National Symposium of 21st Century Community Colleges
Strengthening Workforce Development in India for the Global Economy

Under Prepared students: Developmental Math using Technology
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The Challenge

- On a national level, the percentage of community college students who need developmental mathematics, reading, and writing courses is approximately 50%.

- The percentage of students needing remediation in mathematics is generally higher than those needing remediation in reading and writing English. For example, in Maryland, 35% of students need remediation in reading and writing, and 65% need remediation in mathematics.
ACADEMICALLY VULNERABLE

• They are first generation college students
• They have no family guidance to help them navigate the academic world
• They have job responsibilities
• They have family responsibilities (16% are single parents)
• They are distracted by transportation difficulties
• They are from underrepresented minorities
• They have financial limitations—cannot afford books
• They have poor high school academic preparation
AMERICAN DREAM

• Open Door Policy
  – Everyone will be educated

• Montgomery College
  – “All who are high school graduates, or the equivalent, and who can benefit from the programs and services of the College, shall qualify for Admission.”

• Diverse Population
  – “Students enrolled from every continent and from more than 170 countries from around the globe.”
ASSESSMENT

- National Assessment Instruments
  - ACCUPLACER (62% of community colleges)
  - COMPASS (46% of community colleges)
  - Other diagnostic instruments
    Writing samples
    Affective questions
    High school transcript
CHARACTERISTICS OF DEVELOPMENTAL COURSES

• Class Size
  – 20 student for English and 24 for mathematics

• Institutional Credit
  – Not transferable credit

• Course Repeats
  – Limited number

• Con-Current Enrollment
  – For example, English with Math
DEVELOPMENTAL WRITING

• Progression to College Level
  – 2 levels.
  – Writing 1 leads to Writing 2
  – Writing 2 leads to college-level writing

• Course Content
  – Paragraphs to multi-paragraph essays
  – Thesis Statement
  – Development of Ideas
  – Grammar and Sentence Structure

• Course Outcomes
  – To write fully developed paragraphs and essays
  – To use and recognize thesis statement
  – To write grammatically correct sentences

21st Century Community Colleges
DEVELOPMENTAL READING

• Progression to College Level
  – Reading 1 leads to Reading 2
  – Reading 2 leads to college-level writing

• Course Content
  – Identifying vocabulary in context
  – Reading paragraphs and essays to the find main idea
  – Reading essays that follow different types of development
  – Reading for understanding of the author’s point of view, purpose, and audience

• Course Outcomes
  – To recognize and understand the main idea
  – To apply critical reading/thinking skills
  – To evaluate arguments
Student Response to Developmental Reading
DEVELOPMENTAL MATH

• Progression to College Level
  – 3 levels of developmental math.

• Course Content
  – Working with Integers, Decimals and Fractions
  – Solving a System of Equations
  – Use of Exponents and Log Functions
  – Modeling Real World situations

• Course Outcomes
  – To solve and graph equations
  – To simplify complex expressions
  – To effectively use technology to solve problems
FACILITIES FOR DEVELOPMENTAL COURSES

• Computer Classrooms

• Learning Centers
INNOVATIVE MODELS

- Developmental Learning Community
  - Reading level 1 and Writing level 1

- Contextualized Learning Community
  - Writing level 1 with Biology 101

- On-line Developmental Courses
  - Math level 1

- Hybrid Developmental Courses
  - Writing level 2
INTERVENTION STRATEGIES

• No Single Strategy Works
  – Providing a Graduation/Goal Plan
  – Providing Learning Communities
  – Accelerated Course Work
  – Flexible Scheduling
  – Student Success Courses
  – Providing Mentors
  – Personal and Intense Advising and Counseling
  – Academic Alerts and Reduction of Hassles
CASE STUDY

Mathematics Reform using Technology
CASE STUDY

- Assessment & Placement
- Number of Students Affected
- Success
- Self-pacing
- Methodology
- Mastery Learning
- Early Alert
- Community
Student Responses