Improving the Odds of Student Success:
Academic Supports and More

RENDEZVOUS WS 7.16-17.15

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Yesterday

DAY 1 – Background and Context	
8:30 – 8:45	**Welcome and Overview**
8:45 -9:30	**Exercise:** Ourselves and Our Institutions A participant self-inventory and discussion
9:30-10:15	**Presentation/Discussion:** 'Outsider at the Table' - The Biology Scholars Program (BSP)
10:15-10:30	**Break**
10:30-11:30	**Exercise:** Culture of Science and Student Attrition

Descriptors

Our Stories

Our Stories
Recurring Themes - Why We're Here

- Open doors
- Pathways
- Respectful
- Meaningful
- Passionate
- Change
- Share

- Pass along
- Awareness
- Own biases
- Understand
- Extend beyond selves

Descriptors

Our Students

Cluster 1 - Students

- Gifted
- Intimidating
- Amazing
- Inspiring goals
- Bright
- Dreamers
- Scary smart

Cluster 2 - Students

- Good will
- Motivated (2)
- Passionate (2)
- Determined
- Ready to try
- Ready to explore
- Earnest

- Ready to get involved
- Eager for more
- Excited about the subject
- Enthusiastic

Cluster 3 - Students

- Uncertain
- Unsure
- Uncharted territory
- Oblivious
- Clueless
- Misguided

Cluster 4 - Students

- Lots of variation academically
- Underprepared
- Scared of math
- Intimidated
- Better than they can conceive
- Timid
- Need confidence to shine

Cluster 5 - Students

- First gen (3)
- Non-traditional routes
- Transfers (2)
- White
- Black
- Young and old
- Working adults

- Poor
- Blue collar
- Career/job focused
- Financial pressures

Cluster 6 - Students

- Very Midwestern
- Big fish in a small pond
- Iconoclasts
- Quirky

Cluster 7 - Students

- Busy
- Over-scheduled
- Over-committed

Cluster 8 - Students

- Need guided mentoring
- Need guidance
- Want more from us

Cluster 9 - Students

- Hard to recruit
- Our best ambassadors

Descriptors

Our Institutions

Cluster 1 - Institutions

- Rigid
- Question everything
- Homogeneous
- Diverse
- In flux
- Student support lags diversification
- Devoid of vision and means

Cluster 2 - Institutions

- Challenged (2)
- Tenacious
- Big potential
- Important
- Focused

Cluster 3 - Institutions

- Resource Rich
- Under-funded (2)
- Funding-strapped
- Sustainable?

Cluster 4 - Institutions

- Large (3)
- Small (2)
- Rural (2)
- Place-based

Cluster 5 - Institutions

- Land grant (2)
- Two-year college
- Public
- Private
- Liberal arts
- Public Ivy
- R1

- Research-selfish
- R1 wanna-be (2)
- Elite

Cluster 6 - Institutions

- Non-competitive
- Connections with faculty
- Emphasis on community
- Supportive/Personal
- Cozy
- Close-knit department

- High expectations
- 'Top students'
- Value teaching/ learning
- Service-oriented
- 1-on-1 interaction
- 'Whole student'

Cluster 7 - Institutions

- Isolated
- Segregated
- Can be impersonal
- Overwhelming to navigate
- Big pond
- Unsympathetic

- In the business of students (but could be widgets)
- Student focused (not student centered)
- One university only when we aren't

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Cluster 8 - Institutions

- Work-force focused
- Geoscience opportunities

Today

DAY 2 – Planning, Implementing, Evaluating, and Adjusting	
8:30-9:00	**Presentation/Discussion:** Adapting 'Best Practices' and 'What Works' Considerations of scaling and replicating programs that work
9:00-9:45	**Exercise:** The 'Devil' is in the Implementation Considerations about how we select, advise, tutor, etc. students
9:45-10:00	**Break**
10:00-10:45	**Presentation/Discussion:** Evaluation
10:45-11:30	**Discussion/Exercise:** Next Steps and Summary Exercise

2 Studies

Impact of Treatment on Retention and Success

Elaine Seymour and Nancy Hewitt Study

Talking About Leaving:
Why Undergraduates Leave the Sciences

Westview Press, Boulder, CO 1997

Key Findings

- Students leave STEM because of the curve grading, emphasis on grades vs. learning, and the 'cut throat' feeling in their introductory STEM courses.

- Students see it as intentional 'weeding out.'

- Faculty see it as benign in intent and 'normal wastage.'

- Hewitt and Seymour see it as 'over-pruning' of students with good potential.

