EMERGING ISSUES IN MATH REFORM

SOUTHEAST TEXAS REGIONAL MATHEMATICS PATHWAYS MEETING

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GOALS FOR TODAY

• Describe NASH and its role in higher education today
  • Document the shared challenge of remedial mathematics

• Describe an approach that links top-down and bottom up policy change in a university system and a state
  • Fortuitous Federal Grant Opportunity: First in the World
  • Drill down to a campus level to reveal implementation successes and challenges
NASH: NATIONAL ASSOCIATION OF SYSTEM HEADS

- More than 35 years of collaboration
- System heads in 33 states
- Over 45 university systems
- More than 5.6 Million students represented
- Support for public multi-campus systems, which enroll 75% of all students in public four year colleges and universities
NASH: NATIONAL ASSOCIATION OF SYSTEM HEADS

- Bring a System level approach to closing equity gaps
- Communicate the value of higher education to key stakeholders
- Promote smoother pathways for students to completion
- Partner in policy and strategy development


**TS³**: TAKING STUDENT SUCCESS TO SCALE

- Interventions were chosen based on strong evidence for:
  - Improving student outcomes
  - Closing equity gaps

- **TS³**
  - Flexible implementation
  - Common definitions of success
  - Minimal thresholds for adoption and diffusion
NASH TS³ PARTNERS
NASH DRIVES “COLLECTIVE IMPACT”

NASH serves as the backbone to drive collective impact on college completion by:

- Working with systems to develop a shared vision for success within their communities
- Establishing standard definitions and metrics to build evidence and compare results
- Centrally managing and tracking data
- Facilitating the sharing of best practices across systems
- Engaging systems in collaborative problem solving on how to address challenges
WHAT PROBLEM ARE WE TRYING TO SOLVE IN MARYLAND?

✧ Intermediate Algebra is the “graveyard” for non-STEM majors

✧ Approximately 71% of Maryland’s community college students and 24% of four-year university students test into developmental math courses

✧ Existing regulations drove community college students toward math courses that did not align with the requirements of their majors and resulted in high failure and drop-out rates

✧ USM institutions had multiple mathematics pathways, but community colleges did not
MARYLAND’S GOALS FOR UNDERGRADUATE MATHEMATICS

- Reduce the number of students taking remedial math
- Increase the percentage of students who successfully complete remedial math within their first year of college
- Increase the percentage of first year freshmen who successfully complete a math course that fulfills a general education requirement in their first year
- Develop math pathways to place students in more appropriate courses for their educational goals and for success in their degree program area
- Provide better advising for incoming freshmen and returning non-traditional students
ACHIEVING BUY-IN FOR POLICY CHANGES

✧ Leadership from the top
  ▪ Intersegmental Chief Academic Officers

✧ Engaging Faculty
  ▪ Statewide Mathematics Group
  ▪ Campus-level committees and task forces
WHAT IS THE “RIGHT MATH”? 

Community College Student Enrollment into Programs of Study

- Require Calculus 20%
- Do not require Calculus 80%

Four-Year Student Enrollment into Programs of Study

- Require Calculus 28%
- Do not require Calculus 72%

Oakland CA: Learning Works and Policy Analysis for California Education.
POLICY TAKEAWAYS

• Take advantage of existing structures and relationships
• Space or forum for open and frank dialogue is key
• Essential Conditions
  • Common understanding of the problem
  • Shared belief that the problem is important and needs to be addressed
MMRI-FITW PARTNER CHARACTERISTICS

- Five 4-Year Baccalaureate Degree Institutions
- Seven 2-Year Community Colleges
- Ten Institutions with open or non-competitive acceptance
- One HBCU
- Two Institutions w/ Majority Non-traditional Freshmen
- Four Rural-Serving Institutions
- Three Research-Oriented Institutions
- Institutional Enrollment Ranging from 3,100 to 85,000
MARYLAND FITW RESEARCH DESIGN

**FALL Course**
- **Treatment Group**: New Developmental Pathway Course
  - 1 or 2 levels below

- **Control Group 1**: Intermediate Algebra
  - 1 level below college math

- **Control Group 2**: Elementary Algebra
  - 2 levels below

**SPRING Course**
- Gen. Ed. Statistics

**Students** - 1 or 2 levels below college level math
MARYLAND FITW TIMELINE

Fall 15
Project Begins; Planning & Kickoff Events

Spring-Summer 16
Development of curriculum and placement, advising, & registration processes

Fall 17 – Spring 18
Evaluation Cohort Enrolled

Jan 16
Course Outcomes Defined

Fall 16
Spring 17
New Statistics Pathways Launch
Pilot Cohort Enrolled

Fall 17-Spring 20
Data Collection, Analysis, Dissemination
NEWLY-DESIGNED COURSE OUTCOMES AND FRAMEWORKS FOR NON-STEM MAJORS

- Developmental Mathematics Course
- General Studies Statistics
- Topics for Mathematical Literacy: Liberal Arts Math
POLICY AND IMPLEMENTATION QUESTIONS

• How To Best Place Students Into The Most Appropriate Mathematics Course?
  • Registrar, Advisors, Department Chairs, Faculty

• How To Lead Faculty Discussions About Rigor of Different Mathematics Courses?
  • External and internal facilitators, math faculty, testing office

• How should Developmental Mathematics Transfer?
  • Transfer coordinators, admissions advisors, transfer advisors, math faculty
INVESTMENT IN CURRICULAR DEVELOPMENT AND INNOVATION

- Resources (Faculty Summer Salaries)
- Elementary Statistics Course Revision
- Study Skills Integration
- Best Practices (active learning, real-world projects, lecture/computerized formats)
PROJECT BENEFITS (SO FAR)

• Accelerated option for students 2 levels below College Math
• Developmental course aligned to program of study
• Data collection/analysis to assist with evaluation of current courses, success rates and streamlining efforts
• Engagement of faculty (ground up efforts)
• Collaboration across institutions (2 and 4-year)
• Opportunities for improvement (course content, delivery and student success rates)
• Access to FITW Senior Advisors (Dr. Uri Treisman to visit AACC April 21, 2016)
PROJECT CHALLENGES (SO FAR)

- Tight timeframe for course development, recruitment and implementation
- Internal negotiation about where this reform fits with other campus-level reform efforts
- Advising challenges/multiple choices and pathways for students—what is the advisor’s responsibility/obligation to the student?
- Working with disciplinary faculty from across campus to align math requirements.
WHERE ARE WE NOW?

- Courses have been developed (Summer and fall 2016) and piloted (Spring 2017).
- Pilot data has been analyzed to inform data collection process and advising procedures.
- FITW courses will roll out in Fall 2017.
  - Faculty identified to teach newly developed courses.
  - Faculty creating and sharing course materials for fall implementation.
  - Initial advising and admission has taken place, and pilot results are being shared with partners.
QUESTIONS?

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