STRENGTHENING STUDENT SUCCESS THROUGH DEVELOPMENTAL REDESIGN

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October 8, 2015
List 3 things you want to know about SAC Math Redesign.
In Fall 2014, SAC had:

- 26,728 credit students
  - 5,156 Full Time Students,
  - 20,452 Part-Time Students
- 41% females, 59% males
- 54% are Latino, 8.5% are Asian, 16.5% White
- 54% are first-generation college students
- 78% of all full-time students receive the BOG
- 3055 incoming freshmen students
Incoming Freshmen
- 51.4% registered in Basic Skills classes
- 20.6% enrolled in Basic Skills Math (47.64% pass rate)
- 33.9% enrolled in Basic Skills English (60% pass rate)

Basic Skills Completion
- Math 41.1%
- English 37.6%
GOALS FOR TODAY’S SESSION

- Share with you the exciting SAC Math Redesign project
  - Why Redesign?
  - History of the project
  - Details
  - Data

- Encourage you to consider Math Redesign

- Answer your questions about Math Redesign
WHY REDESIGN?
Too many students begin the developmental sequence and then never finish.

- **Do the Math**
  - Assume 70% pass rate/80% retention to the next course

- **2 developmental courses and 1 college level**
  - \(0.70 \times 0.80 \times 0.70 \times 0.80 \times 0.70\)
  - \[= 21.9\% \text{ success}\]

- **3 developmental courses and 1 college level**
  - \(0.70 \times 0.80 \times 0.70 \times 0.80 \times 0.70 \times 0.80 \times 0.70\)
  - \[= 12.3\% \text{ success}\]
The chances of a student who begins in the developmental sequence at SAC completing a transfer level course are very low. They are especially low if the student begins three or more levels below transfer level math.
### Math 060 Students Tracked To Math 080/081 Within One Year

<table>
<thead>
<tr>
<th></th>
<th>Math 060 Enrollment</th>
<th>Success</th>
<th>Tracked to Math 080</th>
<th>Tracked to Math 081</th>
<th>Total Success</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Enrollment (grade A,B,C,P)</td>
<td>Enrollment (grade A,B,C,P)</td>
<td></td>
</tr>
<tr>
<td>Fall 2013 N=1015</td>
<td>467</td>
<td>72</td>
<td>48</td>
<td>239</td>
<td>19% (196/1015)</td>
</tr>
<tr>
<td>Spring 2014 N=820</td>
<td>418</td>
<td>61</td>
<td>33</td>
<td>160</td>
<td>17% (136/820)</td>
</tr>
<tr>
<td>Fall 2014 N=786</td>
<td>387</td>
<td>53</td>
<td>27</td>
<td>165</td>
<td>17% (133/786)</td>
</tr>
</tbody>
</table>

- **Math 060 Elementary Algebra**
- **Math 080/081 Intermediate Algebra**
Math 060 Students Tracked To Math 080/081 Within Two Years

<table>
<thead>
<tr>
<th></th>
<th>Math 060</th>
<th>Tracked to Math 080/081</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enrollment</td>
<td>Success</td>
</tr>
<tr>
<td></td>
<td>Fall 2010</td>
<td>434</td>
</tr>
<tr>
<td>N=976</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fall 2011</td>
<td>511</td>
</tr>
<tr>
<td>N=996</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Math 060 Elementary Algebra
Math 080/081 Intermediate Algebra
Respond to the data:

What would you do next??
HISTORY OF PROJECT AT SANTA ANA COLLEGE
The National Center for Academic Transformation (NCAT) theNCAT.org

- independent, not-for-profit organization
- provides leadership in using information technology to redesign learning environments
  - to produce better learning outcomes for students
  - to reduce costs to the institution
- uses sound research practices
Program in Course Redesign (PCR), funded by the Pew Charitable Trusts, 1999 - 2003
Roadmap to Redesign (R2R), funded by FIPSE, 2003 - 2006
Colleagues Committed to Redesign (C²R), funded by FIPSE, 2006 - 2009
Changing the Equation funded by the Gates Foundation, 2010 - 2013

theNCAT.org
Followed NCAT template to structure the process

Four Years of Work
  - Department Redesign Meetings
    - monthly for 2.5 hours
  - Committee meetings
Five Principles of Successful Course Redesign

