Adaptive Blending: Designing for Personalized Online and Purposeful, Higher-Order Face-to-Face Learning

Matthew Vick, Ph.D.
Interim Associate Dean of Graduate Studies
University of Wisconsin-Whitewater

Nicole Weber, Ph.D.
Assistant Vice President of Learning
Online Learning Consortium

Pre-Session Chat:
Tell us your role, institution, and experience with adaptive learning in a single chat message
Session Goals

• Define advantages and disadvantages to three domains in an adaptive, blended course: online-adaptive elements, online-non-adaptive elements, and face-to-face elements

• Purposefully map objectives to online-adaptive, online-non-adaptive, and face-to-face portions of a course

• Plan granular adaptive learning course maps that permit flexibility and focus on mastery
Session Goals

• Design and sequence online, non-adaptive elements of a course based upon adaptive learning results

• Design face-to-face sessions based upon the use of adaptive learning learning analytics dashboards to drive instruction best conducted in-person (e.g. physical lab skills, communication and teamwork skills suited to live interaction, higher order thinking skills)
Adaptive Learning Features

- Self-Directed Learning Pathways
- Self-Paced Milestones
- Content Mastery
- Accounts for Prerequisite Knowledge
- Continuous Assessment
- Learning Path Change Based on Needs
Blended Learning Features

- Reduction in Seat Time
- Meet course objectives in best format
- Leverage advantages of face-to-face environment
- Leverage advantages of online environment
- Front Loading of Material
- Back Loading of Material
Reasons Blended Works

• Improved instructional design
• Increased guidance and triggers
• Easier access to learning activities
• Individualized learning opportunities
• Increased engagement through social interaction

https://onlinelearningconsortium.org/news_item/6-reasons-blended-learning-works/
CATEGORIZING DESIGN APPROACHES BY DOMAIN OF ADAPTIVE AND BLENDED LEARNING
Three Domains when designing for Blended and Adaptive:
1. Online & Adaptive
2. Online & Non-Adaptive
3. Face-to-Face
Online & Adaptive

Useful for Learning Objectives that involve

- Granularized content that requires mastery of skills or knowledge “chunks”
  - video/reading can be chunked into about 15 minutes and 3-8 assessment good questions could be constructed
Online & Adaptive

Useful for Learning Objectives that involve

• Content that has some sequential/pre-requisite aspects to it
  – this will best leverage the adaptive system

• Could be used for front loading or back loading of content when designing course
Online & Adaptive

Useful for Learning Objectives that involve

• Content requiring background knowledge from previous coursework
  – allows for personalized “remediation” or coaching through presumed skills and knowledge

• Used as a “front loading” strategy for design
Online & Non-Adaptive

Useful for Learning Objectives that involve

• Co-construction of knowledge
• Sharing or critiquing of personal experiences related to content
• Virtual simulations or laboratories
Face-to-Face

Useful for Learning Objectives that involve

• Physical, tactile, or other kinesthetic skills
  – science labs
  – patient skills for health sciences

• Whole group simulations/case studies
  – micro-teaching in education courses

• Discussions of sensitive topics
SAMPLE LEARNING ANALYTICS DASHBOARDS
## Instructor View

### Milestones

**NGSS-Scientific and Engineering Practices**
- **Knowledge state:** 83%
- **Knowledge covered:** 92%

### Milestones: Knowledge state and Knowledge covered

<table>
<thead>
<tr>
<th>Category</th>
<th>Knowledge State (Percentage)</th>
<th>Knowledge Covered (Percentage)</th>
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<tbody>
<tr>
<td>Understanding by Design</td>
<td>83%</td>
<td>92%</td>
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<tr>
<td>Conceptual Change Theory</td>
<td>77%</td>
<td>92%</td>
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<tr>
<td>NGSS-Scientific and Engineering Practices</td>
<td>80%</td>
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<td>NGSS-Crosscutting Concepts</td>
<td>88%</td>
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<td>NGSS-Physical Science DCIs</td>
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### 14 Students

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<td>14 students</td>
<td><strong>Understanding by Design</strong></td>
<td><strong>Conceptual Change Theory</strong></td>
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<td><strong>Master: 96%</strong></td>
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<td>Knowledge covered</td>
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<td><strong>Master: 98%</strong></td>
<td><strong>Master: 97%</strong></td>
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<td><strong>Master: 94%</strong></td>
<td><strong>Master: 71%</strong></td>
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<td><strong>Expert: 87%</strong></td>
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<td><strong>Improving: 77%</strong></td>
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CASE STUDY: EXAMPLE OF A BLENDED, ADAPTIVE COURSE IN SCIENCE EDUCATION
Identified Course Objectives:

1. Students will be able to utilize backwards design for unit planning.
2. Students will be able to use elements of conceptual change theory when designing science lessons.
3. Students will be able to design a unit plan that demonstrates the ability to address all three dimensions of science learning.
4. Students will be able to show understanding of the Body of Knowledge about science teaching and learning.
Designing the Course

1. Students will be able to utilize backwards design for unit planning.
   - Online & Adaptive: Students will correctly identify enduring understandings and essential questions.
   - Online & Non-adaptive: Students will evaluate a NSTA resource for its use of backward design
   - Face-to-face: Students will plan and teach elementary lessons that include essential questions as guides
Designing the Course

2. Students will be able to use elements of conceptual change theory when designing science lessons.

- Online & Adaptive: Students will explain concepts such as p-prims, conceptual change theory, and the persistence of misconceptions
- Online & Non-adaptive: Students will reflect in a discussion board on a misconception that was difficult to overcome
- Face-to-face: Students will plan and teach lessons using a conceptual change framework.
3. Students will be able to design a unit plan that demonstrates the ability to address all three dimensions of science learning.

- Online & Adaptive: Students demonstrate knowledge around the dimensions of the Next Generation Science Standards
- Online & Non-adaptive: Students plan (using resources) a unit plan using NGSS and backward design as starting points.
4. Students will be able to show understanding of the Body of Knowledge about science teaching and learning.

– Online & Adaptive: Students will demonstrate mastery of core concepts about conceptual change theory and Next Generation Science Standards

– Face-to-face: Students will plan and teach lessons using instructional models and strategies from the textbook.
DISCUSSION/SCENARIOS
Join in the Discussion

https://tinyurl.com/y4ksl7ae
Session Evaluations & Drawing

- Download and open OLC Conferences mobile app
- Navigate to specific session to evaluate
- Select “Evaluate Session” on session details screen (located under session type and track)
- Complete session evaluation*

*Each session evaluation completed (limited to one per session) = one contest entry

**Five (5) $25 gift cards** will be awarded to five (5) individuals
Must submit evals using the OLC Conferences mobile app or website