EFFECTIVE WRITING FOR E-LEARNING ENVIRONMENTS HANDBOOK

Katy Campbell

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Welcome to Effective Writing for e-Learning Environments

This handbook is designed to support active learning – your active learning. Use the handbook alongside the text as a guide to reading or as an accompanying resource that extends the ideas in the text.

As you work your way through this guide you will encounter many practical suggestions for developing e-Learning environments. Completing a practice activity will help you adapt new concepts about instructional writing to your own work developing new resources.

The guide also includes cognitive tools – tables, outlines, checklists, etc. – that you can complete and then adapt and use as you re-purpose your content for online delivery.

Each chapter in the Handbook corresponds to a chapter in the text. As you read the text, you will notice that the icon that looks like this

appears frequently in the left margin. This icon signifies that a resource or an activity is included in the Handbook, as well as its location.

These activities and tools may also be used independently.

Hopefully, the Handbook will also give you some ideas for developing resources that will support users (or readers, or learners) of your materials. Please feel free to liberate some of these concepts!
Introduction:  
Trends and Challenges for Learning Organizations

Concept Guide

The social and political contexts for learning

- Do you agree with the four key planning issues?
- Do you face similar issues or different ones?
- What effects do these issues have on your work in the organization?
- Are you aware of a digital divide in your context?

A new learner profile

- How will you describe your learners or readers?
- How will each planning factor affect your relationship with your colleagues? Your administrators? Your learners?
- Why consider a blended learning approach?

Trends in the use of learning technologies

- How have the new trends begun to affect your institution or organization?
- Is there a legitimate business case to be made for e-Learning?
- Are there concerns arising from these trends that your institution should be aware of?
Questions and Goals

Use this form to record your questions about the trends and challenges in e-Learning facing you and your learning organization.

As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals

1.

2.

3.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
**Key Terms**

Use this list as a guide to the vocabulary common to the e-Learning field.

- e-Learning
- m-Learning
- me-Learning
- Web-based learning
- Online learning
- Distributed learning
- Distance learning
- Blended learning

**Four Issues Related to e-Learning**

What effect will each issue have on your institution? What are the implications for you as an online writer and teacher?

1. The changing learner

2. The rise of the information and global economy

3. The emergence of the consumer culture

4. The changing nature of work and implications for higher education

5. Others?
My Most Pressing Issue... Master Action Plan

Note two or three of the most pressing concerns or questions you have about creating online learning opportunities. What action could you take to explore the issue more thoroughly? What do you already know?

As you work through this book and encounter information that helps you answer your questions return to this page again and again to flesh out the “problem.” This template may help you organize your thoughts.

At the end of the book, decide whether you are comfortable that you have adequately addressed your concern(s). You may also have new questions. Note them here as they arise.

**Question or Concern:** ____________________________________________________________
<table>
<thead>
<tr>
<th><strong>Action Step</strong></th>
<th><strong>New Information</strong></th>
<th><strong>Sources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem-solving step</td>
<td>Notes, key ideas, plans, questions</td>
<td>References, URL's, people</td>
</tr>
<tr>
<td>Why exploring this topic/issue will help me write e-Texts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What I already know about writing for e-Learning environments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What I need to find out more about</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The activities and resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideas to use for my redesign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most interesting new idea</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## To Do List

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Date</th>
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<tbody>
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</table>
Concept Guide

Why e-Learning?

• At this moment, why are you interested in becoming an effective e-Writer?

Learning Outcomes

• Which of the three domains are most represented in your discipline?

• How do you assess outcomes now?

• Can you add to the seven advantages of e-Learning?
Learners

- When have you been most successful as a learner?
- When have you been most successful as a teacher?
- Do you teach to your learning style?

Learning Activities

- What is your role as a teacher or e-Writer?
- What activities have worked well for you? Can they be translated to e-Learning environments?

Learning Assessment

- How do you currently implement authentic assessment?
- Does your discipline require specific assessment methods?

Resource Factors

- What resources will you need to develop e-Learning environments?
- How will you acquire the resources you need?
- How will you present the cost-benefit argument to your administrator?

Should I choose the Web?

- Can you list your reasons for going online?

Questions and Goals

Use this form to record your questions about the factors affecting planning.
As you read, return to this form to record new ideas, resources, and additional questions.

**Personal Goals**

1. 

2. 

3. 

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
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</tbody>
</table>

**Key Terms**

This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary common to the e-Learning field.

- [ ] Learning outcome
- [ ] Knowledge construction
- [ ] Cognitive
- [ ] Affective
- [ ] Psychomotor
- [ ] Active learning
- [ ] Authentic assessment
- [ ] Collaborative learning
5 Key Questions
As you develop your e-Texts, you should continually ask yourself these five key questions. If you cannot answer one or more, you might want to re-visit your decision to use an e-Learning strategy.

1. Who are the learners or readers?

2. What learning goals or information outcomes do I want to achieve?

3. How will I know when this happens?

4. Is the Web the best learning/information environment for this course?

5. Will it add value to the teaching or learning experience?

Return to your responses at the end of the chapter. Would you change anything?

Checklist of Active Learning Strategies
Promote Higher-Order Learning

☐ Provide assignments that simulate in some way the real world application of the course content.

☐ Engage learners in meaningful activities throughout the instruction not just at the end of a module or unit.

☐ Require students to generate meaning for themselves by asking them to analyze, compare, evaluate, and synthesize the concepts, principles, and procedures.

Provide Opportunities for Interaction and Collaboration with Others

☐ Use face-to-face discussion and online conferencing to:
  • Develop a learning community for your students
• Access a rich array of resources including experts who may be thousands of miles away
• Augment the development of critical thinking
• Facilitate collaborative learning activities
• Enhance creative thinking
• Develop a sophisticated understanding of complex issues and situations

**Provide Feedback**

Feedback consolidates a learner’s understanding, enables him or her to plan how to study, and allows the instructor to elaborate on the instruction.

- Ensure that learners have ongoing information about their progress.
- Link feedback to associated reference materials for enrichment or remedial support.

In sum, ensure that the learning environment you create is a dynamic and intellectually stimulating one for your students.

**Advantages and Disadvantages of e-Learning Environments**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Notes</th>
<th>Disadvantages</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active learning</td>
<td></td>
<td>Time consuming to develop</td>
<td></td>
</tr>
<tr>
<td>Real-world context</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Depth of coverage</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Developing information literacy skills</td>
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<td></td>
<td></td>
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<tr>
<td>Critical and creative thinking</td>
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<td></td>
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<tr>
<td>Collaborative learning</td>
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</tr>
</tbody>
</table>
Decision-making Checklist

Use the Web as a Learning Environment If....

☐ Access to a wide range of perspectives, information, and current, authentic representations is desired.

☐ The opportunity to make personal sense of information through organization and categorization (semantic linking) is key.

☐ A wide range of learning style preferences, perceptual modalities and options should be supported.

☐ Communication and reflection with others at a remove of time or place is necessary.

☐ Global access to a learning environment is encouraged.

Five Learning Outcomes

1.

2.

3.

4.

