Building a Model to Serve Indigenous Graduate Students in STEM: The PNW-COSMOS Experience

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Today we will provide perspectives on model building.

**AGEP Model**

- **Develop**
  
  What do you need to know in order to develop and adopt or adapt a model?

- **Evaluate**
  
  How would you evaluate the adequacy of our/your model?

- **Reflect**
  
  What did we learn?
About the PNW-COSMOS Alliance
### PNW-COSMOS Strategy: Theory of Change Model

<table>
<thead>
<tr>
<th>ACTION STEPS</th>
<th>OUTPUTS</th>
<th>INTERMEDIATE OUTCOMES</th>
<th>IMPACTS</th>
<th>IMPACTS</th>
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</thead>
<tbody>
<tr>
<td>Designate institutional leads</td>
<td>Undergraduate pathways to STEM graduate degrees</td>
<td>Appropriate lab and mentor assignments for incoming students</td>
<td>STUDENTS</td>
<td>More diverse academic, government and private sector workforce</td>
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<tr>
<td>Form Alliance network</td>
<td>Grad student professional development opportunities</td>
<td>Improved mentor/mentee relationships</td>
<td>Persistence &amp; degree attainment</td>
<td>More diverse role models for future generations</td>
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<td>Create a shared vision</td>
<td>Faculty development opportunities</td>
<td>Students perceive that campus environment supports their cultural identity and personal goals</td>
<td>Advancement to academic or applied positions</td>
<td>Reduction in outcome disparities for Indigenous communities</td>
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<td>Divide responsibilities for program development and communication</td>
<td>Experiential learning opportunities for students &amp; faculty</td>
<td>Students are able to navigate the intersection of academic and Native culture</td>
<td>INSTITUTION</td>
<td>Sustainable, scalable services for Indigenous students</td>
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<td>Recruit faculty, staff and administration supporters</td>
<td>On-campus services for Indigenous students</td>
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<td>Increased capacity for diversity &amp; inclusion efforts</td>
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<td>Coordinate existing institutional resources &amp; services</td>
<td>Opportunities for building community</td>
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<td>Enriched campus climate &amp; scholarship</td>
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<td>Implement programs</td>
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<td>Improved service to Indigenous communities</td>
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<td>Internal evaluation of programs per each occurrence</td>
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<tr>
<td>Annual external program evaluation</td>
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Where to start building a model?

Social science — Theory, principles, data re: “what works”.

Needs assessment — Participants assets, needs, challenges, opportunities.

Practitioner judgment — Prior practical experience.

Developmental evaluation — Early findings as programs are implemented.
People & Place

Respect—for Indigenous cultural values and Traditional Ecological Knowledge
Responsibility—to protect tribal sovereignty and self-determination
Reciprocity—value caring for others, community and the earth
Relationality—view of human and natural systems as interconnected
Relevance—desire for education to be relevant to tribal concerns

(Brayboy et al., 2012; Kirkness & Barnhardt, 1991)
Different graphic views help clarify the model

AGEP alliances have many moving parts:

• Overall strategy
• Project management & operations
• Recruitment pathways
• Program activities
• Institutional resources

Separate displays of the model for different audiences or purposes can help to clarify the key ingredients.
Elements of a Logic Model

**Inputs**
- Faculty
- Students
- Tribal members
- Curriculum
- Facilitators
- Coordinator
- Native community sites
- Travel funds

**Activities**
- Indigenous knowledge field camp
- Mentor development program
- Story telling
- Mentor/mentee visit home or historical site
- Opportunities for Indigenous research
- Summit meetings

**Outputs**
- Relationships
- Refined curriculum
- Refined faculty development plan
- Publications
- Institutional alliances

**Short-Term Outcomes**
- Faculty knowledge of Indigenous history, culture, research
- Improved mentor/mentee communication
- Support community for students & faculty

**Mid-Term Outcomes**
- More Natives recruited
- Students persist
- Research includes Indigenous perspectives
- Increased mentor capacity to collaborate with tribal colleges

**Long-Term Outcomes**
- Diverse STEM workforce
- More diverse role models
- Reduce disparities for Indigenous communities

Evaluation questions: Does the model have merit?

**Reciprocity**

Did the Alliance create benefits for Indigenous students and communities?

**Respect**

Did the Alliance respect Indigenous cultural values and traditions?

**Qualitative feedback:** Stakeholders say that the model has merit.

**Quantitative measures:** Increased diversity in the grad school application pool, grad applications, admissions for STEM disciplines; Indigenous student persistence, graduation and career outcomes.

**Institutional results:** Model can be sustained and/or scaled up at home; adapted and adopted at home or elsewhere. New collaborations.
Discussion

What do you need to know in order to adopt/adapt a model?
How would you evaluate the adequacy of our/your model?
Are there other ways to focus the evaluation?

Other questions?
Check out the PNW-COSMOS edition of New Directions for Higher Education
References


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