INTEGRATED APPROACHES TO DIVERSITY IN STEM

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CRITICAL QUESTION

How do we take a situation deemed hopeless, and make it otherwise?
Select References on Barriers

Inequities in training, degree attainment and recruitment and/or retention (Moreno et al., 2006; Leboy and Madden, 2012; Whittaker and Montgomery, 2012; Whittaker and Montgomery, 2014)

Established environmental culture(s) and traditions (Hurtado et al., 1998; Girves et al., 2005; Sethna, 2011; Harper, 2012; Moss-Rascusin et al., 2012; Zambrana et al., 2015)

Disparities in research grant support (Ginther et al., 2011; National Science Foundation, 2012)

Limited or inadequate integrations into academic communities and/or isolation (Laden and Hagedorn, 2000; Tillman, 2001; Cawyer et al., 2002; Smith and Calasanti, 2005; Turner et al., 2008; Zambrana et al., 2015)

Levels or perceptions of environmental support or lack thereof (Crowley et al., 2004)

Negative stereotypes about underrepresented minorities (Figueroa and Hurtado, 2013)

Implicit bias (Turner, 2002; Moody, 2004)

Lack of will or understanding on the part of institutional leaders/leadership (Price et al., 2005)
WE MUST

✓ Think differently;
✓ Consider alternatives;
✓ Be open to diverse views; and,
✓ Retain an ability to function and thrive.
WHERE THE RUBBER MEETS THE ROAD

We can talk about **DIVERSITY**......

- Counting the numbers.
- Differences and similarities that define the students, faculty and communities in which we operate.
- Diversity of thought and approach within and outside the academic setting.

But the real issue is how we focus on **INCLUSION**........

- Making the numbers count.
- Creating academic environments that benefit from the diversity of ideas, knowledge, and experience.
- Creating an academic ecosystem that engages everyone and seeks equitable contributions and opportunities for all.
Tectonic Shifts in STEM

- Global Economic Changes in Investments
- Funding; Resource allocation
- Digital Technology; Open Source Utility
- Rise in Entrepreneurial Approach to Research
- Era of Uncertainty
- Leadership concerns
- Drive towards Co-creation and Interdisciplinary Work
- Loss Aversion; Fixation on Rules
“CREATIVITY TAKES COURAGE”
– HENRI MATISSE

To manage the complexity, pace of change, and the “adaptive challenges” facing higher education (Heifetz & Linsky, 2002; Sanaghan & Jurow, 2011; Sanaghan & Lohndorf, 2015), presidents will need all the creativity they can generate. Senior leaders, especially presidents, will need to do two important things:

1. Nurture and build their own creativity
2. Build the “Creative Capital” of the leaders throughout their campuses
GETTING FROM WHERE WE ARE TO WHERE WE NEED TO BE
SHIFTING THE CURRENT PARADIGM

• We say we value diversity, but …
• We say that our doors are open to under-represented groups, but……
• We say diversity of thought is encouraged, but.........
• We say that we actively engage diverse stakeholder groups, but …….
• We say that we want to achieve positive outcomes and make progress with D&I in STEM , but ……. 

DESIGN THINKING PROCESS

Empathize → Define → Ideate → Prototype → Test
STEM Design

- Funding & Accountability
  - Overlapping cultures; Spheres of Operation & Obligation

- Government
  - Sets Standards of Operating

- Corporations

- Public Management

- Social Responsibility
  - S & T Human Resources
  - Variable Vulnerability to Public Pressure

- Academic Ecosystem

- STEM
ECOSYSTEM INTERDEPENDENCE

• Corporations often create vision for driving innovation & legislation (at times with academic partners);
• Public management sector develops policies, drives community engagement as well as R&D;
• R&D activities advance STEM programs, capacity development & global competitiveness.
OPPORTUNITIES

• Building consensus & collaboration in areas of complementary focus & desired outcomes;
• Sharing “Best Practices” to facilitate adaptation & efficient use of human and financial resources;
• Establish conditions to drive creativity & innovation;
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Defined Area of Focus

Ideation Divergent Thinking
Goal: Generate multiple ideas/solutions

Convergent Thinking
Goal: Narrow possible solutions

Solution(s)

Implementation

Test

Learn
Stakeholder input/Problem Identification → Academic Processes & Practices → Design Outputs

- Development
- Service delivery
- Policy Development

Design Approaches → Knowledge Creation → Decision-making
Finding Synergy

New

+/-

Systems consolidation

Problem ID/definition?

Service

Outcome

Traditional

+/-
STEM Service Relationships

Adapted from Polaine, Levie, and Reason, Service Design: From Insight to Implementation, 2013
SUMMARY

• Limited scales of progress
  ➢ Limited or poor integration
  ➢ Lack of synergy
  ➢ Lack of accountability

• Design approach needed to facilitate
  ➢ Enhanced outcomes
  ➢ Student placement
  ➢ Experiential learning
SUMMARY

• Leader’s role in STEM ecosystem:
  ➢ Brings commitment to process for building accountability framework

  ➢ Identification of stakeholders who are under-resourced (critical step)

  ➢ Adds network value (with right leadership) by
    • Engaging strengths of URM communities
    • Driving partnerships and collaborations
Questions?
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