Developmental Mathematics Redesign
Chancellor’s Retreat
August 10, 2010
INTRODUCTION
Why?

• Developmental students face significant barriers in completing college programs

• Demand for a more educated, credentialed workforce
  – Governor’s commitment for 100,000 additional degrees in 15 years
  – Commitment to student success Achieve 2015
    – Increase the number of students graduating, transferring or completing workforce credential
Three Overarching Goals

- Reduce overall need for developmental education (DE)
- Design DE to reduce time to complete in 1 year
- Increase number of DE students graduating or transferring
DMRT Charge

- Review developmental mathematics policies and practices
- Make recommendations to redesign developmental mathematics
  - Improve student success
  - Have more streamlined and efficient ways of delivery
Percent of Recent Virginia Public High School Graduates Entering Virginia’s Community Colleges in Fall 2006 Underprepared in Math According to COMPASS Placement Tests*

* the percent of students taking at least one COMPASS test represents approximately 83% of incoming recent Virginia public high school graduates statewide.
** In several counties, other placement tests were given to high school students.
Note: These figures do not include students exempted from placement testing (e.g. SAT and ACT scores) and formally dual enrolled students.
Source data: Virginia Department of Education and Virginia Community College System; prepared 8/17/2007
Percent of Cohort Attempting and Successfully Completing First Math Course

- Any Mth Course: 69.7%
- Dev Ed Mth Course: 41.8% Attempted, 21.4% Successful on First Attempt
- College level Mth Course: 42.3% Attempted, 27.2% Successful on First Attempt

Legend:
- Attempted
- Successful on First Attempt
Persistence and Completion Rates of Students Within 4 Years to Gatekeeper Math Courses

- Dev Ed: Attempted 100, Completed 62.6
- Transfer Gatekeeper (MTH151, 163, 166, 173): Attempted 22.9, Completed 16.4
- CTE Gatekeeper (MTH120, 121, 126): Attempted 8.7, Completed 5.6

[Graph showing the persistence and completion rates for different categories of math courses]
J Serbousek

NATIONAL INITIATIVES
Pathways

- New vision of Mathematics Pathways: Fewer noncredit math courses for non-STEM students
- Collaboration
  - Carnegie Foundation for the Advancement of Teaching
  - Charles A. Dana Center, UT at Austin
  - American Mathematical Association of Two Year Colleges
Pathways

• Integrated approach to content and instructional strategies—Not replication of high school
  • Stemway
  • Mathway
  • Teachway
  • Statway
Many colleges across the country

Principles
- Redesign the whole course
- Increase student engagement
- Provide individual assistance
- Ongoing assessment
- Prompt feedback
Success rate in developmental math courses went from 54% to 72%.

Each course showed significant improvement.
Compared to one VCCS college:
Elementary Algebra Pass rates

Baseline:
VCCS college: Fall 2004
CSCC: Before Redesign

VCCS college: Fall 2007
CSCC: Spring 2008

VCCS college: Fall 2008
CSCC: Fall 2008

VCCS college: Fall 2009
CSCC: Spring 2009
FFriedman

WORK OF MATH REDESIGN TEAM
Basic Assumptions

- Purpose of developmental studies is to prepare students for academic success in postsecondary education
- Simply tweaking is not enough
- Students need to move quickly and successfully into college work
- Role of faculty in redesign and implementation is essential
- Redesign will be implemented at scale
Developmental Mathematics
Redesign Team Composition

- Mathematics faculty, including VMATYC chair
- Social science faculty
- CTE faculty
- Academic and student services administrators
- Workforce representatives
- K-12 representative
- 2 presidents
The Work of the DMRT

- Face-to-face meetings
- Subcommittees worked in between meetings
  - Content review
    - STEM, Liberal Arts, CTE
  - Structure
  - Placement/student services/transfer
- Faculty feedback
  - Conferences, convenings, blog & email
- Regular updates to State Board, ACOP, ASAC
DMRT Recommendations

1. Content revised to reflect what is needed to be successful in college courses
2. Content will be organized into units/modules that are equivalent to one credit hour
   - Competency based
   - Faculty group to write student learning outcomes
   - New grading scheme from S, R, and U to A, B, C, R, and F
   - Change in course prefix to reflect new design
DMRT Recommendations

3. New, customized placement and diagnostic instruments, together with practice tests

4. Enterprise system for early alert and tracking to strengthen student services

5. Research, analytics, tracking student success integral to refining redesign

6. Institutional autonomy for delivery
A CLOSER LOOK AT THE MODULES
Current Path

- Arithmetic
- College Credit Math Course
  - Algebra II
  - Algebra I
  - Arithmetic
Precollege Math Pathways by Program of Study

Placement and Diagnostic Tests

- STEM Business Administration
  - Precollege Units 1-5

- Liberal Arts
  - Precollege Units 1-5

- Career Technical Education
  - Curriculum-Specific Precollege Units

- Precollege Units 6-9

- Curriculum-Specific Credit Courses
NEXT STEPS
Implementation of Redesign

- Motion to approve DMRT Report on agenda of August Advisory Council of Presidents meeting
- Mathematics faculty committees will convene in fall semester to develop
  - Student learning outcomes for modules
  - Placement and diagnostic instruments with vendor
  - Curriculum, common assessments and materials
- System office staff will address issues
  - SIS
  - Financial aid
Resources

- Faculty redesign teams will be funded:
  - Reallocation of existing system office funding
  - DEI state policy funds
- Chancellor’s Innovation Fund
  - Support college redesign efforts
- Professional development
  - VCCS Office of Professional Development
  - Day-long workshop before New Horizons
The Critical Point

Redesigning Developmental Mathematics Education in Virginia's Community Colleges

Report of the Developmental Mathematics Redesign Team
August 2010