- Redesign the whole course
- Encourage active learning
- Provide students with individualized assistance
- Build in ongoing assessment and prompt (automated) feedback
- Ensure sufficient time on task and monitor student progress
Goals Year 1 2011-2012

- Decide
  - whether to redesign
  - which course/s we will redesign
  - what the model needs to include

- Clarify
  - our priorities for the redesign
  - the pedagogical values of the department

- Build
  - consensus among the department faculty for the redesign plan
What are the issues/concerns in our developmental math program that need to be addressed?

- Low success rates
- Low retention rates
- Too long to transfer level
- Overlap of material
- Too much curriculum in a course
- Lack of quantitative and logical thinking
- Unnecessary topics in curriculum
- Attendance
- Poor attitudes
- Weak study skills
- Poor prerequisite skills
- Unwillingness of students to do homework
What are the issues/concerns in our developmental math program that need to be addressed?

- Low success rates
- Low retention rates
- Too long to transfer level
- Overlap of material
- Too much curriculum in a course
- Lack of quantitative and logical thinking
- Unnecessary topics in curriculum
- Attendance
- Poor attitudes
- Weak study skills
- Poor prerequisite skills
- Unwillingness of students to do homework

Redesign the Course
Restructure Curriculum
Redesign the Course
SUMMARY FOR YEAR 1

- **Two Pathways**
  - BSTEM - Business, Science, Technology, Engineering, Math
  - SLAM - Statistics and Liberal Arts Math

- **Two New 6 Unit Courses**
  - BSTEM-Math 084
  - SLAM-Math 083

- **Acceleration achieved by:**
  - Better pre-placement test preparation
  - Math 060/081 combined into a 6 unit 1 semester course for each pathway
DOCUMENTS

- Logic Model
- Course Sequence Flow Chart
FACULTY EXPERTS COMMITTEES

- Math 083 Academic/Course Content
- Math 084 Academic/Course Content
- Assessment and Outreach
- Grants/ Title V
- Curriculum/Articulation/Registration
- Model Development
- Technology/Hardware
- Instructional Services
- Training
REDESIGN FOR SAC MATH

- **Goals**  
  **Year 2**  
  **2012-2013**

  - **Decide**
    - what *topics* /objectives must be included in each course.
    - which *model* best fits the needs of our students, the values of our faculty, and our facilities.
    - the *software and textbook* needs of these courses/models.

  - **Create**
    - *timelines* and *task lists* for each committee that will lead to full implementation.
Model Development

- Model for each course will include:
  - Integration of Technology
    - Some time in a computer (iPad) classroom with teacher
    - Some time at home/ Math Center
  - Consistency across course sections
    - Same core course in software
    - Same course reference sheet
    - Department final
  - Student Assistants in the classroom
Model for each course will include:

- Mastery learning
- Study Skill Development
- More critical thinking development
- More conceptual development
- Student interaction/group work
REDISEIGN FOR SAC MATH

**Goals** Year 3 2013-2014

- Seek Administrative Support
- Create Campus Task Force
  - Inform other departments, etc. as to what we are doing
  - Identify issues that must be addressed
  - Develop solutions to the issues
- Apply for a Title V grant
- Select Software
- Guide courses through curriculum
- Create Software courses
- Create Supplementary curriculum
REDESIGN FOR SAC MATH

Goals Year 4 2014-2015

- Keep focused on goals and previous decisions
- Successfully Pilot 083, 084
- Implement Assessment Plan
- Develop Training Plan
- Establish Computer Classrooms
- Secure funding
- Outreach
- Continue collaboration with other campus teams
Pilot Classes

- Fall ’14
  - 2 sections Math 83
  - 3 sections Math 84

- Intersession ’15 (4 weeks)
  - 1 section Math 84

- Spring ’15
  - 5 sections Math 83
  - 5 sections Math 84
Assessment Plan for Math 83/Math 84

