BETWEEN EQUITABLE ACCESS TO HIGHER EDUCATION: LEVERAGING ADAPTIVE COURSEWARE FOR A SUCCESSFUL START

Karen Vignare, Ph.D.,
Association of Public & Land-Grant Universities
Despite Years of Focus, the Divide in Postsecondary Attainment by Income Level Persists

Distribution by family income quartile of dependent family members age 18 to 24 who attained a bachelor’s degree by age 24: 1970 to 2014

Figure reads: of those dependent family members reporting attaining a bachelor’s degree by age 24 in 2014, 54 percent were in the top quartile of family income and 10 percent were in the bottom quartile.

Mission Driven Use of Digital Learning
Defining the Problem

Low-income and minority students are lost early in introductory courses

Faculty teaching introductory courses often instructors or GA/TA with little pedagogy training and not long-term employees

Departments teaching service courses not incentivized appropriately

Institutional cultures generally reward innovation of research not teaching

Institutional culture values academic freedom over faculty collaboration
The PLC was founded in 2013 to offer participating APLU institutions with opportunities and resources to improve their understanding and implementations of personalized learning using technology. Members cooperate to share experiences and expertise, identify promising and trustworthy vendors and partners, influence data practices, and organize multi-institutional projects that benefit from scale and community.
Leveraging Adaptive Courseware Is ..

About **Faculty** having better tools for diagnosis and to deliver better pedagogy during remainder of the course

About **Departments** recognizing that teaching introductory courses should be a faculty team sport

About **Academic IT & IT** that “the best” products do not yet exist but and effort is on supporting scale (moving beyond the pilot)

About **Institutions** recognizing gateway and introductory course improvement is strategic and required to reduce equity gaps
APLU ACCELERATING THE ADOPTION OF ADAPTIVE COURSEWARE GRANT

GRANT OVERVIEW AND CUMULATIVE RESULTS
APLU Accelerating the Adoption of Adaptive Courseware Grant

CROSS-INSTITUTION COLLABORATION

- Targeting similar programs and courses
- Adopting from a list of approved adaptive courseware suppliers and products
- Sharing information within the cohort by campus-based program managers
- Common reporting requirements

FACULTY ENGAGEMENT METHODS

- Incentives (money, time, teaching support)
- Training and instructional design support
- Department-level adoption decisions
- Peer learning communities
- Senior leadership investment and recognition

2018 THE PERSONALIZED LEARNING CONSORTIUM AT APLU
Results:
Grant to date: eight universities produced 73,065 enrollments (from 1/2017- 7/2018)
Results:

Multiple Disciplines adopting courseware (51% STEM and 49% Humanities & Social Sciences)
Courseware Usage Across APLU Grantees

- Sociology
- Rhetoric/Writing
- Psychology
- Physics
- Philosophy
- Modern Languages
- Mathematics
- History
- Health Sciences
- Govt/ Political Science
- Geology
- English Comp.
- Engineering
- Economics
- Chemistry
- Business
- Biology/ Life Sciences

- Cengage Learning Mindtap (Cerego)
- CogBooks
- Learning Objects
- Lumen Waymaker
- McGraw-Hill Education Smartbook
- Macmillan Learning Curves
- Pearson MyLab & Mastering with Adaptive Practice
- Realizeit
- Hawkes Learning
- McGraw-Hill Education ALEKS
- Open Stax
- Smart Sparrow
- WileyPlus with ORION (Snapwiz)
What is your overall satisfaction with your courseware suppliers?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Satisfied</td>
<td>32.1%</td>
<td>9</td>
</tr>
<tr>
<td>Satisfied</td>
<td>53.6%</td>
<td>15</td>
</tr>
<tr>
<td>Neutral</td>
<td>3.6%</td>
<td>1</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>10.7%</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Responses</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>28</strong></td>
</tr>
</tbody>
</table>
Overall student cost lower than print