Shape of the River (1998)
by Derek Bok & William Bowen

- <u>Largest study</u> of race-conscious admissions at selective colleges and universities

- <u>Found</u>
  Students admitted under affirmative action performed only slightly below class average and after graduation, out-gained many of their peers

- <u>Concluded</u>
  The students' qualifications that got them admitted (***Selection Effect***) were less important than how they were treated once they were on campus (***Treatment Effect***)

Developing an Implementation Plan

Integrating new material with what's already been said

Increasing Student Success in STEM

Susan Elrod and Adrianna Kezar
Peer Review Spring 2015
http://www.aacu.org/peerreview/2015/spring/elrod-kezar

While many change efforts have been initiated, almost always at the departmental level, few have reached the institutional level of entire programs, departments, or colleges in the STEM disciplines, described as necessary in these recent reports. There is growing recognition that reform in STEM is an institutional imperative rather than only a departmental one.

Model for Institutional Change
Keck/Project Kaleidascope (PKAL)
Elrod & Kezar (2015)

The Keck/PKAL model for effective institutional change outlines both a process and content that will lead to increased student success in STEM. Although focused on STEM, it is applicable to any change process that is focused on improving student learning and success.

Model for Institutional Change
Keck/Project Kaleidascope (PKAL)
Elrod & Kezar (2015)

Model Element	Description
Establish Vision	The vision represents the direction in which the campus is aimed in terms of altering its STEM experience to support student success. We encourage a vision that is clear, shared, and aligned with institutional priorities.

Logic Model

- *Establish your goals & work backwards*

- *'Backward Design'*

- *Your strategies, use of resources, actions, outputs, outcomes, etc. should align with your goals*

Logic Model

LOGIC MODEL TEMPLATE - BSP Pre-Graduate Pathway (PGP)

Inputs	Strategies	Outputs	Outcomes		Impacts
			(Short Term-Learning)	(Medium Term-Action)	(Long Term-Conditions)
BSP Staff – Pre-Graduate Pathway (PGP) Coordinator, Academic Advisors, Tutors, Assistant Director, and Director Cadre of pre-screened biology faculty at Berkeley Pre-screened pool of BSP undergraduates interested in research HHMI funds Laboratory facilities of faculty	Exposure of pre- or novice researchers to more experienced undergraduate researchers Setting clear roles and expectations for both students and faculty Pay students to do research so they can do science while meeting their financial need Pre-screening of both undergraduates and faculty Matching students and faculty based on experience, expectations, scientific interest, personalities, etc. Comprehensive and developmental support for students (tutoring, career workshops, application workshops, academic advising) Communication/feedback loops from application, selection, match, doing research, end of the program Student and faculty evaluations Use information and evaluations to improve the program	Create the PGP Hire one graduate student or post-doc to mentor Pathway undergrads Increase the number of program students that participate in the PGP each year Increase the number of students from the larger campus that participate in the Biology Fellows Program (BFP)	Increase the participation of low-income and first generation students that participate in research on and off campus Increase the number of students applying to graduate science programs Increase the number of students graduating with a biomedical undergraduate degree Increase retention in "gateway" courses Increase students' identification with science	Understand how "program" interacts with the undergraduate research experience Increase students' career options awareness Increase faculty awareness of diversity issues in science	Enlarge and diversify the pool of undergraduates conducting bio-medical research Increase the number of students admitted to PhD science programs Increase the number of first generation and low income students entering biomedical careers Diversify the professoriate Institutionalize science diversity programs at our universities and colleges Eliminate the need for science diversity programs with universities and colleges employing the "best practices" of BSP to broaden access to science for students from all backgrounds

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Examine Landscape and Conduct Capacity Analysis	A direction forward is typically best created through an analysis of the existing landscape (internal campus data as well as external reports on STEM reform) as well as a review of current capacity to engage in change generally—such as history of reform, leadership, and buy-in and ownership among faculty. This stage focuses on collecting data and information to conduct analysis.

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Identify and Analyze Challenges and Opportunities	The landscape and capacity information needs to be analyzed in order to identify both challenges and opportunities for the campus. This phase often brings in politics and culture that might be sources of both opportunities and challenges.

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Determine Readiness for Action	In addition to reviewing capacity and opportunities, there are key issues that emerge when implementing specific strategies such as resources, workload, institutional commitment, facilities, timeline, and other areas that campuses should review in order to effectively implement the strategy and to ensure that the campus is ready to move forward with that particular strategy. Campuses will be able to take advantage of opportunities, such as a newly established special campus projects fund, or a new faculty hire with appropriate expertise, that can be leveraged in support of effective implementation. This phase also involves further exploring campus politics and culture.