5.
<table>
<thead>
<tr>
<th>Face-to Face Activities</th>
<th>Online Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening to:</td>
<td>* Webcasts</td>
</tr>
<tr>
<td>• Lectures</td>
<td>* Case-study activities</td>
</tr>
<tr>
<td>• Interviews</td>
<td>* Online conferences</td>
</tr>
<tr>
<td>• Debates</td>
<td>* Audio and video conferencing</td>
</tr>
<tr>
<td>• Sermons</td>
<td>* Presentation sequences</td>
</tr>
<tr>
<td>• Speeches</td>
<td>* Reading online</td>
</tr>
<tr>
<td>• Stories</td>
<td>* Discussion groups</td>
</tr>
<tr>
<td>• Testimonials</td>
<td>* Mentoring</td>
</tr>
<tr>
<td>• Discussion among experts</td>
<td>* Peer-review</td>
</tr>
<tr>
<td>• Critiques</td>
<td></td>
</tr>
<tr>
<td>Seeking advice from:</td>
<td>* Mentoring and coaching, apprenticing</td>
</tr>
<tr>
<td>• Parents</td>
<td>* E-mail</td>
</tr>
<tr>
<td>• Mentors</td>
<td>* CMC among class members</td>
</tr>
<tr>
<td>• Co-workers</td>
<td>* Bringing in online experts, guest speakers</td>
</tr>
<tr>
<td>• Consultants</td>
<td>* Collaborative problem-solving</td>
</tr>
<tr>
<td>• Experts</td>
<td></td>
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<tr>
<td>Reading:</td>
<td>* Presentation sequences</td>
</tr>
<tr>
<td>• Books</td>
<td>* Resource pages</td>
</tr>
<tr>
<td>• Manuals</td>
<td>* Course notes</td>
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<tr>
<td>• Papers</td>
<td>* Virtual libraries</td>
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<tr>
<td>• Articles</td>
<td>* Transcripts</td>
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<tr>
<td>• Reports</td>
<td>* Narratives</td>
</tr>
<tr>
<td>• Case studies</td>
<td>* Case studies</td>
</tr>
<tr>
<td>Watching and hearing:</td>
<td>* Webcasts</td>
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<tr>
<td>• Presentations</td>
<td>* Presentations</td>
</tr>
<tr>
<td>• Plays</td>
<td>* Whiteboards</td>
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<tr>
<td>• Media</td>
<td>* Screen-sharing</td>
</tr>
<tr>
<td>• Demonstrations</td>
<td>* Movies animations</td>
</tr>
<tr>
<td>• Debates</td>
<td></td>
</tr>
<tr>
<td>Organizing:</td>
<td>* Using file folders</td>
</tr>
<tr>
<td>• With lists</td>
<td>* Creating annotations</td>
</tr>
<tr>
<td>• With outlines</td>
<td>* Cut and copy (or paste)</td>
</tr>
<tr>
<td>• With tables and tools</td>
<td>* Downloading online documents</td>
</tr>
<tr>
<td>• By classifying or grouping</td>
<td>* With online tools such as FileMaker Pro™</td>
</tr>
<tr>
<td>• Annotating</td>
<td></td>
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Table 1.1. Learning Activities and Formats (continued)

<table>
<thead>
<tr>
<th>Face-to Face Activities</th>
<th>Online Activities</th>
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<tbody>
<tr>
<td>We learn by…</td>
<td></td>
</tr>
<tr>
<td><strong>Examining exemplars or models by/of:</strong></td>
<td>• Virtual museums, etc.</td>
</tr>
<tr>
<td>• Visiting and touring museums</td>
<td>• Online conferences</td>
</tr>
<tr>
<td>• Seeing a demonstration</td>
<td>• Virtual field trips</td>
</tr>
<tr>
<td>• Work experiences</td>
<td>• Case studies</td>
</tr>
<tr>
<td>• Traveling</td>
<td>• Online lab experiments</td>
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<tr>
<td>• Critiquing work of others</td>
<td>• Virtual reality</td>
</tr>
<tr>
<td>• Modeling the behavior of others</td>
<td>• Mentoring</td>
</tr>
<tr>
<td>• Memorizing</td>
<td>• Webcasts</td>
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<tr>
<td></td>
<td>• Guest experts</td>
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<tr>
<td></td>
<td>• Case studies</td>
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<td></td>
<td>• Simulations</td>
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<td></td>
<td>• Application sharing</td>
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<td></td>
<td>• Reading and repeating</td>
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<td>• On-line MC</td>
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</tbody>
</table>

| Exploring and manipulating: | • Guided tours |
| • Environments              | • Simulations |
| • Objects and tools         | • Case studies |
| • Working models            | • Role plays   |
| • Language                  | • Virtual labs |
| • Building something        | • Brainstorming|
| • Documents                 | • Shared online documents |

| Practicing with:            | • Games |
| • Tasks                    | • Experiments, simulations |
| • New knowledge            | • Role-playing |
| • Others                   | • Manipulable objects |
| • New abilities and skills |                   |

| Contributing to:            | • Threaded discussion groups |
| • Discussions              | • Chat sessions |
| • Debates                  | • Role-playing |
| • Group problem-solving    | • Virtual labs |
| • Writing                  | • Visiting experts |

| Conducting research:        | • Guided research activities |
| • In libraries              | • Group projects |
| • With interviews           | • Case studies |
| • In the field              | • Online databases |
| • In focus groups           | • Simulations |
| •                         | • Online chats and threaded discussions |
Learning Style Theories

Compare and Contrast

<table>
<thead>
<tr>
<th>Organizer</th>
<th>Model</th>
<th>Model</th>
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<tbody>
<tr>
<td>What learning process is described?</td>
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<tr>
<td>Are learning styles described?</td>
<td></td>
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<tr>
<td>Is the model developmental?</td>
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<tr>
<td>Does the model respect diversity?</td>
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<tr>
<td>How does the model define “intelligence”?</td>
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<tr>
<td>Does the model reflect your own understanding of how people learn?</td>
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<tr>
<td>Can this model be implemented easily as a planning tool?</td>
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</table>

Strategies Related to Learning Domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Strategies</th>
<th>Media</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>Cognitive</td>
<td>Didactic</td>
<td>All</td>
<td>MC texts for lower-level skills</td>
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<tr>
<td></td>
<td>Individual research</td>
<td>Print</td>
<td>Think-aloud</td>
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<tr>
<td></td>
<td>Manipulation of data</td>
<td>Internet</td>
<td>Writing, portfolio construction</td>
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<tr>
<td></td>
<td>Problem-solving</td>
<td></td>
<td>Group projects and presentation</td>
</tr>
<tr>
<td></td>
<td>Case study</td>
<td></td>
<td>Debate, discussion</td>
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<tr>
<td></td>
<td>Simulation</td>
<td>Video</td>
<td>Observation</td>
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<tr>
<td></td>
<td>Modeling</td>
<td>CBL</td>
<td>Self-assessment</td>
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<td>Microworlds</td>
<td>IMI</td>
<td>Peer-assessment</td>
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<tr>
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<td>Role-play</td>
<td></td>
<td>Inventories</td>
</tr>
<tr>
<td></td>
<td>Collaborative learning</td>
<td></td>
<td></td>
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<tr>
<td>Affective</td>
<td>Demonstration, modeling</td>
<td>Video</td>
<td>Observation, checklists</td>
</tr>
<tr>
<td>Psychomotor</td>
<td>Practice and coaching</td>
<td>Interactive media</td>
<td>Performance</td>
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## Morten Flate Paulsen’s Online Teaching Methods and Techniques