- Fall, Spring Semester Pilot comparisons
  - Course Success
  - Final Exam Comparison

- Longitudinal Comparisons
  - Persistence
  - Basics Skills Completion

- Ongoing In-Course Formative Assessment
  - Assignment Completion vs. Test Performance
  - Hours vs. Test Performance
  - Surveys
  - Enrollment assessment
Training Modules

A----Philosophy of Redesign.
  This training is for both 083/084 instructors

B----Pedagogy and Classroom Practices.
  Math 083B and Math 084B.

C----Technology of Redesign.
  Math 083C and Math 084C.

To teach:  Instructor must complete training modules:

  Math 083  A, 083B, 083C
  Math 084  A, 084B, 084C.
Redesign Classrooms

- 6 classrooms
  - Booked all day/night

- Amenities
  - iPads
  - White Boards
  - Printer
  - Apple TV
  - Mediation
FUNDING

- **Title V**
  - One year of preparation
  - Not funded

- **BSI, Student Equity, etc.**
  - Planning Support
  - Personnel
  - Classrooms (6)
  - Student Support
    - Student tutors in the classroom

- Total Funds over $250,000 in 2014-2015.
FUNDING

- **BSI, Student Equity, etc.**
  - **Planning Support**
    - FIG - Monthly Faculty Planning Meetings for ’13-’14
    - FIG- Pilot Faculty Weekly Meetings for ’14-’15
  - **Personnel**
    - Redesign Coordinator
    - Math 083 Coordinator
    - Math 084 Coordinator
    - Assessment Coordinator
    - Software Coordinator
OUTREACH EFFORTS

- Information to students about:
  - the new classes, Math 083, Math 084
  - how to choose the best option for them personally
  - the importance of the placement test

- How was information disseminated?
  - SAUSD Task Force
  - Outreach at the high schools
  - Early Decision
  - Math N48 classes
  - Flyers
  - Posters
OUTREACH DOCUMENTS

- Math Placement Test Worksheet
- Math Pathway Decision Chart
The impact is huge:
- Every Department
- Curriculum
- Articulation
- Admissions/Records
- Counseling
- Freshman Experience
- EOPS
- DSPS
CHALLENGES

- Articulation with CSUs, UCs

- What happens if a student wants to change pathways?

- Supplemental instruction.
REDESIGN FOR SAC MATH

**Goals Year 5** 2015-2016

- Successful full implementation of 083, 084
- Implement Assessment Plan
- Develop Supplementary Instruction Plan
- Develop Plan for 083 to BSTEM pathway
- Websites

**Math 83**
- 32 sections

**Math 84**
- 18 sections
Do you have any questions?
MATH 83/84
SHARED COURSE FEATURES

- Consistency across sections
- Common course documents and assessments
- Teacher is facilitator of learning not the deliverer
- Taught in an iPad classroom
- Use online learning system with personalized homework
- Student takes responsibility for own learning
- Student Aides in each class
Classroom time will be used to:
- Present Mini-lectures in response to student needs
- Work in groups and foster student interaction
- Work on iPad math assignment
- Develop study skills
- Develop critical thinking skills
- Develop conceptual understanding
- Provide support for students
MATH 84
BEGINNING AND INTERMEDIATE ALGEBRA FOR BUSINESS AND STEM MAJORS
COMMON COURSE DOCUMENTS

- Course Reference sheet
- Syllabus (personalized for each class)
- Homework Structure
- Time Allocation Model
- Semester Schedule
- First Day Plan and Talking Points
- Welcome Email
Class is 3 hours and 5 minutes
- 0:00-0:30  Class discussion/problem solving
- 0:30-1:20  Group work
- 1:20-1:40  Break and pass out iPads
- 1:40-3:00  Individual Work
- 3:00-3:05  Collect iPads

These are Guidelines only-each day is different!
CLASS DISCUSSION AND PROBLEM SOLVING

- Example problems chosen
  - based on needs of the specific class
  - with item analysis of assignments in MyLabsPlus

