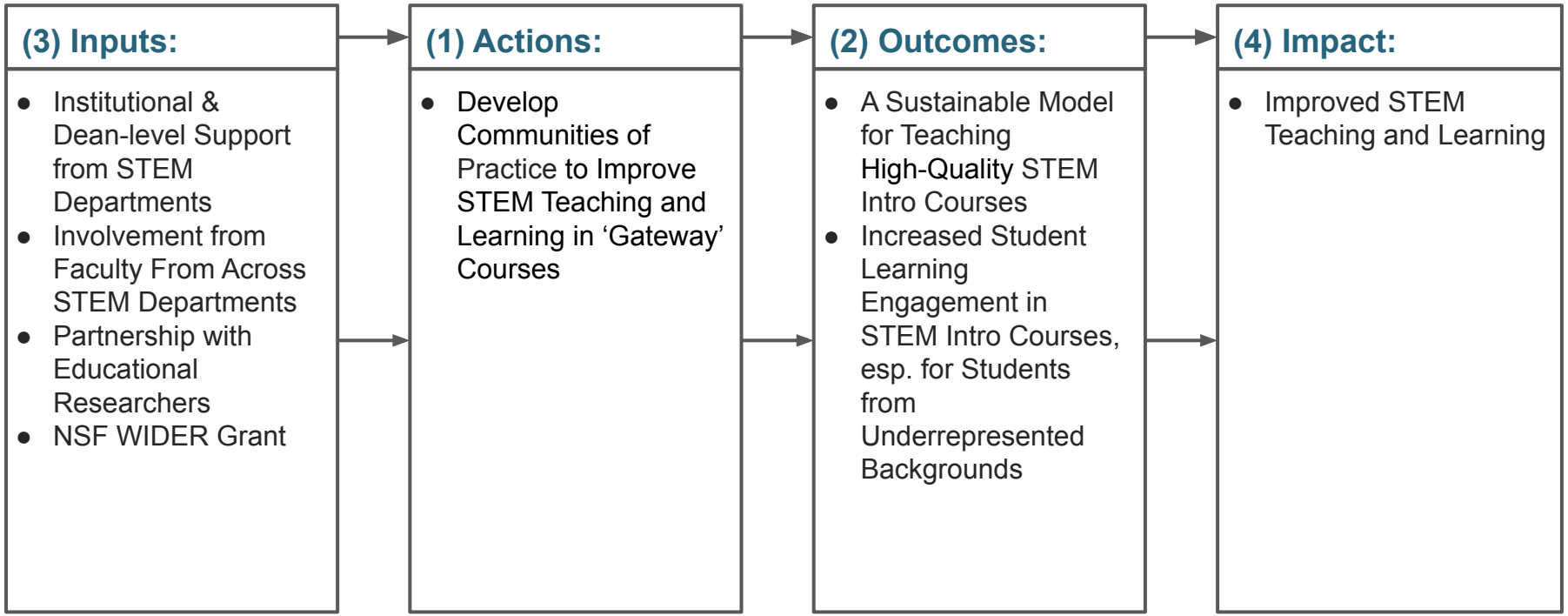
Exercise #2

Our theory of change targets the _____ level of the system



Example Exercise #2

Our theory of change targets the relationships and connections level of the system