<table>
<thead>
<tr>
<th>Methods</th>
<th>one-alone</th>
<th>one-to-one</th>
<th>one-to-many</th>
<th>many-to-many</th>
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</table>
| Techniques | Online databases  
Online journals  
Online applications  
Software libraries  
Online interest groups  
Interviews | Learning contracts  
Apprenticeships  
Internships  
Correspondence studies | Lectures  
Symposiums  
Skits | Debates  
Simulations or games  
Role Plays  
Case studies  
Discussion groups  
Transcript based assignments  
Brainstorming  
Delphi  
Techniques  
Nominal group techniques  
Forums  
Project groups |
| Devices | Online resources | E-mail | Bulletin board | Computer conferencing |

Online at http://www.nettskolen.com/forskning/22/icdepenn.htm
<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Advantages</th>
<th>Limitations</th>
<th>Tips</th>
<th>Online evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF questions</td>
<td>A choice is made between two alternatives</td>
<td>Short items</td>
<td>Items at low cognitive level</td>
<td>Items should be unequivocally true or false</td>
<td>Use as self-assessment Poll learners online after a structured debate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fairly easy to score</td>
<td>Not very nuanced</td>
<td>Avoid multiple negatives</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use for polling</td>
<td>Little diagnostic information</td>
<td>Approximate same number of true and false answers</td>
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<td></td>
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<td></td>
<td>Emphasizes rote memorization</td>
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<tr>
<td>Matching</td>
<td>Associate one item with a number of alternatives</td>
<td>Measures understanding of association between</td>
<td>Frequently used to associate trivial information</td>
<td>Explain basis for matching, e.g.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>pairs of items</td>
<td>Recognition over recall of information</td>
<td>Can items be used more than once?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rapid response time</td>
<td></td>
<td>Extra alternatives eliminate answering by process of elimination</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6-8 associations for each question</td>
<td></td>
</tr>
<tr>
<td>Completion</td>
<td>Finish a sentence or answer a question in a sentence</td>
<td>Good for recall</td>
<td>Difficult to develop items that measure higher-level</td>
<td>Write specifically (one right answer)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eliminates guessing</td>
<td>cognitive skills</td>
<td>Blanks go near end of sentence rather than beginning</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Covers large amount of content</td>
<td>Difficult to score</td>
<td>Require one-word response or short phrase only</td>
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<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Advantages</th>
<th>Limitations</th>
<th>Tips</th>
<th>Online evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple-choice</td>
<td>Stem + alternatives (one correct)</td>
<td>Used for simple memorization to complex cognitive manipulations</td>
<td>Difficult and time-consuming to write</td>
<td>Avoid opinion items</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learning problems diagnosed if alternatives are designed to catch common errors</td>
<td>Can be ambiguous to some learners</td>
<td>Include media wherever possible</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can be constructed so that there are no absolutes, requiring deeper thinking</td>
<td>Too often poorly written</td>
<td>Present only one problem or idea in a stem</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Use negatives sparingly</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Provide only one correct or clearly best answer</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Include common misconceptions in the distracters to help diagnose learning errors</td>
<td></td>
</tr>
<tr>
<td>Essay</td>
<td>For higher-level cognitive skills, making arguments, etc.</td>
<td>Measures desired competencies at greater depth</td>
<td>Disadvantages those with literacy challenges, non-native English speakers</td>
<td>Specific directions</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Freedom to respond within broad limits</td>
<td></td>
<td>Prepare list of key points. (weights)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encourages originality, creativity, divergent thinking</td>
<td></td>
<td>Score papers anonymously</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Advantages</th>
<th>Limitations</th>
<th>Tips</th>
<th>Online evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>Measures skills needed to accomplish real-life task</td>
<td>Demonstrates knowing and knowing how in real context</td>
<td>Requires more than one judge</td>
<td>Specify exactly what learners are to do, equipment needed, assessment guidelines, time to complete, etc.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Student demonstrates, rather than just describes, desired performance</td>
<td>Increased setup time</td>
<td>Develop a checklist based on acceptable performance standards</td>
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<tr>
<td></td>
<td></td>
<td>With checklist student can practice beforehand</td>
<td>Must develop good tools (e.g. checklists)</td>
<td>Give copy of checklist to learner to help them shape their learning</td>
<td></td>
</tr>
<tr>
<td>Portfolios</td>
<td>Purposeful collection of work that tells the story of the learner’s efforts, progress, and/or achievement</td>
<td>Provides broad picture of what student can do</td>
<td>Work may not be totally representative of what learners know or can do</td>
<td>Provide models of exemplary portfolios</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Portrays both process and product of work, growth</td>
<td>Criteria should reflect most relevant or useful dimension of the task</td>
<td>Negotiate what will be included and assessment criteria</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Active self-assessment</td>
<td></td>
<td>Should contain rationale, intents, contents, standards, and judgments</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Actively promotes critical reflection</td>
<td></td>
<td>Examples that illustrate growth</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Include self-reflection</td>
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</table>

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Advantages</th>
<th>Limitations</th>
<th>Tips</th>
<th>Online evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews, oral evaluations</td>
<td>Design set of questions to be asked, covering specific objectives.</td>
<td>In-depth</td>
<td>Time-consuming</td>
<td>Practice interviewing with peers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Could be structured or unstructured</td>
<td>Allows more flexibility and is learning process itself</td>
<td>May be unreliable</td>
<td></td>
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</tr>
<tr>
<td>Logs and journals</td>
<td>Students keep a written record as they move through a learning task</td>
<td>Promotes critical reflection</td>
<td>Skill that needs to be developed and supported</td>
<td>Try journal club</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Good for formative stages of learning</td>
<td>Evaluation is subjective</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Writing is a cognitive tool</td>
<td></td>
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<tr>
<td>Open-ended</td>
<td>Learners are placed in novel situation requiring a performance – e.g. mock trials, debates, role playing</td>
<td>Diverse results play on individual strengths</td>
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<tr>
<td></td>
<td></td>
<td>Authentic</td>
<td></td>
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<tr>
<td>Long-term projects</td>
<td>Require extended research work; often</td>
<td>High-level cognitive skills supported</td>
<td>Requires development of tools such as checklists for major attributes</td>
<td>Combine with other evaluation methods</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Interpersonal skills</td>
<td></td>
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</table>

A Case Study: Introduction to Psychology

Background
Professor John Boeglin teaches a first-year undergraduate course. French is the language of instruction.

The course enjoys one of the larger enrollments in John’s faculty because it is required for many of the degree paths. A similar, lecture-based course is offered on the English campus.

John consistently received high student evaluations for the face-to-face course, but he was unhappy with the lecture mode of the course because of the lack of interaction with his students. Nor did they have the time in class to interact with their peers.

John was concerned about other issues as well:

• Assessment of learning was done entirely with multiple-choice examinations
• He wanted students to do more in-depth research and research in non-traditional sources
• He felt that a more problem-based model was desirable
• He saw that while students were taking copious notes, they were not engaged with the material
• He wanted to increase active learning time
• He wanted to provide more flexibility

Course Redevelopment
The online content closely parallels the weekly lecture by topic. The online version extends the lecture material with:

• Additional content
• Embedded media (or e-Texts)
• Semantic links to related sites and reports of recent research in English and French
• Online forums

An asynchronous class discussion supports an issues-based discussion on a special topic four times during the semester. Students are placed in cooperative groups with which they stay for class assignments and for the discussions, for which they are graded.
John uploads a class outline, adapted from a PowerPoint™ slide presentation, several days in advance of the class meeting. The outline serves as a notes outline (or advance organizer) to guide student note-taking during the lecture. The notes outline is based on reflective questions that are repeated again in the online discussion.