SWOT Analysis

Strengths

Weaknesses

Opportunities

Threats

HSI Student Success SWOT

Strengths-Weaknesses-Opportunities-Threats

Stakeholders

- Students
- Staff
- Faculty
- Administrators

STENGTHS

Students – motivated, capable, from target populations

STEM Diversity/Student Support - faculty/staff/admin share commitment

Q?- Shared vision how to get there? Possible 'threat/challenge'

Space – high quality/quantity

ETC…

WEAKNESSES/CHALLENGES

Academic Support – issue of consensus on nature of support and @ which course level

STEM Course Availability – impacted, off-sequence scheduling, no CS course available

STEM Faculty – need more FTEs

Time to Transfer – prolonged

ETC …

OPPORTUNITIES

STEM Enrollment - growing

Target Student Population - large

Time to Transfer – consensus on need to reduce

STEM Jobs – increased demand to fill

Political Will – strong @ local, state and national levels

ETC…

THREATS

Competition – funds, "turf," space

Students – change majors, schools

Faculty/Staff – leave

Burn-out – few individuals on overload

ETC …

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Choose Strategies/ Interventions, Leverage Opportunities	Campuses need to familiarize themselves with a host of possible strategies or interventions to address the challenges identified and leverage the opportunities. They can examine these strategies in light of the capacity of the campus as well as opportunities identified earlier.

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Begin Implementation	Implementation involves drafting a plan for putting the intervention or strategies in place. The plan builds off of the ideas from the readiness for action, capacity of the campus, and opportunities identified. All of these will be built into the plan, as well as a process for understanding challenges as they emerge. In addition to creating a well-laid-out plan, campuses may decide to pilot an initiative first and then consider how to modify and scale it after an initial trial.

Adapting Effective Programs in New Contexts

A pragmatic 7-step process to adapt an existing, successful program to a new context, while preserving what made it effective in the first place

1. Select a suitable effective program

2. Gather original program materials

3. Develop a program model/logic model

4. Identify the program's core components & best practices

5. Identify mismatches between the original program model/materials and the new context

6. Adapt the original program model

7. Adapt the original program materials

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Measure Results	Campuses will also create an assessment plan to determine whether the intervention is working and ways they can be changed over time to work better.

Assessment and Evaluation

Measuring Change – meaningful metrics of 'success'
- Baseline
- Comparison Group

Broader Impact
- Beyond program participants
- Institutional change

Questions and Considerations
- Correlation v. Causation?
- Selection v. Treatment?
- Skimming v. Expanding the Pool?
- Longitudinal Effect – over what timeframe?

Evaluation Research

- Evaluation =>   What's working
- Evaluation Research =>   Why it's working
- Requires – Social Science Researchers
- Measure – Impact on such things as
  - Science Identity
  - Self-Efficacy
  - Reduction of Stereotype Threat
  - Increased Resilience/Grit, etc.

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Disseminate Results and Plan Next Steps	In order to prevent the continued "siloization" of work, it is important for campuses to think about dissemination opportunities on campus as well as off campus, either regionally, statewide, or nationally. Also, keeping the momentum going will require deliberate planning for next steps.

Implementation

Examples of Some Fundamental Challenges

Challenge

- *You can't 'fix' what you don't understand.*

- *We're mono-cultural individuals working with students from diverse cultures.*

- *How do we come to understand and be understood?*

Discussion

- Stereotypes/Generalizations
- Memorize 'the list'
- Cultural Humility and 3rd Culture

Challenge

Competency Testing

Discussion

- Buying in to the 'Proving Game'
- Stay focused on the task at hand
- Play your game and not your opponent's

Challenge

Want v. Need

Discussion

- Upside of giving our students what they want

- Downside of acquiescing

- Must be clear on our definition of 'success' in terms of student outcomes

Challenge

Quality Mentoring

Discussion

- 3 critical qualities
  - <u>Instrumental support</u> – info, opportunities, system knowledge
  - <u>Psycho-social support</u> – competency, identity, efficacy
  - <u>Quality relationship</u> – trust, respect, empathy, connection

- Advocates/Anti-advocates
  - 'Cheerleader'
  - 'Gatekeeper'
  - 'Mercenary'
  - 'Coach'

- Multiple Mentoring

Challenge

Change:
What's in it for me?

Discussion

- Stakeholders and reward structures
- Triage and Concentric Circles
- 'Success' – realistic definition and timeframe

Challenge

Please share your challenge