- Students
  - respond to instructor raised questions
  - guide the instructor through problems
  - go over common mistakes or obstacles

- Instructor
  - models proper mathematical form
  - ties together concepts and offers tips to avoid common mistakes
Students
- are engaged
- eager to show what they learned
- see how their work should be organized
- see how to use proper mathematical form
- see connections between objectives and concepts
- feel ready for problem solving together in groups after this brief review
IN-CLASS GROUP WORK

- Students work together in small groups/pairs on problems, usually at the whiteboards
- The whole class is working on the same set of problems
- Each group cannot erase a problem until the work is checked by the instructor or assistant.
Benefits to In-Class Group Work

- Students
  - are actively engaged
  - develop critical thinking skills
  - gain confidence in their abilities
  - take turns explaining the process to each other and thus gain a deeper understanding of the material
  - make connections with each other
  - learn the benefit of study groups
  - hold each other accountable
  - begin to connect with the instructor and assistant
  - see instructor as a coach who is “in their corner”
  - see assistant as a role model and mentor
IN-CLASS INDIVIDUAL WORK

Students
- work online on assignments in MyLabsPlus
- work on Study Skills in Strategies For Success workbook.
- receive individual help from instructor and assistant.

Instructor
- meets one on one with students,
  - especially those that are falling behind or struggling
  - to provide support.
- Discussion topics include:
  - Strengths of the student
  - Challenges the student faces, including their personal lives
  - Study skills that the student needs to further develop
  - Resources available to the student
  - Student progress in the class
  - Major of study and career path
Students

- are actively engaged.
- get help on exactly what they personally need
- see instructor as their ally
- learn about resources on campus to help them succeed
- receive support and mentoring

Relationships between students and instructor/assistant become stronger
THE END RESULT

- The Teacher is the facilitator of learning not the deliverer. They are there to guide the students on their educational journey.

- The students are empowered to take responsibility for their own learning and ownership of their education.

- The students feel a strong connection to their classmates, their school, the instructor and the assistant.

- Students are succeeding at higher rates!
MATH 83
BEGINNING AND INTERMEDIATE ALGEBRA FOR LIBERAL ARTS AND SOCIAL SCIENCE MAJORS
A TYPICAL DAY IN MATH 083

- Class is 3 hours and 5 minutes
  - 0:00-0:30   Review and Reinforce Concepts
  - 0:30-1:40   Active Learning (Group Work)
  - 1:40-2:00   Break
  - 2:00-3:00   ALEKS
  - 3:00-3:05   Collect iPads
REVIEW AND REINFORCE CONCEPTS

- Previous Homework
  - Discuss one or two challenging homework questions

- Respond to ALEKS Reports
  - Model proper mathematical format
  - Practice algebra skills in groups (at desks or at the board)

- Reinforce Previous Activity Objectives
  - Mini follow up activity
Active Learning (Group Work)

- Students work through contextual situations
  - Work in groups (both at their desks or at the board)
    - Given time to struggle and figure it out
  - Students
    - present problems to the class or to their group
    - Put group’s answers on the board
- Class discussion of answers
1. According to taxifarefinder.com, a cab ride from the airport in Las Vegas will cost you an initial charge of $5.10, plus $2.60 per mile. Use this information to fill in the rest of the table describing the total cost for various distances. Then create a scatter diagram, using the distance as \( x \) coordinate and the cost as \( y \) coordinate.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$5.10</td>
</tr>
<tr>
<td>1</td>
<td>$7.70</td>
</tr>
<tr>
<td>2</td>
<td>$10.30</td>
</tr>
<tr>
<td>3</td>
<td>$12.90</td>
</tr>
<tr>
<td>4</td>
<td>$15.50</td>
</tr>
<tr>
<td>5</td>
<td>$18.10</td>
</tr>
</tbody>
</table>
1. How much more will you pay for a 3 mile ride than for a 2 mile ride?

$12.90 - $10.30 = $2.60

2. How much more will you pay for a 5 mile ride than a 2 mile ride? Explain why that makes sense based on your answer to Question 1.

