

Breakout Group 1: National Demand for Better Quantitative Skills

Discussion Leader: Uri Treisman; Facilitator: Howard Gobstein

Session 1: Braddy, Cooper, Franco, Goroff, Medina, Rivers, Goldin

Session 2: Allison, Fahringer, Ham, March, Moena, Tanner

TPSE Challenges: To increase persistence and degree completion, involve the math community in reforms, better align instruction with workforce and career needs, and create multiple pathways from (1) secondary to postsecondary institutions and (2) 2-year colleges to universities.

Questions

- 1. What introductory college-credit math courses does your department offer? How does your institution set the prerequisites for these gateway math courses? What advice do students receive about the relevance of these offerings to their intended majors and career aspirations? Does your department have a process for regularly reviewing its introductory offerings? Are there exemplary practices in this regard, which should be widely shared?*
- 2. What are the administrative, advising, and other challenges in offering multiple lower-division math pathways? Are there creative solutions to these that should be widely shared?*
- 3. Given the high inter-institutional transfer rates among public colleges and universities, how does your institution manage course transfer? Do you have a model that is particularly effective and should be shared?*

Breakout Group 2: Building Partnerships with Other Disciplines

Discussion Leader: Mark Green; Facilitator: Francesca Fraga Leahy

Session 1: Allison, Axler, Fahringer, Horton, Miller, Posner

Session 2: Cantrell, Cooper, Goldin, Miranda, Saari, Turner, Weekes

TPSE Challenges: To encourage the evolution of upper division mathematics courses into partnerships with other disciplines; to build enhanced pathways and collaborations between mathematics and other STEM disciplines; to strengthen interdisciplinary teaching and course co-design.

Questions

- 1. What are some models for partnerships with other disciplines around upper-division courses? Which disciplines are most promising? Whose students might benefit from taking upper-division math courses? Is co-teaching and/or co-designing a course worthwhile in some circumstances?*
- 2. What might an upper-division pathway (possibly continuing a lower-division pathway) for non-math students look like? How long and how intense? How would completing such a pathway show up on a student's record?*
- 3. Why are the steps in creating and maintaining partnerships with other disciplines? What are the obstacles, and how might these be overcome?*

Breakout Group 3: Sharing Success in Leading Educational Transformation

Discussion Leader: Eric Friedlander; Facilitator: Brit Kirwan

Session 1: Cleary, Levy, March, Miranda, O'Sullivan, Turner, Williams, Younker

Session 2: Braddy, Buckmire, Kung, Levermore, Marshall, Miller, Posner, Vogelius

TPSE Challenges: To provide guidance and innovative solutions to chairs as they work with administrators to gain financial resources, encourage colleagues to participate in evolving roles, and form partnerships with external faculty. Objectives include incentives for pedagogical transformation and resources for improved modes of teaching.

Questions

- 1. How can chairs incentivize excellence in teaching while continuing to reward other goals of the mathematics program of their institution?*
- 2. What are innovative programs of various mathematics departments that are viewed most favorably by client departments and administrators?*
- 3. What informational resources would be most helpful in facilitating the efforts of chairs? How should these resources be made available?*

Breakout Group 4: Evolving Culture of Teaching and Learning

Discussion Leader: Karen Saxe; Facilitator: Amy Getz

Session 1: Buckmire, Ham, Kung, Marshall, Moena, Nolan, Tanner, Walker

Session 2: Cleary, Franco, Horton, Medina, Rivers, Velez, Wolpert, Younker

TPSE Challenges: To address the challenges of staffing, pedagogical innovations, and culture in mathematics departments. Objectives include identifying, evaluating, and disseminating successful models (and other promising experiments) of teaching in developmental, lower division, and upper division courses.

Questions

- 1. What are innovative programs in mathematics departments that you know about and view as successful or promising? What were the intended goals of the innovation and what is the evidence that they are successful?*
- 2. The participants in panel 4 gave the perspectives of administrators. What is it that you would like your home administration to know about the impediments that you feel prevent – or at least make it difficult – to expand or experiment with new pedagogies which may or may not include using technology?*
- 3. Is there any sort of ongoing conversation about updating undergraduate curricula and pedagogy in your department? If not, are you aware of individuals in your department who act alone in this context? Are you aware that anyone in your department looks at curricular or pedagogical guides published by the professional associations (AMS, MAA, SIAM) to inform such conversations?*

Breakout Group 5: Broadening Graduate Training

Discussion Leader: Tara Holm; Facilitator: Phillip Griffiths

Session 1: Cantrell, Levermore, Saari, Weekes, Velez, Vogelius, Wolpert

Session 2: Axler, Goroff, Levy, Nolan, O'Sullivan, Walker, Williams

TPSE Challenges: To better prepare graduate students for alternative careers. This includes not only improved teaching practice, but familiarity with the range of workforce options now available to their own students, and ability to explain the range of uses of mathematics in the work place.

Questions

- 1. Does your department or university make it easy for your graduate students to take courses in other fields? Can they get (and are they encouraged or discouraged to get) a masters degree in a different field simultaneously to their mathematical work? Does your department offer seminars or courses that illustrate the wide range of applications and uses of mathematics?*
- 2. What co-curricular training does your Department offer? How extensive is your training for TAs? Do you train students to mentor and advised students as well as teach in the classroom? What university resources are available to support graduate students in their teaching role?*
- 3. How does your Department and University support graduate students during their job search? Does the culture in your department affect students seeking nonacademic positions (in a positive or negative way)?*
- 4. Do your graduate students participate internships? Does your department or university have ways to support students in the process of finding internships and nonacademic jobs?*