- Not Applicable (e.g., costs are included in a course or program fee)
- More than $100: 7
- $70 to $99.99: 8
- $35 to $69.99: 7
- $10 to $34.99: 0
- Greater than $0 but less than $10: 0
- $0 with purchase of printed textbook: 0
- $0: 2
Lessons From the Field
OREGON STATE UNIVERSITY –
ALL HANDS ON DECK:
ADAPTIVE LEARNING TRANSFORMATION
Adaptive Learning Ecosystem: Pathways requiring algebra reasoning

Potential Impact:

18 Courses
23,008 Students
32% of Gen Ed Enrollment
Redesigning 18 Gen Ed Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Enrollment</th>
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<tbody>
<tr>
<td>MTH 103</td>
<td>490</td>
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<td>MTH 111</td>
<td>1661</td>
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<td>MTH 112</td>
<td>1568</td>
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<td>PSY 201</td>
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<td>1811</td>
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<td>ST 351</td>
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<td>962</td>
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<tr>
<td>WR130</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23409</strong></td>
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</table>

Adaptive Platforms:
- ALEKS
- Macmillan Learning Curves
- Pearson with Adaptive Practice
- McGraw Hill LearnSmart
- Acrobatiq
- Smart Sparrow

32% of GE enrollments

5,800 students/year receive a DFWU in these courses

Financial loss to student ~$2,315/DFWU
Promising Early Results in Math & Psychology

Algebra
• Withdraw rates cut in half
• Double-digit decreases in DFW rates
• 23% decrease in DFWU rate for Ecampus

General Psychology
• Historic DFW rate of 26%
• DFW rates range 2-12% for the redesigned course (which includes many changes in addition to adaptive learning)
## College Algebra Results Across Modalities and Cohorts

<table>
<thead>
<tr>
<th>Course</th>
<th>Format</th>
<th>DFW Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blended Campus-Based</td>
<td>Lecture</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>Adaptive-active</td>
<td>25%</td>
</tr>
<tr>
<td>Fully Online</td>
<td>Before</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>Adaptive Redesign</td>
<td>43%</td>
</tr>
<tr>
<td>EOP (Underserved Students)</td>
<td>Lecture</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td>Adaptive-active</td>
<td>25%</td>
</tr>
<tr>
<td>INTO (International Pathway)</td>
<td>Lecture</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Adaptive-active</td>
<td>27%</td>
</tr>
</tbody>
</table>
Impact of Redesign Initiative

547 additional students passed and persisted with redesign of initial four courses in first year of initiative

~$1.3M in cost savings to students

Increased student engagement and positive student experience

Potential to impact pass rate of over 5,800 students/year with redesign of 14 additional courses

Model for course redesign and faculty development
What subjects are we working on at ASU?

**Biology** - CogBooks

**Chemistry** - McGraw Hill Connect

**College Algebra** - McGraw Hill ALEKS

**College Math** – McGraw Hill ALEKS

**Economics** – Cengage Learning Objects

**General Science** - SmartSparrow

**History** - CogBooks

**Physics** - Pearson Mastering Physics

**Psychology** – Cengage Learning Objects

Adaptive software is necessary **but not sufficient** to enable student success.
How is this affecting our teaching & learning?

- Best results with “Adaptive and Active” approach

Active Learning in class

Adaptive Learning before class

Bloom’s Taxonomy

Optimize high-tech (adaptive) and high-touch (active) learning.
How has it worked at ASU?

Introduction to Biology (~ 850 non majors) with CogBooks

Same instructor, curriculum and assessment
How has it worked at ASU?

College Algebra
(~5,000 students per year)

Fall 2016 implemented
McGraw Hill ALEKS adaptive math system

![Graph showing progress](image)
What about different demographic groups?

College Algebra: AY 2016-17 increases in success rates among all groups
DON’T START FROM SCRATCH...
DON’T STOP AT PILOT-GO TO SCALE
QUESTIONS?

Karen Vignare, Ph.D., kvignare@aplu.org
Megan Tesene, mtesene@aplu.org