Adaptive Learning as an Applied Innovation: How to Get Started

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Pop-quiz

Where are you in your adaptive learning system process?

- Thinking about it
- Evaluating vendors
- Implementing systems
- Evaluating results
Get the most out of this workshop:

- What do you want to accomplish today?
- What does your institution want to accomplish with adaptive learning systems?
Workshop Learning Objectives

- Understand adaptive systems & terminology
- Make decisions about the best use of adaptive systems for your institution
- Create an adaptive system evaluation framework for your institution
Understand adaptive systems & terminology
Understand adaptive systems & terminology

What is the promise of adaptivity?

Personalize the learning process!
Understand adaptive systems & terminology

What are the possible benefits for students?

✓ Formative Evaluation (d=.90)
✓ Acceleration (.88)
✓ Effective Feedback (.73)
✓ Meta-cognition (.69)
✓ Mastery Based Learning (.58)
✓ Concept Mapping (.57)
✓ Interactive content (.52)

15 year, 800+ meta analysis on achievement

Standard deviation is effect size where d = 1.0 (i.e. improvement of learning by at least 50%)

Average effect size d = .40

When d is > .40 then excellent achievement gains

*Source: John Hattie’s Visible Learning (2008)
Understand adaptive systems & terminology

How are adaptive learning systems different?

<table>
<thead>
<tr>
<th>LMS</th>
<th>Adaptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson Plan</td>
<td>Fixed → Variable</td>
</tr>
<tr>
<td>Presentation</td>
<td>Group → Individual</td>
</tr>
<tr>
<td>Content</td>
<td>Common → Personalized</td>
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</tbody>
</table>
Understand adaptive systems & terminology

What are some ways to think about AL system?

- Mastery based learning
- Adaptive spacing
- Adaptive fading
- Error-differentiated feedback
- Metacognitive support
- Non-cognitive support

*Source: Tyton Partners *Learning to Adapt* (2013)
Understand adaptive systems & terminology

What is adapting to the student?

- Concept
- Content

How is that adaptation done?

- Assessment – rapid remediation
- Algorithm (Analytics) – recommendations
- Assignment – author builds decision tree
- Agency – student chooses
Content Adaptivity

Learning Loop

Concept #1
- Pre-Assessment
  - Adaptive Recommendations
- Content #3
- Post-Assessment
  - Adaptive Recommendations

Concept #2
- Pre-Assessment
  - Adaptive Recommendations
- Content #4
- Post-Assessment
  - Adaptive Recommendations
Make decisions about the best use of adaptive systems for your institution
Make decisions about the best use of adaptive systems for your institution

- Context
- Course
- Considerations for technology
- Content
- Cost
Make decisions about the best use of adaptive systems for your institution

CONTEXT

- What is the right approach for introducing and testing adaptive? (Approach and Methodology) (11)
- How much institutional IT support is needed to incorporate the ALS into the learning environment? (7)
- Do we have a way to recruit and support faculty members in aligning their teaching to AL tools? (7)
- What program(s) at the institution would be most interested in using AL? (6)
- Who will be responsible for ALS content development, system integration, reporting, and data analysis? (5)
- What are your organization’s goals for adaptive learning?
- Is there a strategy and defined responsibility for AL on campus?
Make decisions about the best use of adaptive systems for your institution

Should we create or configure an adaptive course?

Create
- Time consuming
- Flexible
- Costly
- Riskier

or

Configure
- Quicker
- Constrained
- Cheaper
- Safer

➢ Consider the time commitment before committing.
Make decisions about the best use of adaptive systems for your institution

**COURSE**

- How will an ALS affect the course design? (10)
- What are best practices for integrating ALS with existing systems and curriculum? (9)
- How will we provide training and support for faculty and students? (8)
- What type of course do we want to build? (online, on-ground, CBE)
- Should we create or configure an adaptive course?
- What are the key personnel needed to deploy AL courses and programs?
  - Dean, dept. chair, faculty, instructional designers, video producers, technologists, etc.
- How do I select the right faculty to work on the course?
- What is the faculty role during development?
- What is their role during the course?
- What are the challenges they may face?
Make decisions about the best use of adaptive systems for your institution

