USM SUMMIT: ADAPTIVE TOOLS FOR HIGH-ENROLLMENT ONLINE COURSES: IMPROVING THE COVID-19 LEARNING EXPERIENCE FOR STUDENTS AND FACULTY

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BARBARA MEANS, DIGITAL PROMISE
Persistent equity gaps for low-income students and students of color are exacerbated by gateway courses acting as filters, not pumps.

**Equity gaps in degree completion**

- BA degree attainment by 24, by family income bracket
  - Highest 25%
  - 3rd 25%
  - 2nd 25%
  - Lowest 25%

**Gateways courses as filters**

- First-year gateway course DFWI rates, by Pell Grant status
  - Calculus: -8%
  - Chemistry: -4%
  - Accounting: -5%

- 4-year public BA completion rates, by race / ethnicity*
  - Asian: 10% Not enrolled, 11% Still enrolled, 78% Completed at any institution
  - White: 17% Not enrolled, 10% Still enrolled, 73% Completed at any institution
  - Hispanic: 24% Not enrolled, 17% Still enrolled, 59% Completed at any institution
  - African American: 32% Not enrolled, 19% Still enrolled, 49% Completed at any institution

Notes: *Shows percent completed, stopped out, and still enrolled six years after enrolling (2013 student cohort), **DFWI (Drop, Fail, Withdraw, Incomplete) rates completed from a mix of 36 different types of post-secondary institutions (2018 data)

Sources: National Student Clearinghouse Research Center, Pell Institute, Gardner Institute, Tyton Partners analysis
What is adaptive courseware?

- A digital teaching tool with instruction and assessments **scoped and sequenced to support an entire course**
- Provides **personalized and nonlinear instruction** by analyzing students’ responses and pointing them to activities based on their needs
- Provides instructors with data about each student’s progress and learning so they can modify instruction in response
Adaptive courseware: Benefits for Instructors

- Automated assessments and analytics give instructors real-time data on students’ progress and areas of need
- Instructors can see how students are interacting with the course material (time spent on activities, study habits)
- Frees up instructors to spend more class time on interactive activities that build on student engagement with content outside of class
What does it take for Faculty to add these tools?

Increase course prep work includes:
- Selection or Customized tools choice
- Integration into course or redesign of course
- Modify assessments to include practice from adaptive tools

Redesigned course approach includes:
- Constant review of student progress in system
- More feedback for those students underperforming
- Incorporating tool practice into other course activities
Acceleration Adoption of Adaptive Courseware Grant (APLU)

- **Grant goals:**
  - To cumulatively have adaptive courses in at least 15% of general education credits
  - To scale adaptive courses across all sections of a course
  - Improve student success

- **Scaling impact to date:**
  - 63% above target

204 adaptive courses representing
25 course disciplines utilizing
15 courseware vendors
<table>
<thead>
<tr>
<th>University</th>
<th>Change in Pass Rates</th>
<th>Total Adaptive Enrollment</th>
<th>Change (Increase/Decrease in Enrollments)</th>
<th>3 Credit Cost (in-state)</th>
<th>Student Tuition Savings based on Change in pass rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6.78%</td>
<td>29887</td>
<td>2027</td>
<td>$1,134</td>
<td>$2,298,401</td>
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<tr>
<td>B</td>
<td>10.59%</td>
<td>18107</td>
<td>1918</td>
<td>$1,206</td>
<td>$2,312,159</td>
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<tr>
<td>C</td>
<td>2.00%</td>
<td>31285</td>
<td>466</td>
<td>$929</td>
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</tr>
<tr>
<td>D</td>
<td>4.60%</td>
<td>52801</td>
<td>2429</td>
<td>$1,487</td>
<td>$3,611,694</td>
</tr>
<tr>
<td>E</td>
<td>5.60%</td>
<td>22560</td>
<td>1263</td>
<td>$781</td>
<td>$986,684</td>
</tr>
<tr>
<td>F</td>
<td>-0.58%</td>
<td>6004</td>
<td>-35</td>
<td>$538</td>
<td>$(18,676)</td>
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<tr>
<td>G</td>
<td>2.47%</td>
<td>26655</td>
<td>658</td>
<td>$1,491</td>
<td>$981,642</td>
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<tr>
<td>H</td>
<td>3.52%</td>
<td>46825</td>
<td>1648</td>
<td>$1,102</td>
<td>$1,816,773</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>234124</td>
<td>10535</td>
<td></td>
<td>$12,569,703</td>
</tr>
</tbody>
</table>

Student Tuition Savings
Indicators of Success

Cumulative Data: Millions saved by students not repeating courses

Year over year course pass rates improved faster in course sections that included adaptive

Of 66 courses that were scaled over at least three years, 81% report higher ABC rate

- One institution self-reported equity gaps closed
- Additional institutions self-reporting equity gaps narrowing

Success within disciplines:

- Three universities reported a double digit increase in pass rates in College Math/Algebra
- Biology, business, math, and modern languages showed consistent increases in pass rates

IT TAKES TIME...almost no course achieved improved student success in one year!
Goal was to promote effective implementation of adaptive courseware in order to:

- Increase success rates in gateway courses in 2- and 4-year colleges and universities
- Reduce achievement gaps for low-income students, students of color, and first-generation college goers

Continuous improvement research component was integrated into technical assistance.

