LET THEM IN:
ILLUMINATING THE POTENTIAL TO INCREASE ACCESS, COMPLETION AND EQUITY IN COLLEGE ENGLISH AND MATH THROUGH NATURAL EXPERIMENTS

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Katie Hern, California Acceleration Project
John Hetts, Educational Results Partnership
Olga Rodriguez, Community College Research Center

RP Conference, April 9, 2015
Landscape of research on developmental education

- More than half of community college students are assigned to developmental education; more often than not, these students never complete the developmental course sequence (Bailey, Jeong & Cho, 2010)

- No conclusive evidence that developmental education is effective (Bettinger & Long, 2009; Boatman & Long, 2010; Calcagno & Long, 2008; Martorell & McFarlin 2011; Scott-Clayton & Rodriguez, 2012; Xu, 2013)

- Reasons for poor outcomes include lengthy course sequences, poor alignment with college-level coursework, predominant use of “remedial pedagogy” (Bailey, Jeong & Cho, 2010; Hern & Snell, 2010; Grubb & Gabriner, 2014; Perin, 2013)

- Standardized placement exams are weakly predictive of success in gatekeeper college-level courses (Scott-Clayton, 2012)
# Under-placement as a particular problem

<table>
<thead>
<tr>
<th>Student Ability</th>
<th>Placement</th>
<th>Developmental</th>
<th>College Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental</td>
<td>✓</td>
<td>Over-placed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(English – 5%)</td>
<td>(Math – 6%)</td>
</tr>
<tr>
<td>College Level</td>
<td>Under-placed</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>(English – 29%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Math – 19%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Why are standard exams weakly predictive?

- Student lack of awareness and preparation (Venezia, Bracco & Nodine, 2010; Fay, Bickerstaff & Hodara, 2014)

<table>
<thead>
<tr>
<th>Post-Review Re-test Results at One College</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Testing 1+ levels higher</strong></td>
</tr>
<tr>
<td>Math</td>
</tr>
<tr>
<td>English</td>
</tr>
</tbody>
</table>

Hodara, Jaggars & Karp, 2012

- Exams are poorly aligned with college curricula
- No accounting for non-cognitive and other factors predictive of student success
Possibilities for improvement

- Change (lower) cut scores
- Improve student awareness and preparation
- Create new exam aligned to curricula
- Use multiple or alternative measures for placement
  - Additional exams
  - High school quality
  - High school performance (shown to be more predictive than standard exams, Belfield & Crosta, 2012)
  - Non-cognitive assessments
  - Self-assessment
- Redesign course sequence, curriculum/pedagogy, and student supports
LET THEM IN: ILLUMINATING THE POTENTIAL TO INCREASE ACCESS, COMPLETION AND EQUITY IN COLLEGE ENGLISH AND MATH THROUGH NATURAL EXPERIMENTS
Butte College begins its own natural experiment with placement…

In 2011, Butte switched from one placement test to another. While establishing cut scores, they were surprised to find that more than twice as many students were now eligible to enroll directly in college English.

Old test/cut scores:
23% of incoming students “college ready” in English

New test/cut scores:
48% of incoming students “college ready” in English
Did access to college English become more equitable?

<table>
<thead>
<tr>
<th>First-Time Freshmen (FTF) Cohort enrolled for credit</th>
<th>Fall 2010 percent assessed at college level</th>
<th>Fall 2012 percent assessed at college level</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>31%</td>
<td>52%</td>
</tr>
<tr>
<td>White</td>
<td>36%</td>
<td>58%</td>
</tr>
<tr>
<td>African American</td>
<td>15%</td>
<td>37%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>19%</td>
<td>41%</td>
</tr>
<tr>
<td>Asian</td>
<td>19%</td>
<td>35%</td>
</tr>
</tbody>
</table>
Completion of College English in One Year
College-Wide – first-time freshman cohort

- Tripled for African American students (8% ➔ 23%)
- Doubled for Hispanic students (13% ➔ 27%)
- Doubled for Asian students (17% ➔ 35%)
- 1.6 times higher for White students (23% ➔ 37%)

Old policy:
Whites’ completion nearly 3 times higher than African Americans’

New policy:
There’s still a gap, but whites’ completion now just 1.5 times higher than African Americans’
What about course success rates?

Median success rates across sections of College English:
Old policy: 67-72%
New policy: 63%

High degree of variability across sections:
2012-13 success rates ranged from 18% to 94%
Should we be concerned about drop in median success rate?
Should we be concerned about drop in median success rate?

21 instructors taught before and after the policy change:

- 8 had higher mean success rates after the change
- 3 had no change in their mean success rates
- 10 had lower mean success rates

Across all 21 instructors, the mean success rate dropped just 2.8 percentage points under the new policy, and the median less than 1 percentage point.
How did lower-scoring students do -- the ones previously placed into remediation?

