IN PURSUIT OF INCLUSIVE EXCELLENCE

Promoting Effective Learning in a Diverse STEM Environment: Hidden Factors That Undermine Your Success
PROMOTING EFFECTIVE LEARNING IN A DIVERSE STEM ENVIRONMENT: HIDDEN FACTORS THAT UNDERMINE YOUR SUCCESS

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Alliance, OH
May 19, 2018
➢ Broadening participation programs and services are typically organized around a theory of change and logic model that benefit from being “evidence-based.”

➢ Today funded projects also typically have an evaluation component mandated; some even requiring use of a design from the What Works Clearinghouse.

➢ In addition, the literature urges us to develop interventions that are culturally relevant and responsive, and deploy them in academic settings that are inclusive.

➢ Formative and summative evaluation efforts are put in place to inform us about outcomes and ultimate impacts. Could there be important factors we miss even with these progressive practices?
This presentation will focus on thinking evaluatively, guided by important considerations that can help uncover hidden assumptions that have the potential for undermining project impact, and may even foreclose opportunities to recognize important impacts.

Through illustrations from the literature and actual project narratives, a heuristic strategy will be provided that can be employed by everyone involved, encouraging broad-based evaluative thinking during all phases of the project.

The end result will be tighter program designs, more integrated and empowered evaluations, and greater understanding of the “whys” of the outcomes...not just the “whats.”
The US has never found a way to fully utilize all of its talents, since even before its inception, only a portion of the citizenry have been tapped for the important tasks of innovation, creativity, and discovery.

Full realization of our potential is actually becoming more difficult as the percentage of fully engaged individuals declines relative to the total population!

What we must come to understand is that good, competitive, and world class STEM is Inclusive STEM!

Reaching the goal of maximum achievement, can only happen one classroom at a time, with the goal of inclusive excellence providing the guidance.
SCENE SETTING – THE ISSUES

- The increases in STEM participation of underrepresented African Americans, Hispanics, and Native Americans in science and engineering has increased from 9.1% to 12% between 2006 & 2013 but their percentage of the nation’s population increased from 28.5% to 32.6% during that period. (National Academies report: *Expanding Underrepresented Minority Participation: America’s Science and Technology Talent at the Crossroads*.)

- This is not a problem for minorities only; it’s a national problem. Most well-prepared students of all backgrounds with an interest in STEM fields and careers abandon that goal in the first two years of college. To solve the problem, we in academia just need to look in the mirror.

Toward a More Diverse Research Community: Models of Success

SCENE SETTING – THE ISSUES

• Today our nation is conflicted--not on the problem, but on the solutions that are acceptable--largely because we do not agree on how we arrived at this place of under utilization and on whose initiative solutions are to be sought and implemented.

• As faculty at America’s leading higher education institutions, you have expressed a commitment to broader participation in STEM, but here today in this audience there is less agreement about what that means in terms of your actions, and your authority, than we might think.

• A big part of our challenge in doing the right thing in the classroom stems from our lack of agreement about what the goals are, or should be!
SCENE SETTING – THE ISSUES

• The biggest “hidden” factor nationally impeding our improvement in broadening participation—in my not so humble opinion—is lack of consensus and therefore conviction, that we are the vanguard of the change we wish to see in the STEM workforce!

• By what authority and on whose orders, are college faculty empowered to alter the complexion of the STEM workforce of the future?

• Without a mandate to do more, you are only here to improve the success of those who happen to end up in your classroom…I can work with that, but you could do so much more!
Boundary definitions are a good way to visualize the curriculum you deliver and the courses that comprise it.

1. What evidence is there, that the boundary definitions that define your courses are both rational and based upon the learning needs of your students?
Boundary definitions are a good way to visualize the curriculum you deliver and the courses that comprise it.

2. When taken as a whole, the courses in your curriculum constitute the boundary of professional knowledge you impart to students. Presumably these boundaries match student interest to some degree. How many students are lost before they gain access to this material, and therefore access to the profession?
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3. Pedagogy reflects the strategies used to facilitate learning, to what degree have you examined the cultural and contextual pluralism exhibited in your pedagogy?
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4. While some would argue that science is objective and culturally neutral (not true) it would still be important to think about pedagogy which must be contextually and culturally loaded by the profession if not the professor!
Boundary definitions are a good way to visualize the curriculum you deliver and the courses that comprise it.

5. Among your departmental colleagues how often do you discuss the assumptions that inform pedagogy in your discipline...when and in what order things are taught, the levels of mastery and methods of certifying it that are standard, or evidence of mastery that must be observed?
Boundary definitions are a good way to visualize the curriculum you deliver and the courses that comprise it.

6. After giving thought to how you can make the content in your course more accessible, what attention did you give to promoting the sense of community among learners in your classroom? Who is responsible for inter-student inclusive practices?
Boundary definitions are a good way to visualize the curriculum you deliver and the courses that comprise it.

7. What departments have you identified as benchmarks in inclusion and graduation of representatives of “underrepresented groups” do you have a sense of whose record you should emulate and the practices that support their success?
Boundary definitions are a good way to visualize the curriculum you deliver and the courses that comprise it.

8. Does your classroom/department promote a culture of competition, meritocracy, or elitism?
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9. Is there a greater role to be played by
   • Study groups, advising, tutoring, mentoring
   • Sense of community within the classroom and throughout the department
   • Building values among students
   • Involving family
Boundary definitions are a good way to visualize the curriculum you deliver and the courses that comprise it.

10. What about campus culture...does it help or hurt your efforts in the classroom/department?
• For over 100 years, HBCUs have produced an overwhelmingly large percentage of African American men and women in STEM, who go on to obtain graduate degrees from the nation’s most prestigious institutions, and become leading scientists, physicians, and faculty members. What do we know about how that has happened?
COMPARING YOUR BOUNDARY DEFINITIONS

• One of the primary advantages of HBCUs is that the students start out with barriers that come less from the campus and its jarring differences from the students, than from the educational objectives they seek to reach. These are the barriers we want students to learn to scale. Time spent navigating unnecessary obstacles, is time and effort taken away from achieving.

• It is this achievement that we seek as a nation, and hence it is the removal of the unnecessary barriers that we must find a way to accomplish...fixing the playing field, not fixing the student.
The key concept that applies here is CSH: Critical employment of boundary critique

- Thinking evaluatively is also thinking systemically, consistent with Werner Ulrich’s CST