Funding STEM Intervention Programs: Money Speaks Louder than Words

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Project STEP-UP

PROJECT STEP-UP

- STEM Trends and Enrollment Patterns for Underrepresented Populations

  - STEM Intervention Programs:
    - Examine the design, implementation, and impact of STEM intervention programs on underrepresented undergraduate students
    - Identify factors that may impact the access and retention of underrepresented students within STEM fields
      -Women
      -Low-income
      -First-generation
      -Underrepresented Minorities

Significance of study

- Promoting diversity within STEM fields and workforce
- National competitiveness
  - Economic leadership
  - Global shift in the scientific talent
- Institutional commitment to SIPs:
  - Access and Retention
- "Best practices" : financial sustainability
- Current economic downturn
  - State and University Budgets

STEM Literature

- Institutional Factors to Persistence
  - Intervention Programs
  - Campus and Departmental Climate
- Individual Factors to Persistence
  - Pre-college factors (k-12)
  - Socioeconomic status
  - Social and academic integration

RESEARCH FOCUS/QUESTIONS

- SIPs Design
  - Structured?
  - Staffed?
  - Funded?

- What are the common challenges that STEM intervention programs face?
  - Questions
    - How is the program funded? Does the source of funding impact delivery? If so, how?
    - What is the level of funding from the college, campus, and external sources?

PROFILE OF PARTICIPANTS

- Interview Data
  - 9 large, public, research universities.
  - 47 participants
  - 11 male, 36 female
  - 22 white, 19 African American, 4 Hispanic, 1 Native American, and 1 Asian American
- Methods
  - Qualitative Methods
  - Semi- structured interviews with program administrators
  - Open Coding Strategy: Themes

Stem intervention programs

- SIPs rely on a wide variety of funding sources to support personnel, deliver their programs, and provide services to students.
  - College/University/Department funds
  - State and federal grants
  - Alumni donations
  - Corporate sponsorships
- Intervention Programs Include:
  - Research opportunities
  - Mentoring
  - Academic: (e.g. tutoring)
  - Leadership development
  - First-year
  - Live and Learning Communities

PRELIMINARY RESULTS: CHANGES IN FUNDING

- "Soft Funds":
  - Grant or Corporate support → Struggling to find continuous funding
- "Hard Funds":
  - College/University/Departmental budgets → Solely supported by "soft funds" (e.g. Grants, Corporate donations, Sponsorships)

- Results:
  - Reduced Funding →Deliverance of programs, Existence

SOURCE OF FUNDS: CORPORATE

- SIP "receives no funding from state money…all of the funding comes from the industry."

- Ongoing need to seek out new funding through grant writing, which directly influenced the resources and services they provided students due to uncertainties within the economy and competition with other programs seeking funding.

- Corporate funding was welcomed but did not always support the types of services needed most: "The corporate funding is repetitive and it doesn't depend on the results of the program. We given them the results and it doesn't matter [if the program doesn't work]."

SOURCE OF FUNDS: SOFT FUNDS

- "Soft funds" and "staffing" issues as huge impediments to delivering programs and services.   "Some staff even have to bring in their own salary."

- Frustration with universities, colleges, or departments who have opted to have SIP staff supported by soft funds rather than commit budgeted funds to support their salaries.

- Desire to expand the program had to be put on hold due to budget restraints.

- Even with the reduction in staffing, the program was still expected to provide the same services: "We used to have a secretary, plus three to five student workers. Now we have three. There used to be more. It all depends on funds. We had a half-time or quarter-time evaluator. There is not one now but I would like us to have one again."

- Severely understaffed. Often relied heavily on current students and student organizations for volunteers to aid in delivering the program, manage websites, market their programs, and serve as mentors for incoming students. Others shared administrative support staff with other offices in their college.

SOURCE OF FUNDS: COLLEGE/UNIVERSITY FUNDS

- Programs supported via "hard funds" expressed their institution's long-term commitment to their programs and related diversity efforts. One participant spoke of a campus-wide effort to improve diversity that began in the 1980s and continues today, with funds from the state, university, and individual academic colleges.

- Having administrative support and commitment from upper-level administrators on campus.

- The funding of their programs is seen as a campus priority, and has been sustainable overtime due to the institution's commitments and funding decisions.

- Some programs which were funded through their college and/or university acknowledged the hardships of those programs that were on "soft money."

- "Oh, the Dean. I mean, 100 percent. I have a budget. I've had a budget for programming. And I consider myself lucky."

LEGITIMATION THEORY

- Organizational Ecology: institutional and resource dependence theory
- Organizations that pursue goals in line with social values have a legitimate claim on resources (Parsons, 1960)
- Organizations seeks legitimacy and support by incorporating structures and procedures that match widely accepted cultural models embodying common beliefs and knowledge systems (Meyer and Rowan, 1977)

LEGITIMATION THEORY: SIPS

- Public universities make difficult budget decisions, the decision to fund, decrease the amount of funding, or discontinue the funding of SIPs becomes a symbol of the institution's commitment to supporting SIPs and to diversifying the STEM fields.

- High-levels of institutional commitment to STEM diversity would support the existence of SIPs

- While some institutions may emphasize their commitment to diversifying the STEM fields, only some institutions provide the administrative and financial support needed to sustain STEM interventions. In this sense, the actual funding and sustainability of SIPs speaks louder than institutions merely claiming to support such efforts. The financial support of the institution allows successful SIPs that may be struggling financially to increase their services to students, allow for a consistent set of services, and contribute to increasing the number of students and success rates of students in STEM

IMPLICATIONS

- These findings have great implications given the nation's need for an increase in the number of STEM degrees awarded to domestic students in order to ensure economic and global competitiveness.

- As STEM Intervention Programs (SIPs) struggle to secure corporate and private funding, reduced funding support from institutions threatens the existence of some SIPs.

  - Existence of Program: Threatens long term sustainability
  - Support personnel
  - Resources: Eliminate Services
  - Change of Mission
  - Reducing the Number of Students Served
  - Selection of Participants: qualifications

LIMITATIONS

- Nine large, four-year, research-intensive, and predominantly white universities
- Response rate based on self-selection
- Recruitment to participate based on publicly available information of STEM intervention programs on each institutions' website
- Programs are housed in certain STEM fields
- No contemporaneous statements from students participating in programs

FUTURE RESEARCH

- Collaborative Efforts: cost-effective

- Examine the differences of sustainability among SIPs
  - Gender vs. Minority based
  - SIP type (research based vs. non-research)
  - Shifting ideologies (merit)

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QUESTIONS AND DISCUSSION

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