$18.10 - $10.30 = $7.80.

The answer to question 1 shows that you’re paying $2.60 per mile. So for a 3 mile ride, you would pay $2.60 \times 3 = $7.80
3. Pick any two points on the graph that you drew, and subtract the second coordinates. Then divide the result by the difference of the first coordinate. What does the result represent about the cab ride?

Using the points (5, 18.10) and (2, 10.30), we get 2.60 This is the cost per mile of the cab ride.

In dividing the difference of the two costs by the difference of the two distances in question 3, you found the rate of change of the cost as distance changes. When applied to the graph of a line, we call this number the Slope of the line.
ALEKS - ONLINE LEARNING SYSTEM

- Initial Adaptive Assessment (First Day)
  - ALEKS creates an individualized homework plan
    - Student only works on what he or she is ready to learn
    - Less frustration
    - Students work at their own pace, but have deadlines to keep them on track
    - Practice algebraic concepts learned in the activities
    - Learn new algebra skills
    - Built in support.

- Mastery learning and constant re-assessment
  - Knowledge check after every 20 topics learned
ALEKS - ONLINE LEARNING SYSTEM

- ALEKS In the Classroom
  - Students work on iPads
  - Student-Instructor Conferences
    - Get to know your students
    - Discuss grades
    - Guide students through a self-assessment
      - *In what area are you still struggling?*
      - *How do you feel _________ went?*
      - *What are some things you're noticing?*
      - *What are some steps you might take to improve this work?*
    - Refer students to campus resources
    - Help students problem solve
    - Students know you care
ASSIGNMENTS

- ALEKS
- Paper and pencil handouts and assessments
- Study Skills Worksheets
Assignment Structure

- **Paper and Pencil**
  - Daily follow up assignments
    - Applications
    - Reflections
  - Weekly quizzes
  - Exam Reviews
  - Exams
Study Skills Worksheets

- Study Skill worksheets with the following benefits:
  - These worksheets encourage students to:
    - Be actively engaged
    - Self-reflect
    - Gain valuable insights
    - Take ownership over their learning and success
  - Offer great insight into what the student is dealing with
  - Great conversation starters
  - Helps you connect with your students
  - Require very little class time and are easy to grade.
What are the results?
What is the impact?
For who is it making the greatest impact?
### Course Success and Retention Comparison - Spring 2015

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Completion</th>
<th>Pass</th>
<th>No Pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 081</td>
<td>483</td>
<td>77.2%</td>
<td>52.6%</td>
<td>24.6%</td>
</tr>
<tr>
<td>Math 083</td>
<td>168</td>
<td>79.3%</td>
<td>64.6%</td>
<td>14.6%</td>
</tr>
<tr>
<td>Math 084</td>
<td>160</td>
<td>77.5%</td>
<td>47.5%</td>
<td>30%</td>
</tr>
<tr>
<td>Math 083/084 Combined</td>
<td>328</td>
<td>78.3%</td>
<td>56.4%</td>
<td>22.2%</td>
</tr>
</tbody>
</table>
Traditional and Redesign Comparison final exam study was conducted

- Redesign students
  - Underperformed 4 of the 20 items
  - Outperformed 11 of the 20 items
    - Significantly-more than 5% of students
## Final Exam Comparison