We estimated this group by considering the ratio of incoming students formerly placed into college English

Under previous placement ratios:

* Students scoring between 73-88 on new test would likely have been placed into developmental coursework

* Students scoring between 89 and 99 on new test would likely have been placed into college English
# Grade Distribution in College English

<table>
<thead>
<tr>
<th>Placement Score Range</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F/FW</th>
<th>W</th>
</tr>
</thead>
</table>
| Students likely placed into college English under prior ratios  
Scores: 89-99 on new test  
N=2481 | 23% | 27% | 15% | 6% | 21% | 9% |
| Students likely placed into remediation under prior ratios  
Scores: 73-88 on new test  
N=1927 | 15% | 25% | 19% | 7% | 23% | 12% |
How did the change affect the institution?

Enrollments and sections Fall ‘10-Fall ‘12
- Number of first-year students enrolling in college English doubled
- Number enrolling in all other levels fell by almost a third
- 22 sections of college English added to fall schedule
- 15 sections of developmental English cut

Staffing
- Five new part-time faculty hired in Fall 2012
- 2 new full-time faculty hired to cover sections and a third on the way
- Some part-time faculty who were not credentialed to teach college English were let go (faculty with reading or ESL credentials)
Did the culture change too?

23 of 46 English department faculty have been trained in methods for teaching accelerated English:

- integrated reading and writing
- growth-oriented approach to students
- grading so that students have low-stakes opportunities to practice skills early in the semester

Moving toward a vision of using developmental pedagogy at all levels

Faculty say they are using these methods in their college-level courses as well.
Early Findings From a Developmental Placement Reform at the Virginia Community College System

Olga Rodríguez
Community College Research Center

* Research Funded by the Bill & Melinda Gates Foundation
The Developmental Education Reform at the Virginia Community College System

Driven by three broad goals:

- To reduce the need for developmental education
- To reduce the time students spend in developmental education
- To increase the number of developmental education students graduating or transferring
The Developmental Math Reform

• Redesigned developmental math curricula into one-credit modules

- Arithmetic/Pre-algebra (3-5 credits)
- Beginning Algebra (3-5 credits)
- Intermediate Algebra (3-5 credits)

  - Whole numbers (1 credit)
  - Fractions Decimals (1 credit)
  - Ratios Percents (1 credit)
  - Linear Equations (1 credit)
  - 2-variable Equations (1 credit)
  - Factoring Equations (1 credit)
  - Rational Equations (1 credit)
  - Radicals (1 credit)
  - Quadratic Equations (1 credit)

• Introduced a customized diagnostic assessment to place students into individual modules
Developmental English: Pre-Reform

- ENG 03
- ENG 05
- READ 02
- READ 04
- ENG 111
Developmental English: Post-Reform

Semester 1:
- ENF 1: 8 Credit Hours

Semester 2:
- ENF 2: 4 Credit Hours
- ENF 3: 2 Credit Hours
- ENG 111: 3 Credit Hours
- ENG 112: 3 Credit Hours

Pathway:
- ENF 1 → ENF 2 → ENG 111 (Semester 1) → ENG 112 (Semester 2)
- ENF 1 → ENF 3 → ENG 111 (Semester 1) → ENG 112 (Semester 2)
Research Questions

- What is the impact of the developmental assessment and placement reform on the early academic outcomes of students placed into college-level math and English courses?
  - College-level placement, enrollment and performance
Data & Methods

- Nearly 60,000 first-time in college fall semester students who took a math and English placement test in 2010 (pre-reform) and 2012, 2013 (post-reform)
  - From over 20 colleges across the state

- Dataset includes student-level information on:
  - Demographics
  - College course transcripts (enrollment and performance)
  - Placement test scores in reading, writing, and math

- Descriptive analysis of students’ early academic outcomes
## Demographics: Math Test Takers

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>0.598</td>
<td>0.589</td>
</tr>
<tr>
<td>Black</td>
<td>0.261</td>
<td>0.265</td>
</tr>
<tr>
<td>American Indian</td>
<td>0.006</td>
<td>0.004</td>
</tr>
<tr>
<td>Asian</td>
<td>0.051</td>
<td>0.061</td>
</tr>
<tr>
<td>Latino</td>
<td>0.063</td>
<td>0.072</td>
</tr>
<tr>
<td>Female</td>
<td>0.527</td>
<td>0.529</td>
</tr>
<tr>
<td>Age</td>
<td>21.538</td>
<td>21.14</td>
</tr>
<tr>
<td>College English</td>
<td>0.426</td>
<td>0.428</td>
</tr>
<tr>
<td>N</td>
<td>21196</td>
<td>20457</td>
</tr>
</tbody>
</table>
DEVELOPMENTAL MATH PLACEMENT REFORM
More Students Placing into College Math

College Math Placements more than doubled after the introduction of the VPT-Math; STEM college math placements continue to comprise over three quarters of college math placements.
More Students Enrolling in College Math