### First Term Activity (Fall 2019)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions</td>
<td>9</td>
</tr>
<tr>
<td>Courses</td>
<td>32</td>
</tr>
<tr>
<td>Disciplines</td>
<td>7</td>
</tr>
<tr>
<td>Instructors</td>
<td>81</td>
</tr>
<tr>
<td>Students</td>
<td>5,000+</td>
</tr>
</tbody>
</table>
## DFWI Rates for Courses Undergoing Redesign Supported by Every Learner Everywhere

<table>
<thead>
<tr>
<th></th>
<th>All Students</th>
<th>Under-represented Minority Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison Course Sections without Adaptive Learning (usually Fall 2018)</td>
<td>35% (n=6,622)</td>
<td>44% (n=3,514)</td>
</tr>
<tr>
<td>Adaptive Course Sections Fall 2019</td>
<td>32% (n=5,037)</td>
<td>40% (n=2,280)</td>
</tr>
</tbody>
</table>

*Note: These are averages of course DFWI rates, not adjusted for differences in prior achievement or other student characteristics.*
Model-adjusted Estimates of Impact on DFWI Rates

Impact of Adaptive Courseware vs Business-as-Usual

Note: For courses with adequate samples, Digital Promise computed odds ratios corrected for pre-existing differences between conditions.

Odds Ratio greater than 1.0 indicates lower DFWI rate in Adaptive condition.
Digital Promise National Student Survey

https://www.everylearneverywhere.org/resources
Frequency of Serious Technology Issues

Survey Items: “In accessing this course after it moved online, how often, if at all, did you experience serious internet connectivity problems that interfered with your ability to attend or participate?”

“In accessing this course after it moved online, how often, if at all, did you experience serious hardware or software problems that interfered with your ability to attend or participate?”
Internet connectivity issues were experienced Often or Very Often by a larger proportion of Hispanic students (23%) than of non-Hispanic White students (12%).
Severity of Non-Tech Challenges Post-COVID

- Staying motivated to do well in the course: 42% not a problem, 37% minor problem, 20% major problem
- Finding a quiet place where you could do the course online: 20% not a problem, 35% minor problem, 44% major problem
- Fitting the course in with your home/family responsibilities: 17% not a problem, 37% minor problem, 45% major problem
- Not knowing where to get help with the course: 16% not a problem, 38% minor problem, 45% major problem
- Feeling too unwell, physically or emotionally, to participate: 14% not a problem, 31% minor problem, 54% major problem
- Fitting the course in with your work schedule, if you work for pay: 8% not a problem, 23% minor problem, 68% major problem
Severity of Non-Tech Challenges Post-COVID

Higher proportions of Hispanic students than of non-Hispanic White students cited each of these challenges EXCEPT staying motivated.
Online Instruction Practices

**Interaction**
- Live sessions in which students can ask questions and participate in discussions
- “Breakout groups” during a live class
- Personal messages to individual students about how they are doing in the course or to make sure they can access course materials

**Content & Activities**
- Breaking up class activities into shorter pieces than in an in-person course
- Using examples from the real world to illustrate course content
- Assignments to work on group projects separately from the course meeting

**Assessment Practices**
- Frequent quizzes or other assessments
- Assignments having students express what they have learned and what they still need to learn
Use of Instructional Practices and Student Satisfaction

Satisfaction with Course Post-COVID

- Very Satisfied
- Somewhat Satisfied

Percent of Students

- 6-8 instructional practices
  - 35% Very Satisfied
  - 39% Somewhat Satisfied

- 3-5 instructional practices
  - 19% Very Satisfied
  - 42% Somewhat Satisfied

- 0-2 instructional practices
  - 8% Very Satisfied
  - 35% Somewhat Satisfied
Individual practices with the strongest relationship to course satisfaction were:

- Using real-world examples to illustrate course content
- Sending personal messages to students and
- Assignments requiring students to reflect on their own learning
Other Predictors of Course Satisfaction Post-COVID

- Satisfaction with course before COVID
- Having taken 2 or more online courses previously

Learner Experiences

- Smaller class size
- Fewer challenges
- Fewer tech problems

- Larger class size
- More challenges
- More tech problems
What We’re Learning from Every Learner Partners

Support and experience using technology for learning BEFORE the pandemic made a big difference for students and instructors.

Separate Sample of Students from Courses Using Adaptive Courseware

Satisfaction of 4-year Public IHE Students with Quality of Instruction

- National Sample
- ELE Sample
Contact Info & Resources

Karen Vignare, kvignare@aplu.org
Barbara Means, bmeans@digitalpromise.org

Resources:

A Guide to Implementing Adaptive Courseware,
https://www.everylearneverywhere.org/resources/a-guide-for-implementing-adaptive-courseware-from-planning-through-scaling/