<table>
<thead>
<tr>
<th>Item</th>
<th>Math 081 Percentage</th>
<th>Math 084 Percentage</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>78%</td>
<td>83%</td>
<td>Multiplication of Complex Numbers</td>
</tr>
<tr>
<td>2</td>
<td>88%</td>
<td>88%</td>
<td>Rational Exponents</td>
</tr>
<tr>
<td>3</td>
<td>69%</td>
<td>77%</td>
<td>Compound Inequalities</td>
</tr>
<tr>
<td>4</td>
<td>45%</td>
<td>77%</td>
<td>Rational Expressions</td>
</tr>
<tr>
<td>5</td>
<td>61%</td>
<td>39%</td>
<td>Difference of Cubes</td>
</tr>
<tr>
<td>6</td>
<td>17%</td>
<td>78%</td>
<td>Logarithmic Equations</td>
</tr>
<tr>
<td>7</td>
<td>60%</td>
<td>65%</td>
<td>Equation of line parallel to given</td>
</tr>
<tr>
<td>8</td>
<td>61%</td>
<td>48%</td>
<td>Domain of a Rational Expression</td>
</tr>
<tr>
<td>9</td>
<td>61%</td>
<td>61%</td>
<td>Graph of Quadratic Function</td>
</tr>
<tr>
<td>10</td>
<td>61%</td>
<td>61%</td>
<td>Quadratic Inequality</td>
</tr>
<tr>
<td>11</td>
<td>84%</td>
<td>86%</td>
<td>Evaluate Quadratic Function</td>
</tr>
<tr>
<td>12</td>
<td>22%</td>
<td>68%</td>
<td>Simplifying Cube Roots</td>
</tr>
<tr>
<td>13</td>
<td>61%</td>
<td>51%</td>
<td>Long Division</td>
</tr>
<tr>
<td>14</td>
<td>83%</td>
<td>64%</td>
<td>Complex Fractions</td>
</tr>
<tr>
<td>15</td>
<td>50%</td>
<td>57%</td>
<td>Rationalize Denominator</td>
</tr>
<tr>
<td>16</td>
<td>65%</td>
<td>81%</td>
<td>Logarithm Properties</td>
</tr>
<tr>
<td>17</td>
<td>52%</td>
<td>68%</td>
<td>Inverse Functions</td>
</tr>
<tr>
<td>18</td>
<td>87%</td>
<td>95%</td>
<td>Evaluate Square Root Function</td>
</tr>
<tr>
<td>19</td>
<td>71%</td>
<td>79%</td>
<td>Radical Equation</td>
</tr>
<tr>
<td>20</td>
<td>47%</td>
<td>62%</td>
<td>Completing the Square</td>
</tr>
<tr>
<td>Overall</td>
<td>61.4%</td>
<td>69.4%</td>
<td></td>
</tr>
</tbody>
</table>
Transfer course success is higher except trigonometry.

Persistence
- 64% for successful Redesigned Math
- 25% for traditional pathway

Basic Skills Completion
- 18% for Redesign
- 9% for traditional pathway
# Transfer Course Comparison

<table>
<thead>
<tr>
<th>Course</th>
<th>Math 083/084</th>
<th>Math 081</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Successful</td>
<td>Non-Successful</td>
</tr>
<tr>
<td>Liberal Arts Math</td>
<td>67% (6)</td>
<td>33% (3)</td>
</tr>
<tr>
<td>Algebra</td>
<td>67% (6)</td>
<td>33% (3)</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>36% (4)</td>
<td>64% (7)</td>
</tr>
<tr>
<td>Math for Prospective Teachers</td>
<td>100% (2)</td>
<td>0%</td>
</tr>
<tr>
<td>Statistics</td>
<td>71% (12)</td>
<td>29% (5)</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>62.5% (30)</strong></td>
<td><strong>37.5% (18)</strong></td>
</tr>
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</table>
## Transfer Course Comparison

<table>
<thead>
<tr>
<th>Fall 2014</th>
<th>( n )</th>
<th>Completed Intermediate Algebra</th>
<th>Persisted to Transfer</th>
<th>Successful transfer completion</th>
<th>Persistence Rate</th>
<th>Transfer Completion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 081</td>
<td>688</td>
<td>429</td>
<td>109</td>
<td>63</td>
<td>25%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Math 083/084</td>
<td>167</td>
<td>75</td>
<td>48</td>
<td>30</td>
<td>64%</td>
<td>18%</td>
</tr>
</tbody>
</table>
EXPANDING THE PIPELINE

- More than double the number of students completing basic skills math
- In 2 years, over 3 times as many students will have completed basic skills vs. the traditional curriculum
### Expanding the Pipeline