**Costs**

John estimated that the time devoted to the redevelopment of this course was about 480 hours. This estimate includes:

- John’s learning curve  
  - Pedagogy of teaching on the internet  
  - Re-purposing of all course content  
  - Effective videoconferencing techniques  
  - Developing learner support materials  
  - Piloting course segments at a distance  
  - Course development and productivity tools:  
    - WebCT  
    - PowerPoint  
    - PhotoShop  
  - Developing a learner tutorial  
  - Attending workshops

- Instructional design time  
  - .2 FTE instructional designer  
  - .2 FTE expert in synchronous delivery

- Production assistance  
  - .1 FTE graphic artist  
  - .1 FTE Web developer

- Evaluation assistance  
  - .2 FTE evaluator  
  - 2 focus group sessions in first term

**Rates**

Technical assistance may range from $50-75/hour  
Instructional design expertise may range from $75-150/hour
Evaluation assistance is usually rated at 10% of the total cost of a faculty member’s time

**A Value-added Checklist: Key Features of Good e-Learning Environments**

**Check no fewer than 8.**

- Opportunities to interact
- Multimedial
- Open
- Searchable
- Asynchronous
- Resource-based
- Semantic links necessary
- Visual
- Distributed
- Cross-cultural interaction
- Cultural relevance
- Learner-controlled
- Multiple perspectives represented
- Multiple expertise available
- Discussion-based
- Current
- Accessible to learners with diverse needs
- Accessible to learners who do not have fast access
- Access to information not available in non-traditional formats
- Opportunity to perform an activity not easily available off-line
# To Do List

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Date</th>
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<tbody>
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Concept Guide
What is user-centered design?

- Who are your users?
- Are they a homogeneous group?
- How will that affect your e-Writing?

Culture
- Does your discipline have cultural assumptions?
Minority cultures
- If you were asked to develop inclusive guidelines for your department, what would you emphasize?

Age
- What have you learned about learning styles, needs, and models at various stages in the lifespan?

Health and perceptual challenges
- After reading this chapter, do you have a new or different view of accessibility?

Access to technology
- If you widen access to your content through e-Texts, will you exclude any populations of users?

Gender
- Do you believe that there are gender differences in learning?
- Are your e-Texts gender or culturally neutral?

Questions and Goals
Use this form to record your questions about user-centered design.
As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals
1. 
2. 
3. 

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
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**Key Terms**

This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary common to user-centered design.

- Target audience
- Participatory design
- Peer co-designer
- Design co-owner
- Expertise contributor
- Self-advocate
- Needs assessment
- Genre
- Usability
- Human-computer interface (HCI)
- Standards
- Specifications
- Compliance
- Interoperability
- ISD
- Dominant culture
Design Features
Describe three design features that you really like or find powerful.

1.

2.

3.

Needs Assessment: Sample Survey
These are excerpts from a needs assessment tool developed for a Continuing Pharmacy Education program. Several questions from each section have been included. This is a very extensive tool; you may not need to develop a survey that is so encompassing.

As you examine this document, try to draw some assumptions about a “typical” learner profile based on possible responses to these questions.
I. Program Format
For each of us, there is a program format that reflects our preference in learning style.

A. Live Programs
For the following options, please circle the format(s) that best correspond to your preference for live (face-to-face) educational programs.

1. Lecture
2. Lecture with audience participation
3. Interactive scenarios (e.g. role-playing)
4. Workshops
5. Case studies
6. Small group discussions
7. Other (please specify) _________________________________

In addition to various formats, there are also tools or aids that can contribute to the effectiveness of live educational programs. Please circle the corresponding number that reflects how useful the following tools are.

<table>
<thead>
<tr>
<th>Tool Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Visual aids (e.g. slides or overheads)</td>
<td>1</td>
<td>2</td>
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<td>5</td>
<td>9</td>
</tr>
<tr>
<td>(b) Comprehensive handouts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>(c) Readings, articles, or monographs</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
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<tr>
<td>(d) Other (please specify)</td>
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</table>

B. Distance Education Program Formats
It is important that educational programs are accessible to pharmacists. Today, there are various program delivery options that pharmacists can participate in without having to leave their homes or workplaces. As well, with increasing demands on the pharmacist’s time, such options may be useful to pharmacists in any practice setting or geographical location.
Please circle the corresponding number that reflects how useful each format is in meeting your learning needs as a practicing pharmacist.

Overall, which program format would you say best represents how you currently obtain the *majority* of your continuing education units? Please circle only one answer below.

1. Live programs (e.g. conferences, seminars, presentations)
2. Videoconferencing
3. Online computer-assisted programs
4. Packaged computer-assisted programs
5. Home study correspondence courses
6. Home study audio tapes
7. Home study video tapes
8. Other (please specify)_____________________________________

<table>
<thead>
<tr>
<th>Format</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>9</th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
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<td></td>
<td></td>
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<tr>
<td>Lecture with audience participation</td>
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<td></td>
<td></td>
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<tr>
<td>Interactive scenarios (e.g. role-playing)</td>
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<td></td>
</tr>
<tr>
<td>Workshops</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Case studies</td>
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<tr>
<td>Small group discussions</td>
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<tr>
<td>Other (please specify)</td>
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</table>

**II. Scheduling**

Due to busy work and personal schedules, pharmacists need conveniently scheduled learning opportunities.

Do you currently work shift work?

1. Yes
2. No
Do you currently work weekends?

1. Yes
2. No

In general, what month(s) of the year would you be interested in participating in continuing education programs? Please circle as many as applicable.


Which day(s) of the week are generally best for you to attend evening programs (e.g. 7-9:30pm)? Please circle as many as applicable.

1. Monday  3. Wednesday  5. Friday  7. Sunday
2. Tuesday  4. Thursday  6. Saturday

### III. Time Commitment

Continuing education programs can vary in length from a single evening event to a two-year program. Since some options would require more time commitment than the more traditional evening or full-day CE programs, it is important to determine interest in various durations of programs.

Please indicate your level of interest for the following options:

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<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Un-interested</td>
<td>Somewhat Un-interested</td>
<td>Neutral</td>
<td>Somewhat Interested</td>
<td>Interested</td>
<td>Not Sure</td>
</tr>
</tbody>
</table>

(a) Evening program (e.g. 2-3 hours on 1 evening)

(b) Series of evening programs (e.g. once per week for 3 consecutive weeks)
IV. The Use of Computers in Continuing Pharmacy Education Programming

The use of computers to facilitate the delivery of CE programs is becoming more and more popular. As well, more and more pharmacists are using computer technology as a tool for lifelong learning. This section will explore your access to and attitudes toward the use of computers in continuing pharmacy education programming.

A. Access
Do you have access to a computer? Please circle one response.

1. Yes, only at home
2. Yes, only at work
3. Yes, both at home and at work
4. Yes, other (please specify)_____________________________
5. No

If you own/have access to a computer, was it purchased within the last two years?

