BROADENING THE PARTICIPATION IN STEM: IMPROVING RETENTION THROUGH UNDERGRADUATE ACADEMIC RESEARCH

LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION (LSAMP)

TOYINDA WILSON-LONG, MS
PURDUE CAMPUS – PROGRAM COORDINATOR
APRIL 22, 2011
Agenda

- Introduction and Program History
- Mission and LSAMP Program Model
- Undergraduate Research Literature
- Purdue Campus Program Components
- Video: Faculty and Mentor Engagement
- Comparative Data
- Questions
Program History

- Alliances for Minority Participation (AMP) started in 1991 – 6 programs

- In 1999 the program was named after Louis Stokes

- LSAMP Indiana started in 2002 with 5 universities

- In 2007 added 3 more universities
Mission

• Substantially increase the quantity and quality of undergraduate students, especially from disadvantaged or underrepresented groups who:
  - Graduate with degrees in Science, Technology, Engineering and Mathematics (STEM) majors
  - Enter graduate programs in STEM disciplines
  - Enter the workforce in STEM careers
LSAMP Model

- **Student Retention**
  - STEM Related Academic Integration
    - Student, Faculty, and Institutional Focused Strategies
  - STEM Related Social Integration
    - Student, Faculty, and Institutional Focused Strategies

- **Disciplinary Socialization**
  - STEM Related Professionalism
    - Student, Faculty, and Institutional Focused Strategies

*Source: Urban Institute: 2006 Revitalizing the Nation’s Talent Pool in STEM*
Literature on Undergraduate Research

- Undergraduate researchers experience gains in specific skills such as making use of primary literature, formulating research hypotheses, interpreting data, and communicating the results of research (Kardash, 2000, 2004)

- They experience personal gains in independence and self-confidence (Seymour, et al., 2004)

- They show gains in career clarification and career preparation (Lopatto, 2003; Seymour, et al.)
Literature on Undergraduate Research

- They persist in their pursuit of an undergraduate degree at a higher rate than comparison groups (Nagda, et al, 1998)
- They pursue graduate education at a higher rate than comparison groups (Hathaway, et al., 2002)
- And as alumni they retrospectively report higher gains than comparison groups in skills such as carrying out research, acquiring information, and speaking effectively (Bauer and Bennett, 2003)
Distribution of BA’s in Science and Engineering

Percentage of Bachelors Degrees Awarded 2008

www.nsf.gov

- Asian Pacific Islander: 9.9%
- American Indian: 0.7%
- Black, non-Hispanic: 8.6%
- Hispanic: 8.5%
- White, non-Hispanic: 66.1%
- Other, unknown race: 6.2%
Targeted Colleges

Science  Technology  Engineering  Agriculture
Undergraduate Research Program Eligibility

- Research Objective Statement
- Interview
- Major/College
- Classification
- GPA
- Mentor Availability
- US Citizen, Permanent Resident,
Purdue Campus Program

- STEM Academic Boot Camp
- Academic Year and Summer Research Program
- Sophomore Learning Community
- LSAMP Professional Development Seminar
- Tutoring & SI
- Mentoring Program
- Faculty Engagement
STEM Academic Boot Camp

- Collaboration between the Colleges of Science, Technology, Engineering, and Agriculture
  - Financial Support

- STEM Academic Boot Camp
  - A five week, summer transitional program for students who will matriculate that immediate academic school year
  - Exposes the students to the STEM coursework, lifestyle, and the pace of college life here at Purdue University
LSAMP Undergraduate Research Program

Pair students with Faculty Mentors to conduct Cutting-Edge Research

- 12 weeks: Fall & Spring Programs
- 10 weeks: Summer Program
- Create a Poster, and Oral Presentation
- Annual Research Conference
- Monthly STEM workshops
- LSAMP Professional Development Seminar
Collaboration with Student Access Transition and Success Programs

LSAMP Sophomore Research Based Learning Community

- Will live and learn together in the Residence Hall
- Take LSAMP Professional Development Seminar
- First Semester: Introduction to Academic Research
- Second Semester: Research Career Opportunities
- Conduct a Service-Learning Project
Expected Benefits of Participation

- Students **live, learn and study** with students that have similar STEM academic goals
- Students conduct **cutting-edge research** with STEM Faculty and their research teams
- Students receive **financial support**
- Students **increase critical thinking** and experience learning workshops
Expected Benefits of Participation

- Students **attend & present research** at local, regional, and national STEM conferences
- Students **acquire preparation for graduate school** in STEM disciplines
- Students will **gain professional skills** for life beyond college
Expected Benefits of Participation

Benefits of participating in LSAMP SRBLC

- Students receive **guidance, mentoring and academic coaching** by graduate students in the Alliance for Graduate Education and the Professoriate (AGEP) Program

- Students **increase** their **knowledge** base for STEM career opportunities

- Students will participate in a **service-learning project** that will increase their STEM leadership competence and communication
LSAMP Professional Development Seminar

- General Studies Courses: 1-credit
- Learning Objectives
  - explore STEM discipline; build academic and career research skills; and develop and nurture professional relationships with faculty and their research teams
  - explore your interest in attending graduate school and/or pursuing research in STEM careers and the STEM workforce
  - introduce students to critical topics that will assist student transition into a professional environment
  - increase students’ understanding, through LSAMP, of the importance of STEM research for potential impact on students’ educational and future career goals
Collaborate

- Academics Departments
- HORIZONS
- Student Organizations
  - Tutoring
- Student Access Transition and Success Programs
  - Supplemental Instruction Offerings
LSAMP Mentoring Program

- Partnership w/Midwest Crossroads Alliance for Graduate Education and the Professoriate Scholars
  - Mentor Training with the Graduate Students
  - Pair Undergraduates with Graduate Students
    - Assist with Research Program
    - Bi Weekly Connections
      - Emails
      - Face to Face Meetings
      - Facebook/Twitter
      - Breakfast/Lunch/Dinner
Faculty Mentor Engagement

- Opening Meeting
- Financial Support
- Mentoring & Diversity Workshop
- Mid-Program Communication/Survey
- Lab Visits
- Faculty Appreciation Luncheon
LSAMP Opportunities

Learn more about graduate school

- Sponsor students to attend events such as the PU Big Ten and Grad Expo

Attend Research Conferences

- Present your work via Poster or PowerPoint
Fall 2003 Cohort Sample

Fall 2003 Cohort

<table>
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<tr>
<th>LSAMP</th>
<th>Non-LSAMP STEM Minorities</th>
<th>Non-LSAMP STEM</th>
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<tr>
<td>Fall 2003</td>
<td>15</td>
<td>760</td>
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# 6-Year Graduation Rate

## Cohort Graduation 2009

<table>
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<tr>
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<tbody>
<tr>
<td>LSAMP</td>
<td>12</td>
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<tr>
<td>Non-LSAMP STEM Minorities</td>
<td>463</td>
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<tr>
<td>Non-LSAMP STEM</td>
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References


Questions

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