Aligning design, production and delivery of eLearning with learning science

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Kaplan Learning Innovation
October 11, 2012

E-Learn 2012, Montreal, CA
Kaplan Context

• Large global diversified education company
• Owned by the Washington Post
• Test preparation, professional education, online university, 100+ campuses, book publishing, etc.
• 30 countries, 400 locations
• 1 million students each year; 25,000 employees
• Multiple LMSs, including Moodle (preferred)
• Centralized product development and delivery
• Goal
• Science
• Design
• Delivery
• Production
• Evidence
• Demo/Sample
• Questions
• Improve effectiveness with evidence-based design (science)
• Improve efficiency by automating production (technology)
• Align design, production, and delivery with learning science
• “Make the right thing to do be the easy thing to do”
“Knowledge is acquired or modified during unobservable learning events inside students’ minds. These learning events are influenced by instructional events, in which the student’s learning environment is modified, and assessment events, in which student knowledge is inferred from performance either at the time of the event or later.”


External support for the internal cognitive processes involved in learning and motivation.
Kaplan Learning Science Instructional Design Framework

**Instructional Events (external)**
- Presentation
- Practice
- Assessment
- Integration
- Motivation

**Learning Events (internal)**
- Working Memory
- Long Term Memory

- Prior Knowledge
  - Declarative
  - Procedural

- Beliefs and Emotions
Strong evidence for practice

• Structure and guidance for novices
  \( (\text{Kirschner, Sweller, & Clark, 2006}) \)

• Demonstrations and worked examples
  \( (\text{Sweller, 2006}) \)

• Practice and corrective feedback
  \( (\text{Mathan & Koedinger, 2005}) \)

• Prompted self-explanation
  \( (\text{Aleven & Koedinger, 2002}) \)

• Multimedia that minimizes extraneous cognitive load
  \( (\text{Mayer, 2009}) \)

• Target beliefs (value, confidence, and attributions) and emotions (positive feelings) to influence motivation
  \( (\text{Clark, 2004; Um et al., 2012}) \)
• One lesson per performance objective
  e.g. Complete a client intake form based on a client interview and identify additional documents needed.

• Guided learning sequence
  ▪ Prepare: Information and demonstration
  ▪ Practice: Practice and feedback
  ▪ Perform: Assessment

• Lessons grouped into units
• Unit = Overview + lessons (O, 1, 2, 3...)
Interface: navigation panel shows location, completion, access, progress at a glance

Content: Small number of page types/templates for Overview, Prepare, Practice, Perform
Overview

- Goal
- Importance
- Context
- Outline
- Reflection
- Pretest
- Motivation
- Survey
• Supportive Conceptual Knowledge (Concepts, Principles, Process)
• Steps (How)
• Demo
Practise

- Authentic
- Prompt
- Response
- Hints
- Feedback
- Item types
- Templates
- Layouts
Perform

- Same as practice
- Mastery
## Adaptive Control, Content and Guidance

<table>
<thead>
<tr>
<th>Data</th>
<th>Adaptation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prior Knowledge</strong></td>
<td><strong>Control</strong></td>
</tr>
<tr>
<td>• Unit Pretest</td>
<td>• System (gated) or learner control</td>
</tr>
<tr>
<td>• Mastery in lesson “Performs”</td>
<td>• controlled path through Unit</td>
</tr>
<tr>
<td><strong>Performance + Motivation</strong></td>
<td><strong>Content</strong></td>
</tr>
<tr>
<td>• Beliefs, Emotions: survey data</td>
<td>• Number of examples</td>
</tr>
<tr>
<td>(value, confidence, positivity)</td>
<td>• Amount of practice and feedback</td>
</tr>
<tr>
<td>• Behaviors: starting, completing,</td>
<td></td>
</tr>
<tr>
<td>time</td>
<td></td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td><strong>Guidance</strong></td>
</tr>
<tr>
<td>• Beliefs, Emotions: survey data</td>
<td>• Email communications</td>
</tr>
<tr>
<td>(value, confidence, positivity)</td>
<td>• Guidance (course home page</td>
</tr>
<tr>
<td>• Behaviors: starting, completing,</td>
<td>and progress report)</td>
</tr>
<tr>
<td>time</td>
<td></td>
</tr>
</tbody>
</table>
Production

- Modular content separated from presentation
- Design, production, and delivery aligned

Write script
Develop / convert content (DITA - XML)
Store content in ECMS (Alfresco)
Publish content
Import and render in LMS (Moodle)
Effectiveness: Kaplan University Study (2011)

- 3 courses, 2 terms, 20 sections
- 18 instructors, 1,090 students
- Assigned to existing and redesigned courses
- 11% difference in success rate = 28% increase
- Students in redesigned courses were 1.6 times more likely to be successful; odds of success more than doubled in one course

Wald Chi-Square: 10.42, df=1, n=895, Sig<.001. Adjusted for variation in student and instructor variables.
Kaplan Product Quality Checklist

Sample Product Quality Report

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Rank</th>
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</thead>
<tbody>
<tr>
<td>1. Objectives</td>
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<tr>
<td>2. Assessment</td>
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<tr>
<td>3. Practice</td>
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<td>2</td>
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<tr>
<td>4. Examples</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>5. Information</td>
<td>0.7</td>
<td>3</td>
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<tr>
<td>6. Multimedia</td>
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<td>5</td>
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<tr>
<td>7. Overviews</td>
<td>0.9</td>
<td>2</td>
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<tr>
<td>8. Integration</td>
<td>0.9</td>
<td>2</td>
</tr>
<tr>
<td>9. Motivation</td>
<td>0.9</td>
<td>2</td>
</tr>
<tr>
<td>10. Organization</td>
<td>0.6</td>
<td>4</td>
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<tr>
<td>11. Usability</td>
<td>0.6</td>
<td>4</td>
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<tr>
<td>12. Personalization</td>
<td>0.3</td>
<td>5</td>
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</tbody>
</table>

TOTAL SCORE (1 - 12) 8.6

STRENGTHS
- Structure and guidance, e.g., daily assignments
- Amount of practice and feedback
- Detailed diagnosis of strengths and weaknesses
- Close integration of offline (print) and online materials

OPPORTUNITIES FOR IMPROVEMENT
- Segment video content
- Reduce inconsistency across modules
- Intersperse visual information displays in print materials to connect print with online material
- Put more of the print materials online
- Add statements of learning objectives

Free course sample
Unit 1: Training and tools to use the checklist
innovation.kaplan.com