1. Yes
2. No
3. Not sure
Do you plan to purchase a computer within the next two years?

1. Yes
2. No
3. Not sure

When specifically considering courses delivered online, it is important to know how much time pharmacists can spend at one time during the day to participate in such courses. Please circle the option that best represents the average amount of blocked time you would be able to devote to study online:

1. Less than 30 minutes
2. 30-60 minutes
3. 1-2 hours
4. 2-3 hours
5. 3 or more hours

B. Views on the Use of Computers for Educational Programming

Since computers are being used more and more for the delivery of continuing education courses, we are interested in learning about how pharmacists feel about using computers in educational courses in general as well as specifically in continuing pharmacy education.

Please respond to the following statements by circling the applicable number:

<table>
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<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Dis-</td>
<td>Somewhat</td>
<td>Neutral</td>
<td>Some</td>
<td>Agree</td>
<td>Not</td>
</tr>
<tr>
<td>disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Sure</td>
<td></td>
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</tbody>
</table>

(a) I would feel more at ease learning on a computer than in a traditional, face-to-face format.
(b) I would feel more independent learning on a computer than in a traditional, face-to-face format.
(c) I would like learning on a computer because I could work at my own pace.  
(d) Learning on a computer would limit the communication I would have with other people.  
(e) A computer structures the learning activity too much.  
(f) Learning that is mediated by a computer would be a cold and impersonal experience.  
(g) Computers can be useful in continuing pharmacy education.  
(h) I would use the computer for assistance in learning pharmacy-related material.  
(i) Computers could increase the quality of pharmacy education.  
(j) Computers could increase the access to educational programs for pharmacists.  
(k) I would like an online mechanism to collaborate with other pharmacists.  
(l) I would like an online mechanism to collaborate with experts.  
(m) Other (specify)
**VI. Motivation**

Pharmacists have various reasons for participating in educational programs. These reasons influence whether or not we enroll in a particular educational activity.

Please circle the number that corresponds to the extent of influence each statement had on your reasons for participating in continuing pharmacy education opportunities.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>No Influence</strong></td>
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<tr>
<td><strong>Little Influence</strong></td>
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<td>4</td>
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<tr>
<td><strong>Neutral Influence</strong></td>
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<td>4</td>
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<td>9</td>
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<tr>
<td><strong>Moderate Influence</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td><strong>Much Influence</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td><strong>Not Sure</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
</tbody>
</table>

(a) To satisfy my intellectual curiosity
(b) To comply with my employer’s policy
(c) To respond to the fact that I am surrounded by people who continue to learn.
(d) To increase my competence in my job
(e) To take part in an activity which is customary in the circle in which I move
(f) To have a few hours away from responsibilities
(g) To abide by the recommendations of someone else
(h) To help me earn a degree, diploma, or certificate
(i) To participate in group activities
(j) To get a break from the routine of home or work
(k) To secure professional advancement

(l) To fulfill the requirements of a regulatory licensing body

(m) Other (please specify) _____________________________

X. Personal Information

In order for us to link your responses to important factors in evaluating educational programming priorities, please volunteer this information.

1. Year of birth: __________
2. Gender: Male Female
3. Year first licensed as a pharmacist: ________
4. Primary employment description (please check one):
   a) Community Practice:
      Independent Pharmacy: Owner Staff
      Corporate/Chain Pharmacy: Manager Staff
   b) Hospital Practice: Manager Staff
   c) Long Term Care: Manager Staff
   d) Other: Military Academia
              Industry Resident
              Graduate Student
              Other (specify)________________

5. Primary employment status (please check one):
   □ Full-time
   □ Part-time
   □ Unemployed, actively seeking employment
   □ Unemployed, not seeking employment
   □ Retired
   □ Other (specify)___________________________
6. Education in pharmacy (institution, degree, year of graduation)

7. Other formal education:
   (specify degree, diploma, certificate or other and year(s))

8. Pharmacy Residency:
   (specify location and year)

**Survey Results**

When this survey is returned:

- 70% of the respondents say that they have only 30-60 minutes at a time to work online.
- Over 50% do not own a personal computer, but have limited access at their workplace.
- “Learning on a computer would limit the communication I would have with other people” is the choice of over 35% of the respondents.

These results suggest that the target audience will have to work on their materials in short chunks of time, perhaps during their breaks or lunch hours. If their workplace supports professional development they might have access to a dedicated computer, but it is more likely that they will have to use business machines that are in use most of the day. In this kind of environment, they will have to be able to tolerate distractions and interruptions.

Implications for the eWriter include designing short chunks of eTexts that can be read and understood in one sitting (say, 30 minutes; it takes some time to get started and to clean up the workspace). Long segments will be interrupted and the user will find it hard to relate concepts and information from one session to the next. Also, if the workstation is in a public area, the use of audio can be a problem. Finally, how can you make a more friendly, connected eLearning environment?

**Learner Profiles**

This is a ‘worked example’ of a learner profile. The first part represents a completed survey of learner preferences. Part II is the resulting profile. This example is followed by another completed survey. Try your hand at developing a profile for Learner 2.
Part I: Learner 1

Your Name (optional):
Year in program: 3rd year
Age: 20
Sex: (please circle) Male Female

1. Place a check mark by the work experiences you have had in this program.
   - Lab assistant
   - Peer coach
   - Evening supervisor
   - Summer internship
   - Co-op placement (1 term)

2. a. In which of these activities did you feel most successful?
   I preferred being a lab assistant
   b. Why?
   I enjoyed setting up and organizing the workspaces and experiments. I liked helping the prof record observations for his own research

3. What do you like to do in your spare time (hobbies, interests, etc.)?
   I have a part-time job in the evenings – I work for a landscaping company.

4. List your favorite television shows: History Channel, Conan O’Brien, Crocodile Hunter

5. List your favorite books or magazines: Conde Nast Traveler, Lonely Planet guides

6. Describe your favorite course in your program. What learning activities did you enjoy the most? Botany 220. classifying plants, field trip to experimental farm

7. How would you rate your own computer abilities?
   - No experience
   - Poor
   - Weak
   - Fair
8. Which of the following Internet activities do you perform on a regular basis?
   □ None
   □ Games
   ✔ Research
   □ Purchasing something
   □ Educational
   ✔ Communicating (e.g. e-mail)
   □ Designing web pages
   □ Other (please list):

9. Describe your favorite Web site. I really like the site for the American Botany Society. There’s not too much text, lots of photographs of the plants and gardens. You can click on the images and get more information and links to other sites. There’s also a list so you can ask questions or get involved in discussions.

10. Do you own a computer at home?
    ✔ Yes
    □ No

11. Do you use the computer labs on campus?
    □ Yes
    ✔ No Not too often

12. How would you describe your access to technology? I have my own laptop at home. We use dial-up. Sometimes it’s hard to get into my e-mail account. Once I dialed in over 100 times.

13. On average, how many hours per week do you spend on a computer?
    □ None
    □ Less than 3
☐ 3-5 hours
☒ 5-7 hours mostly checking e-mail
☐ 7-15 hours
☐ More than 15 hours

14. What do you like MOST about this class so far? It’s small and we spend most of our time in the lab or outside

15. What do you like LEAST about this class? Nothing – too many notes

16. How important is it to attend all your scheduled classes? I don’t mind if I miss a class or two, if I can get the notes from someone

Profile Summary
This is a 20-year old male in his third year in the degree program. Given his age, he entered the program directly on graduating from high school. He probably doesn’t have much work experience, although he does work part-time as a landscaper in the evenings. He notes that he enjoyed the field trips in Botany 220 and that he liked the lab work he did for Jeff. Seems to do well in smaller groups or one-on-one, and actually working directly with tools and materials. Doesn’t like sitting in lectures or taking extensive notes.

