



# TPSEMath

Transforming Post-Secondary Education in Mathematics

Inaugural MAG Meeting

Washington DC

March 25, 2016

# Origins and Information Gathering - 1

- What is the problem: Undergraduate mathematics education doesn't meet the needs of our students – or the nation.
- Preparation for modern careers requires mathematics training of greater relevance and diversity.
- Few undergraduates – especially those from less advantaged backgrounds – see the value of mathematical and analytical skills
- Mathematics is thought to present a barrier rather than a gateway to a stimulating career.

# Origins and Information Gathering - 2

- Many of these issues of long standing
- Early meeting at Carnegie
- Major reports: Math 2025 (MG), Engage to Excel (JG)
- CCNY/Sloan start-up support

# Origins and Information Gathering - 3

- Regional meetings & JMM sessions
- Experiences of leaders throughout the mathematics community
- Their analysis of the issues consistent
- Many good ideas & experimental approaches to curricula, teaching, and learning methodologies
- Mostly isolated experiments at local scale – difficult to scale up. Overall a lack of consistency and communication
- Outside the math community seen a need for more coherence without imposing uniformity.

# Strategic planning & action initiatives - 1

- Lower division: Multiple pathways and improved completion rates
  - Dana Center
  - APLU/AASCU
- New teaching and learning technologies
  - ITHAKA, evaluating the role of technologies in teaching and learning

# Strategic planning & action initiatives - 2

- Upper division: Enhanced alternative pathways
  - Rising demand from other disciplines for students with stronger and more relevant math backgrounds
  - “Math Plus X” programs
- Graduate students:
  - Broader preparation for diverse careers, inside/outside academia.
  - Need to understand diverse demand, multidisciplinary math courses

# Strategic planning & action initiatives - 3

- Strategic plan
  - Developed with Parthenon
  - Major exercise recommending partnerships, especially with chairs (“Math ambassadors”) and professional societies
  - TPSE-influenced networks: Importance of networking, outreach, communication
  - TPSE’s strong alignment with other reports, e.g., Common Vision (MAA).

# Strategic planning & action initiatives - 4

- Administrative center at University System of Maryland Foundation
  - USMF's commitment to educational reform
  - Brit Kirwan, Senior Adviser: long experience in mathematics, math education, senior administration, experiments in reform
- Inclusion of outside stakeholders
  - Administrators
  - State governments & officials
  - Funders: foundations, NSF and other federal agencies
  - Employers and career advisers

# Current meeting - 1

- Purpose: Invite small, diverse group of mathematics department chairs
  - Includes others well informed about substantive pedagogical and institutional issues from ground level.
  - Not just a meeting -- beginning of an ongoing partnership
- Reason for forming a MAG
  - Chairs: Situated at nexus between faculty and administration
  - As in any organization, especially institutions of higher education, middle management is pivotal

# Current meeting - 2

- Dig more deeply into five major topics
  - Expanded Workforce Demand for Quantitative/Math Skills
  - Growing Demand for Quantitative Skills in Other Disciplines
  - Lessons from Postsecondary Reform in Other STEM Disciplines
  - Role and Perspectives of Administrators
  - New Pathways for Mathematics Students

# Current meeting - 3

- Develop ongoing emphasis on two particular major issues
  - Multiple pathways
  - Enhanced alternative pathways, to meet the demand for a wider menu of inter- and multi-disciplinary training
- What we hope to hear at the meeting
  - Personal day-to-day experiences & experiments
  - Broader analysis of issues
  - Suggested strategies to address them
- Plan a second MAG meeting (~150 chairs): topics, goals, structure

# Ongoing actions

- A strong TPSE-MAG base from which to create and develop reforms
- Initiate partnership on lower division multiple pathways (APLU, AASCU, New Mathways)
- Communicate ongoing actions to funders looking for guidance and consensus from the mathematics community
- Expand the network of chairs
- Reach out to professional societies
- Network with STEM areas of high demand: “Math Plus X”
- Help to educate graduate students about these issues

# Meeting outcomes / Next steps

- Prepare for second MAG meeting
- A rough agenda: plan to design, adapt, scale up reforms
- Expand diversity of institutions, ethnicity, gender

# Conclusion

- We hope the department chairs will be our primary ally in this strategy. In closing, the Mission Statement we worked out in partnership with Parthenon – hoping that you will identify with its spirit:

# Mission statement

*TPSE Math will facilitate an inclusive movement to strengthen post-secondary education in mathematics by working closely with – and mobilizing when necessary – faculty leaders, university administrations, membership associations, and relevant disciplinary societies in the pursuit of mathematically rich and relevant education for all students, whatever their chosen field of study. TPSE Math will identify innovative practices where they exist, advocate for innovation where they do not, and work with and through partners to implement and scale up effective practices.*