CONSIDERATIONS FOR TECHNOLOGY

- How suitable is the ALS for formative assessments? For summative assessments? (10)
- What are the key differentiators of available systems? (9)
- How customizable will the ALS be? Will faculty want to add their own concepts, objectives, activities, content, assessments, etc.? (8)
- Does the product support testing and comparing alternative activities, content, assessments for achieving effectiveness? (6)
- Do existing vendors provide AL products or will you need an RFP for ALS? Or Both?
- What is your comfort level with new vendors, vendors with new products? Do you prefer vendors with established AL products?
- How much institutional IT support is needed to incorporate the ALS into the learning environment?
- Who is responsible for connecting AL data to analytics tools, LMS or dashboards?
  - IT, faculty, instructional designers, learning engineers, vendor services, etc.?
Make decisions about the best use of adaptive systems for your institution

CONTENT

- Can we customize the adaptive content? (7)
- Who will be responsible for customizing the courses/content? (7)
  - Faculty, Instructional designers, vendors?
- Can we make or modify connections between learning objectives, resources and assessments? (7)
- Are there particular ALS’ that are more suited to your programmatic needs than others (such as science, technology, medical, math)? (7)
- Is the ALS able to work with publisher or OER content that your faculty already use? (6)
- Can we add or edit concepts (or competencies) associated with adaptive content?
- Are test banks large enough to support multiple attempts to achieve mastery?
Make decisions about the best use of adaptive systems for your institution

**COST**

- How much time and money will it take your institution to deploy an AL course or program? (10)
- What pricing models are generally used for ALS (i.e., enterprise and individual student)? (10)
- Do we have the resources to measure the effectiveness of an ALS? (7)
- Do we have the money and personnel to develop the course? (6)
- Do we have the money and personnel to provide ongoing support? (6)
- How do students purchase access to the ALS?
Create an adaptive system evaluation framework for your institution
Create an adaptive system evaluation framework for your institution

- How should we determine value of the ALS in the learning process?
  - Factors = people, pedagogy, process, technology, etc.

- **Macro indicators**
  - Persistence (lower student withdraw rate)
  - Performance (higher student pass rate)
  - Satisfaction
    - Student
    - Instructor
    - Administrator
  - Financials
    - Money saved or spent

- **Micro indicators**
  - Assessment results (lesson level)
Lessons Learned
Capella University

Prepare learners
- Provide an orientation
- Prepare advisors and faculty members for questions

Plan for at least double the time and effort
- A new design approach and a new tool to learn
- A lot more content

Adopt an agile improvement approach
- Gather lots of feedback from students and faculty
- Plan to update every term
University of Central Florida

Course Analysis

- Review content for proper formatting, copyright, accessibility
- Adaptive platform exposes weak courses
- Challenge to implement collaboration and interaction activities

Can be time-consuming to build quality

- Learning curve for authoring tool
- Faculty development is necessary (e.g. Implementing new strategies)
- Team to assist faculty create content/use software

Must communicate with faculty and students to reset performance expectations

- Supplement the Syllabus with pertinent information related to the platform (e.g., how to use, grading).
Colorado Technical University

Course Analysis
- Evaluate existing content and assessments
- Do thorough mapping of program, courses, content, and assessments
- Measured outcomes need to be clear—view map holistically for course, program

Learning Map Creation
- Ingest as much as possible (content and assessments)
- Variety of content and alternative content plays a role
- Concentrate on dynamic questioning with heavy use of variety and variables

Implementation
- Faculty development, dashboards, and information that drive adaptive instructional strategies
- Faculty interactions and interventions with informed students
- Pay attention to the data and calibrate/modify based on data
Start with the end in mind.
- Figure out WHY you’re doing it before deciding WHAT to do
- Determine how you will measure success

Technology is necessary but not sufficient for success.
- Faculty development/participation is the key
- Course redesign must include pedagogy as well as technology

This is a program not a project.
- Make the changes a permanent part of your culture.