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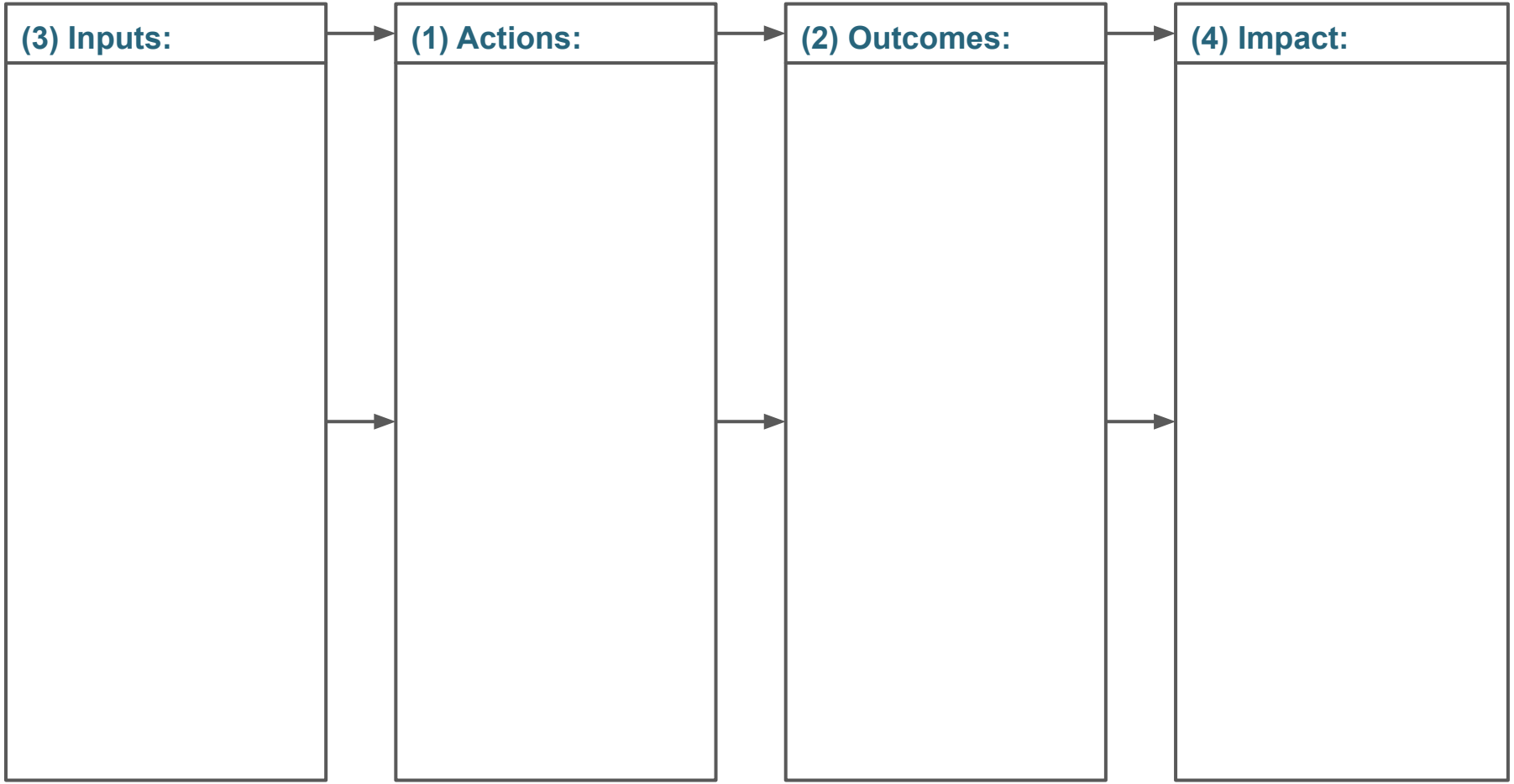

Debrief

Wrap Up

References and Resources

- Abercrombie, R., Harries, E., & Wharton, R. (2015). *Systems Change: A Guide to What It is and How to Do It*. Retrieved https://www.thinknpc.org/resource-hub/systems-change-a-guide-to-what-it-is-and-how-to-do-it/
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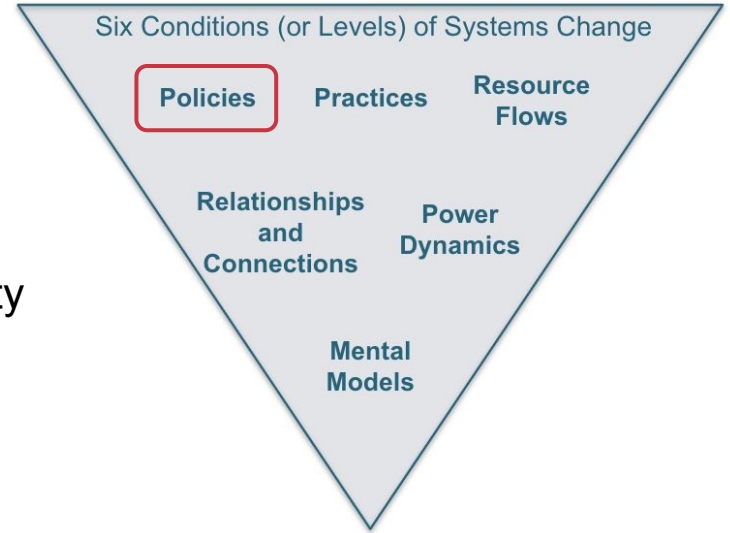
Levels of Systems Change