**Fall 2013-Spring 2015 (All Cohorts)**

<table>
<thead>
<tr>
<th>N</th>
<th>Transfer-Ready</th>
<th>Transfer Ready %</th>
<th>Basic Skills Complete</th>
<th>BSC %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1566</td>
<td>602</td>
<td>38.44%</td>
<td>240</td>
<td>15.32%</td>
</tr>
</tbody>
</table>

**Fall 2015-Spring 2017 (All Cohorts - Does not include summer and winter intersessions)**

<table>
<thead>
<tr>
<th>N</th>
<th>Transfer-Ready</th>
<th>Transfer Ready %</th>
<th>Basic Skills Complete</th>
<th>BSC %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1566</td>
<td>1018</td>
<td>65%</td>
<td>508</td>
<td>37%</td>
</tr>
</tbody>
</table>

Hypothetical Fall 2015-2017 assumes a 30% attrition rate, semester to semester
## Expanding the Pipeline

<table>
<thead>
<tr>
<th></th>
<th>Cohort</th>
<th>Successful completion of transfer course</th>
<th>Basic Skills Completion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Pathway</td>
<td>4238</td>
<td>480</td>
<td>11.3%</td>
</tr>
<tr>
<td>Redesigned Pathway</td>
<td>4238</td>
<td>1456</td>
<td>34.4%</td>
</tr>
</tbody>
</table>

Estimates for the redesigned pathway presuppose a 70% retention rate and a maximum of 3 course repetitions.
Similar Ethnic Profiles

Women take Math 083 in higher proportion

Success Profiles vary greatly when taking race into consideration
## An Equitable Developmental Sequence-Ethnicity

<table>
<thead>
<tr>
<th>Spring 2015</th>
<th>Current Algebra Sequence</th>
<th>Math 083</th>
<th>Math 084</th>
<th>Math 083/084</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native American</td>
<td>50% (2)</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td>Asian</td>
<td>73.3% (30)</td>
<td>60% (5)</td>
<td>100% (7)</td>
<td>83.3% (12)</td>
</tr>
<tr>
<td>African American</td>
<td>80% (5)</td>
<td>80% (5)</td>
<td>No data</td>
<td>80% (5)</td>
</tr>
<tr>
<td>Filipino</td>
<td>50% (8)</td>
<td>100% (1)</td>
<td>20%</td>
<td>42.8% (4)</td>
</tr>
<tr>
<td>Latino</td>
<td>49.5% (386)</td>
<td>63.9% (133)</td>
<td>44.8% (125)</td>
<td>54.7% (258)</td>
</tr>
<tr>
<td>Multiple Ethnicity</td>
<td>100% (4)</td>
<td>50% (2)</td>
<td>33% (3)</td>
<td>40% (5)</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>33.3% (3)</td>
<td>50% (2)</td>
<td>No data</td>
<td>50% (2)</td>
</tr>
<tr>
<td>White (non-Latino)</td>
<td>64.1% (39)</td>
<td>72.7% (11)</td>
<td>50% (14)</td>
<td>60% (25)</td>
</tr>
</tbody>
</table>
**AN EQUITABLE DEVELOPMENTAL SEQUENCE-GENDER**

<table>
<thead>
<tr>
<th></th>
<th>Math 081</th>
<th>Math 083</th>
<th>Math 084</th>
<th>Math 083/084</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>54.5% (232)</td>
<td>67.9% (53)</td>
<td>46.7% (75)</td>
<td>55.5% (128)</td>
</tr>
<tr>
<td>Female</td>
<td>51% (261)</td>
<td>63% (111)</td>
<td>47.6% (84)</td>
<td>56.4% (195)</td>
</tr>
</tbody>
</table>
In Basic Skills Completion-Math, Latinos are disproportionately impacted

- 80% of Basic Skills math students are Latino
- Best practices for Latino students
  - Clearly articulated pathways
  - Eliminating attrition
  - Increasing student-student, student-instructor interaction
  - Increasing feedback
- Shrinks the gaps to Basic Skills and Degree and Certificate Completion
THANK YOU FOR ATTENDING!

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