His tastes run to the scientific and documentary-type shows. He didn’t check off computer games or talk about anything like that – action movies, large get-togethers, etc. Solitary?

Has a laptop and seems to use it every day but mostly to do research or check his e-mail. He likes a site that is professional, has lots of images, is fairly layered, and gives him a chance to connect with others interested in botany. He mentioned text again – appears to prefer hands-on activities, images; interaction. Steers away from the campus labs, but they’re almost impossible to access during the day and he works in the evenings.

Design implications – blended learning design with some meetings and lectures, but lots of hands-on, real-world experiences, and opportunities to communicate with others in the field. Would prefer visuals to text. Doesn’t need to go to class three hours every week, as long as notes, updates and activities, and opportunities to communicate are provided. Since he works in the evenings, he would not appreciate having to spend hours in front of the computer to get course information. He would prefer a site that is not heavily text-based, but that doesn’t require a high-speed connection or long download times. He would participate in a class discussion list online. He might be interested in participating in an online project with others around the country.
Learner 2

Your Name (optional):
Year in program: 2
Age: 27
Sex: (please circle)  Male  Female

1. Place a check mark by the work experiences you have had in this program.
   - Lab assistant
   - Peer coach
   - Evening supervisor
   - Summer internship
   - Co-op placement (1 term)

2. a. In which of these activities did you feel most successful? I did the internship because I like working outside during the summer. I was also pretty independent. Before I came back to school I was thinking about starting my own business.

3. What do you like to do in your spare time (hobbies, interests, etc.)? Roller blading, mountain biking, hiking, traveling

4. List your favorite television shows: don’t watch it much, except for movies.

5. List your favorite books or magazines: personal or academic?

6. Describe your favorite course in your program. What learning activities did you enjoy the most? The first time I was here I really enjoyed the courses I took in Psychology and Sociology. I liked reading about human behavior and doing research in the community. I like to talk to people. I like to write.

7. How would you rate your own computer abilities?
   - No experience
   - Poor
   - Weak
   - Fair
   - Good I use lots of business tools and word-processing. I’m also on the Web a lot.
   - Excellent
8. Which of the following Internet activities do you perform on a regular basis?
   ☐ None
   ☑ Games
   ☑ Research
   ☑ Purchasing something
   ☐ Educational
   ☑ Communicating (e.g. e-mail)
   ☐ Designing web pages
   ☐ Other (please list):
                                __________________________________________________

9. Do you own a computer at home?
   ☑ Yes
   ☐ No

10. Do you use the computer labs on campus?
    ☑ Yes
    ☐ No

11. How would you describe your access to technology? My husband and I compete for time, but it’s usually pretty even.

12. On average, how many hours per week do you spend on a computer?
    ☐ None
    ☐ Less than 3
    ☐ 3-5 hours
    ☐ 5-7 hours
    ☑ 7-15 hours Couple of hours a day, usually when I get home.
    ☐ More than 15 hours

13. What do you like MOST about this class? The prof knows her stuff and tells us about her research and what’s going on in the field. She has a good sense of humor. We have good discussions.
14. What do you like LEAST about this class? The other students who don’t carry their weight on group assignments.

15. How important is it to attend all your scheduled classes? I'm paying for them, but we could do a lot of the stuff on our own. I like it when we discuss a point that there is a lot of debate about.

Profile Summary
Try this one on your own.

Checklist: Evaluating Texts for Language

☐ Acknowledge your own culture
☐ Be polite
☐ Don’t assume tacit knowledge
☐ Use explicit language
☐ Avoid local expressions
☐ Avoid idioms
☐ Use internationally known references
☐ Avoid relative expressions
☐ Spell out currency formats
☐ State dates clearly with words and numbers
☐ Make time zone known
☐ Include both international and American units of measure
☐ Use international telephone number formats
☐ Pick universal symbols
☐ Avoid political statements of any kind
☐ Write in international English
☐ Use simple (vs. complex) sentences and shorter words
☐ Be direct
☐ Use active, not passive voice
☐ Use words everyone can understand
☐ No slang
- No faddish or made up words
- Gender neutralize
- Fewer multi-word verbs (e.g. ‘tolerate’ instead of ‘put up with”)
- Spell out abbreviations and acronyms
- Use high-quality, proper spellings (e.g. ‘through’ vs. ‘thru’)
- Use just one modifier before the word it modifies
- Use fewer pronouns
- Use ‘alerting words’ such as ‘first, second, third’
- Cut out words (try to cut back by 50%)
- Give clear directions in short, active sentences
- Use less formal language
- Replace multi-syllabic words with shorter words
- Guard against pop cultural references
- Use literary references sparingly
- Use humor carefully

**Practice: Suggestions for Improving the e-Text**

WebCT at the University of Alberta, http://www.ualberta.ca/webct
A few improvements:

1. **Top banner**
   a. Replace at least one image of the two Caucasian women with an ethically different individual. One could be replaced with a male.
   b. Check for colorblindness concerns.

2. **Language/Readability**
   a. Replace “FAQs” (an acronym) with spelled-out version.
   b. “WebDAV” is not a widely-known term.
   c. Replace complex sentences with simple sentences.
   d. Replace serial lists with bulleted lists.

3. **WebCT logo** portrays a Caucasian, formal, male academic, carrying a red metal toolkit, which is exclusionary for gender and ethnicity.

Others?
Figure 2.1. Ways of Knowing: Learner Profile and Implications for e-Writing

<table>
<thead>
<tr>
<th>Way of Knowing</th>
<th>e-Writing Suggestions</th>
<th>Gender pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute knowing</td>
<td>• E-mail or online forums build in opportunities for teacher-student interaction</td>
<td>Males tend to be mastery-pattern knowers, who:</td>
</tr>
<tr>
<td>(Junior undergraduate)</td>
<td>• Set behavioral expectations for how to disagree</td>
<td>• Enjoy a public learning role</td>
</tr>
<tr>
<td></td>
<td>• Use links and sidebars to give choices for different levels of difficulty</td>
<td>• Show interest to instructor by participating</td>
</tr>
<tr>
<td></td>
<td>• Write less formally, use a more relaxed tone</td>
<td>• Are more argumentative in class</td>
</tr>
<tr>
<td></td>
<td>• Use surveys and interviews that students initiate with each other</td>
<td>• Appeal to authority to resolve differences</td>
</tr>
<tr>
<td></td>
<td>• Describe your assessment goals and methods clearly and provide examples</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Females are more likely to be receiving pattern knowers, who:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Are private learners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Expect to listen and record rather than interact with instructor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• See peers as sources of support</td>
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<tr>
<td></td>
<td></td>
<td>• Value evaluation that lets them demonstrate mastery</td>
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<tr>
<td></td>
<td></td>
<td>• Try to work out discrepancies for self rather than consult experts</td>
</tr>
</tbody>
</table>
Figure 2.1. Ways of Knowing: Learner Profile and Implications for e-Writing (continued)