1. **Policies:** Government, institutional and organizational rules, regulations, and priorities that guide the entity's own and others' actions.

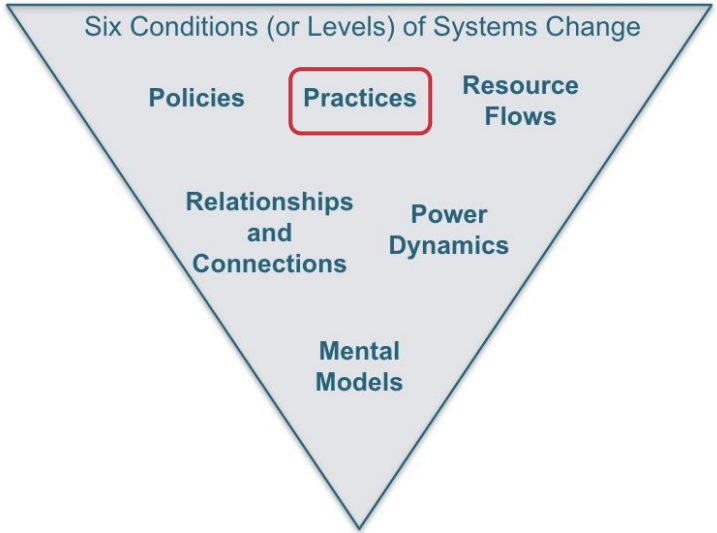
- Institutional STEM priorities (shared by Deans) focused on research publications, funding, and prestige
- No institutional policies to change courses
- School- and department-level policies to obtain faculty committee approval to change courses



Levels of Systems Change

2. **Practices:** Espoused activities of institutions, coalitions, networks, and other entities targeted to improving social and environmental progress. Also, within the entity, the procedures, guidelines, or informal shared habits that comprise their work.

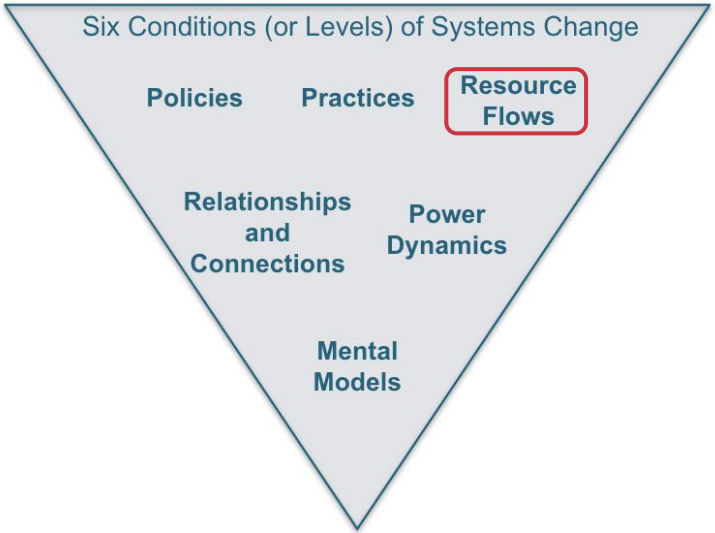
- Courses are currently taught by individual faculty and *not* by multi-faculty teams
- Efforts to improve teaching and learning are typically efforts within courses led by faculty and not department-wide or institution-wide efforts



Levels of Systems Change

3. **Resource Flows:** How money, people, knowledge, information, and other assets such as infrastructure are allocated and distributed.