STEM college math enrollments increased more than liberal arts college math enrollments; less so than placements, however.
Among the students who placed into college math and who enrolled in a college math course within one year, there were lower average pass rates (defined as earning a C or better) after introduction of the VPT.
Significantly More Students Successfully Completed College Math

A larger percentage of college-math-placed students successfully completed entry-level college math after introduction of the VPT.
DEVELOPMENTAL ENGLISH PLACEMENT REFORM
More Students Have Access to College English

Pre-Reform, Fall 2010:
- College English, 43%
- Co-Requisite College English, 10%
- Developmental English, 47%

Post-Reform, Fall 2013:
- College English, 58%
- Co-Requisite College English, 23%
- Developmental English, 19%
More Students Enroll in College English

Enrollment in college-level English increased; especially via the new Co-Requisite course that was implemented across the state.
College English Pass Rates Unchanged, but Decline for Co-Required College English

Among the students who placed into college English and who enrolled in a college English course within one year, average pass rates (defined as earning a C or better) remained virtually unchanged after introduction of the VPT; but declined for the Co-Required English.

![Bar chart showing pass rates for College English and Co-Required College English pre and post-reform. Pre-reform, Fall 2010: College English 73%, Co-Required College English 79%. Post-reform, Fall 2013: College English 74%, Co-Required College English 73%.]
A larger percentage of students who have access to college-English via direct or Co-Requisite English placements successfully completed college English after introduction of the VPT.
Conclusion and implications

• Goal to reduce the need for developmental education was achieved

• Early outcomes of the statewide developmental placement reform are positive—more students are successfully completing college math and English

• Lower pass rates for math and the Co-Requisite English courses after the placement reform suggest changes in how academic supports are deployed and changes to teaching and learning strategies used may improve pass rates over time

• Next step in this research will employ methodology to draw causal connections between the developmental placement reform and student outcomes
PROJECTED POSSIBILITIES OF CUTSCORE CHANGES

JOHN HETTS, EDUCATIONAL RESULTS PARTNERSHIP
Some initial assumptions & caveats

- Students to be moved up to transfer level at 20%
- Consequences of moved students – 15% lower success rate than existing students at that level
- Redistribution of next two levels in English and three levels in Math equally
- Ignoring potential impacts of:
  - increase in engagement for students no longer categorized as “remedial”
  - self-fulfilling prophecy/catch the bus effects
  - increased classroom heterogeneity
  - changes in curriculum or other support
- Modeling with students who attempt a course in discipline
Level of first attempt, Fall 2007 students (by levels below transfer of first attempt)

<table>
<thead>
<tr>
<th>Math</th>
<th>Transfer</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25%</td>
<td>20%</td>
<td>18%</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>27%</td>
<td>18%</td>
<td>10%</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>20%</td>
<td>18%</td>
<td>10%</td>
<td>9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English</th>
<th>Transfer</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39%</td>
<td>30%</td>
<td>20%</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>39%</td>
<td>30%</td>
<td>20%</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>39%</td>
<td>30%</td>
<td>20%</td>
<td>9%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Projected placement under assumptions (by levels below transfer of first attempt)

<table>
<thead>
<tr>
<th>Math</th>
<th>Transfer</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>45%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English</th>
<th>Transfer</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>59%</td>
<td>15%</td>
<td>15%</td>
<td>9%</td>
<td>2%</td>
<td></td>
</tr>
</tbody>
</table>
F2007 Percentage completion of transfer-level course in 6 years (by level of first attempt)

<table>
<thead>
<tr>
<th>Transfer</th>
<th>Math</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>60%</td>
<td>18%</td>
<td>19%</td>
</tr>
<tr>
<td>63%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>10%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>20%</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: 1, 2, 3, 4
Projected percentage completion of transfer-level in 6 years (by F2007 level of first attempt)

- Math:
  - Transfer: 60%
  - 1: 45%
  - 2: 12% (4% 2%)
  - 3: 2%
  - 4: 0%

- English:
  - Transfer: 63%
  - 1: 38%
  - 2: 13% (9%)
  - 3: 2%
Implications for CCCs

• Facing a system-wide reset of cutscores
• Although the assessment will be common, the placement (cutscores) will be locally controlled
• Time to begin thoughtful/meaningful local conversations about appropriate placement distribution given growing evidence is now
Total first-time cohort completion rate for transfer-level courses

Math: 21% (F2007), 36% (Projected)
English: 33% (F2007), 46% (Projected)
Among completers, average year of completion of transfer-level course (by level of first attempt)

<table>
<thead>
<tr>
<th>Level of First Attempt</th>
<th>Math</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td>2</td>
<td>3.7</td>
<td>3.4</td>
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<td>3</td>
<td>4.0</td>
<td>3.5</td>
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<td>4</td>
<td>4.0</td>
<td>4.1</td>
</tr>
<tr>
<td>5</td>
<td>4.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Math: Transfer, 1, 2, 3, 4
English: Transfer, 1, 2, 3, 4
Thank You!

Questions?