<table>
<thead>
<tr>
<th>Way of Knowing</th>
<th>e-Writing Suggestions</th>
<th>Gender pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transitional</td>
<td>• Use private e-mail to show concern and interest&lt;br&gt;• Use public forums for interaction&lt;br&gt;• Set up a social chat&lt;br&gt;• Use a positive tone&lt;br&gt;• Maintain a FAQs section which is regularly updated&lt;br&gt;• Encourage peers to answer each others' questions&lt;br&gt;• Build in questions related to personal experiences&lt;br&gt;• Create practical exercises or point to other sites that will support applications of knowledge&lt;br&gt;• Build in high-level questions that require research&lt;br&gt;• Pair students for one task&lt;br&gt;• Activities should be open-ended and require evaluating evidence&lt;br&gt;• Provide sample assessment questions&lt;br&gt;• Provide opportunities to encounter contradictory views, for example through a debate or inviting 'virtual guest lecturers'</td>
<td>Males tend towards impersonal knowing and:&lt;br&gt;• Prefer to exchange ideas through debate&lt;br&gt;• Expect to be challenged&lt;br&gt;• Value evaluation that is fair and practical&lt;br&gt;• Resolve uncertainty by logic and research</td>
</tr>
<tr>
<td>knowing</td>
<td></td>
<td>Females tend towards interpersonal knowing:&lt;br&gt;• Prefer to be involved by collecting others' ideas&lt;br&gt;• Expect to have their views heard by peers&lt;br&gt;• Desire exposure to new points of view through interaction with peers&lt;br&gt;• Seek rapport with instructor to enhance self-expression&lt;br&gt;• Value evaluation that considers individual differences&lt;br&gt;• Resolve uncertainty by their personal judgment</td>
</tr>
</tbody>
</table>
### Ways of Knowing: Learner Profile and Implications for e-Writing (continued)

<table>
<thead>
<tr>
<th>Gender Pattern</th>
<th>e-Writing Suggestions</th>
</tr>
</thead>
</table>
| **Independent Knowing** | - Don't write as absolute authority; embed collaboration.  
- Activities based on teamwork and collaboration.  
- Examples and contexts reflect the BIG issues.  
- Own thoughts and work are demonstrable responsibility.  
- Insist that online responses are evidence-based and demonstrate responsibility.  
- Build-in threaded discussions for meaningful dialogue.  
- Open-ended questions.  
- Don't write as absolute authority; embed collaboration.  
| **Contextual Knowing** | - Give choice of assessment forms.  
- Don't use multiple choice tests.  
- Build on assignments.  
- Give lots of choice on activities and create the thought.  
- Give independent assignments requiring teamwork/profession.  
- Provide skills which can be used in the workplace/profession.  
- Conclude learning to real life by providing authentic contexts and examples.  
| **Magolda** | - Did identify patterns but didn't identify increasing compassion, degrees of humanity, and initiative.  
| **Way of Knowing** | - Learning should involve interplay and exchange.  
- Instructors should engage all points of view.  
- Evaluation is a joint process.  
- They learn well by engaging views of others.  
- As independent knowers, females believe that:  
- Enjoy being challenged.  
- Prefer to be allowed to define own learning goals.  
- Stress thinking for themselves.  
| **Way of Knowing (continued)** | - Give independent assignments requiring teamwork/profession.  
- Provide skills which can be used in the workplace/profession.  
- Conclude learning to real life by providing authentic contexts and examples.  
- Examples and contexts reflect the BIG issues.  
- Open-ended questions.  
- Don't write as absolute authority; embed collaboration.  

*Figure 2.1: Ways of Knowing: Learner Profile and Implications for e-Writing (continued)*
## Guidelines for Designing e-Texts for Adults

Adult users may experience cognitive overload in hypermedia environments. If you are writing for older adults who are unfamiliar with the architecture of the Internet, evaluate your site for these concerns.

<table>
<thead>
<tr>
<th>Concern</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertext may be problematic for learners who...</td>
<td></td>
</tr>
<tr>
<td>Are from hierarchical cultures</td>
<td>• Publish rules of engagement</td>
</tr>
<tr>
<td>Are field-dependent</td>
<td>• Require users to choose roles</td>
</tr>
<tr>
<td>Are task-oriented</td>
<td>• Include a site map</td>
</tr>
<tr>
<td>Are confused with too many choices</td>
<td>• Define task clearly</td>
</tr>
<tr>
<td>Are confused by structured tasks in unstructured environments</td>
<td>• Suggest reasonable timeline for completion</td>
</tr>
<tr>
<td>Are confused with too many choices</td>
<td>• Advise users of implications of choices</td>
</tr>
<tr>
<td>Are confused by structured tasks in unstructured environments</td>
<td>• Annotate links so user can make decisions</td>
</tr>
<tr>
<td>May not have highly-developed reasoning skills</td>
<td>• Use scaffolds</td>
</tr>
<tr>
<td>Are novices in the discipline</td>
<td>• Include tools to help collect, organize, synthesize and apply new knowledge (e.g. outline)</td>
</tr>
<tr>
<td>Are not expert computer users</td>
<td>• Cue users to organization</td>
</tr>
<tr>
<td>Expect one right answer</td>
<td>• Include meta-cognitive strategies</td>
</tr>
<tr>
<td>Feelings of social isolation</td>
<td>• Provide links to prerequisite knowledge</td>
</tr>
<tr>
<td>Design collaborative tasks that require communicating with others</td>
<td>• Include evaluation tools</td>
</tr>
<tr>
<td>Orientation</td>
<td>• Design online tutorial or users’ guide</td>
</tr>
<tr>
<td>Keyhole problem</td>
<td>• Design open-ended task</td>
</tr>
<tr>
<td>Complex navigation</td>
<td>• Simplify interface</td>
</tr>
<tr>
<td></td>
<td>• Provide an example with more than one solution</td>
</tr>
<tr>
<td></td>
<td>• Do not allow anonymity</td>
</tr>
<tr>
<td></td>
<td>• Build in communication tasks</td>
</tr>
<tr>
<td></td>
<td>• Assign response partners</td>
</tr>
<tr>
<td></td>
<td>• Regularly provide critical feedback</td>
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</table>

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Designing and Evaluating Interactive Materials for Adult Learners

<table>
<thead>
<tr>
<th>Theory Implication</th>
<th>Applications to Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide adults with opportunities to set their own goals</td>
<td>• Clear menu structure</td>
</tr>
<tr>
<td></td>
<td>• Search functions</td>
</tr>
<tr>
<td></td>
<td>• Self-tests included</td>
</tr>
<tr>
<td></td>
<td>• Practice with feedback provided</td>
</tr>
<tr>
<td></td>
<td>• Record-keeping among sessions</td>
</tr>
<tr>
<td></td>
<td>• Different representations of content</td>
</tr>
<tr>
<td></td>
<td>• Varying difficulty levels</td>
</tr>
<tr>
<td>Establish a need to know and readiness to learn</td>
<td>• Problems established</td>
</tr>
<tr>
<td></td>
<td>• Testimonials included</td>
</tr>
<tr>
<td>Provide opportunities to link new information with prior knowledge</td>
<td>• Relevant examples included</td>
</tr>
<tr>
<td></td>
<td>• Frequent responses required</td>
</tr>
<tr>
<td></td>
<td>• Invite learners to develop own catalogue of links</td>
</tr>
<tr>
<td></td>
<td>• Encourage annotation</td>
</tr>
<tr>
<td>Provide adults with individual responsibility for their learning</td>
<td>• Frequent entry and exit points possible</td>
</tr>
<tr>
<td></td>
<td>• Learner control of program options</td>
</tr>
</tbody>
</table>