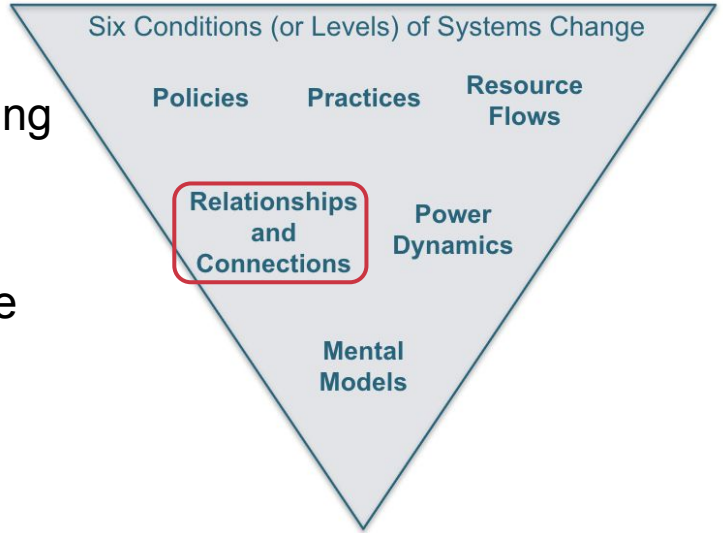
- STEM faculty do not typically use educational research
- Departments engaged in changing introductory courses do not share lessons learned with other departments
- Some disciplines & departments have histories of greater NSF funding providing them with more resources



Levels of Systems Change

4. **Relationships & Connections:** Quality of connections and communication occurring among actors in the system, especially among those with differing histories and viewpoints.

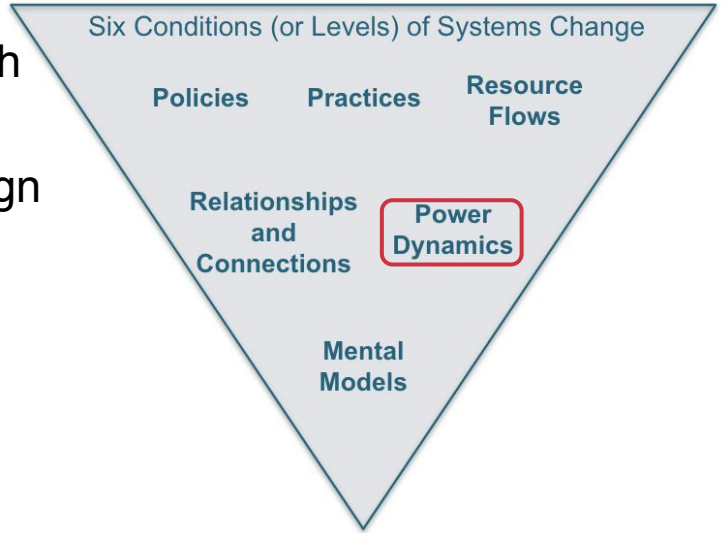
- Faculty within and across departments lack time, space, and trusted relationships to discuss teaching
- Senior, full professors & adjuncts typically do not collaborate around teaching
- Students from underrepresented backgrounds are not well connected to faculty



Levels of Systems Change

5. **Power Dynamics:** The distribution of decision-making power, authority, and both formal and informal influence among individuals and organizations.

- Tenured faculty with research funding do not teach intro courses (adjuncts do)
- Students do not provide feedback on course design
- STEM has more power than education



Levels of Systems Change

6. **Mental Models:** Habits of thought—deeply held beliefs and assumptions and taken-for-granted ways of operating that influence how we think, what we do, and how we talk.

- Intro courses are for ‘weeding out’ students who can’t succeed in STEM
- Teaching introductory courses is ‘easy’
- Instructors individually decide how to teach
- Assessments of student learning = grades
- Teaching is less valued than research