Multiple Intelligences and e-Learning

<table>
<thead>
<tr>
<th>Intelligence</th>
<th>Matching Strategies and e-Texts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Linguistic</strong></td>
<td>• Text-based learning</td>
</tr>
<tr>
<td></td>
<td>• Case studies, personal accounts</td>
</tr>
<tr>
<td></td>
<td>• Computer mediated conferencing</td>
</tr>
<tr>
<td></td>
<td>• Working w/ electronic databases</td>
</tr>
<tr>
<td><strong>Logical-mathematical</strong></td>
<td>• Modeling problems</td>
</tr>
<tr>
<td></td>
<td>• Collaborative research such as Earthquake</td>
</tr>
<tr>
<td></td>
<td>• Puzzles and games</td>
</tr>
<tr>
<td></td>
<td>• Building systems</td>
</tr>
<tr>
<td><strong>Spatial</strong></td>
<td>• Microworlds</td>
</tr>
<tr>
<td></td>
<td>• Concept-mapping</td>
</tr>
<tr>
<td></td>
<td>• Flowcharting or modeling</td>
</tr>
<tr>
<td></td>
<td>• Image maps</td>
</tr>
<tr>
<td><strong>Musical</strong></td>
<td>• Recorded narratives</td>
</tr>
<tr>
<td></td>
<td>• Options for production of new learning</td>
</tr>
<tr>
<td></td>
<td>• Optional sound tracks, motion video</td>
</tr>
<tr>
<td></td>
<td>• Creating sound effects, sound tracks</td>
</tr>
<tr>
<td><strong>Bodily-kinesthetic</strong></td>
<td>• Manipulation of objects</td>
</tr>
<tr>
<td><strong>Interpersonal</strong></td>
<td>• Computer-mediated conferencing</td>
</tr>
<tr>
<td></td>
<td>• Collaborative workgroups</td>
</tr>
<tr>
<td></td>
<td>• Global research projects, keypals</td>
</tr>
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<td></td>
<td>• Forums and newsgroups</td>
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<tr>
<td><strong>Intrapersonal</strong></td>
<td>• Microworlds</td>
</tr>
<tr>
<td></td>
<td>• Simulations</td>
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<tr>
<td></td>
<td>• On-line surveys and questionnaires</td>
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<td>• Reflective activities, journaling</td>
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<td></td>
<td>• Role-playing, MOOs and MUDs</td>
</tr>
<tr>
<td><strong>Naturalistic</strong></td>
<td>• Computer-mediated conferencing</td>
</tr>
<tr>
<td></td>
<td>• Environmental simulations</td>
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</table>
## To Do List

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Date</th>
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<tbody>
<tr>
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USER-CENTERED DESIGN
(PART 2 — AGE, GENDER AND ACCESSIBILITY)

Concept Guide

Health and Perceptual Challenges

• After reading this chapter, do you have a new or different view of accessibility?

Access to Technology

• If you widen access to your content through e-Texts, will you exclude any populations of users?
Gender

• Do you believe that there are gender differences in learning?

• Are your e-Texts gender or culturally neutral?

Questions and Goals

Use this form to record your questions about user-centered design. As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals

1.

2.

3.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
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</tbody>
</table>

Key Terms

This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary common to accessibility and user-centered design.

☐ Universal design
Nielsen’s Accessibility Guidelines

Jakob Nielsen is world renowned for his research and writing about accessibility on the Web. These guidelines are adapted from his book Designing Web Usability (2000).

Perceptual and Motor Challenges (including those related to aging)

- e-Texts other than plain text or HTML are problematic
- The hearing impaired can be supported by use of captions and transcripts of audio
- Visually-impaired users are harder to support - provide a completely textual alternative that integrates the video and audio information
- Increase image size
- Use a slide-show presentation with simplified still images
- Design for your older self
- Get feedback on all graphic elements from a red-green colorblind user
- Use high contrast between foreground and background colors
- Avoid busy backgrounds
- Textual pages can be fed to a screen reader that will read the text out loud through a synthesizer
- Use HTML heading tags (H1, etc.) to facilitate scanning
- Use only relative font sizes so that users can enlarge the fonts
- Test pages at 10, 12, and 14 size fonts, then again with 18 and 24, to make sure that design still works
- Include transcripts for all spoken audio
All video should be subtitled
Do not design image maps that need extremely precise mouse positioning

Cognitive Challenges
- For the general public, aim for readability levels at grades 5-8
- Some users will not be able to visualize the structure of the site - a sitemap is useful.
- Use words with high information content as hypertext anchors
- Search engines should probably include a spell checker
- Give a list of possible correct spellings to click on if no match is found

International Users
Nielsen notes that in 1997, 80% of total web users were in Canada and the US. By 1999, the proportion had dropped to 55%.
- Don’t use icons of body parts
- Don’t use visual puns
- Don’t use sports metaphors
- For times, use 24 hour clock
- Specify AM/PM
- Specify time zone; add a geographical locations such as “that’s 10 am in New York”
- Spell out dates
- Watch punctuation, currency symbols or abbreviations, and measurement

Teaching for Diversity Checklist
The University of Western Australia’s student population is characterized by diversity with regard to, amongst other characteristics, gender, race, age, disability, sexual orientation, cultural background and socio-economic status.

Teaching which disregards diversity places students at a disadvantage by reducing their capacity to learn. An inclusive curriculum, which acknowledges, respects and responds appropriately to diversity can contribute to:
• Enhanced learning outcomes for a greater number of students
• Validation of student experiences and world views
• Development of international skills, cross-cultural perspectives, respect for different values and learning styles, and other skills useful in a diverse global environment
• Improvement of academic standards and the quality of university teaching
• Recruitment and retention of a greater number of students from diverse backgrounds

The following questions and suggestions aim to assist teaching staff to develop curricula appropriate to a diverse student population.

1. Curriculum Design
In designing the curriculum do you:

• Consider your students’ gender, cultural backgrounds, learning styles, health and disability status, English language proficiency, numeracy, values and experiences?
• Take account of students’ prior knowledge and learning?
• Seek participation in curriculum design from people with specialist expertise?
• Include opportunities for a positive engagement with other cultures, practices and life expectations?
• Include texts and readings, which reflect a diversity of perspectives?

2. Content
Does the course content:

• Acknowledge the diversity of knowledge and experience of your students?
• Use examples/case studies which are free of negative stereotypes or assumptions?
• Examine the implications of diversity as part of the theory or practice being studied?
• Encourage students to recognize and understand different ways of knowing?

3. Delivery
In your teaching do you:

• Provide students with a range of learning opportunities?
• Encourage students to know and listen to each other?
• Avoid using negative or potentially offensive stereotypes or assumptions?
• Actively encourage all students to take responsibility for learning?
• Encourage students to use their backgrounds as a learning tool?
• Make available teaching notes, overhead transparencies and recorded lectures?
• Speak in plain English, explain acronyms and avoid unnecessary colloquialisms?
• Actively discourage language or behaviour which is racist, sexist, and homophobic or which demeans people with disabilities?

4. Assessment
Is your student assessment:

• Transparent and able to provide students with timely and appropriate feedback?
• Supportive of students developing habits of routinely assessing their own work?
• Free of culturally or gender biased examples?
• Able to accurately assess intended learning outcomes?
• In plain English and free of unnecessary colloquialisms and acronyms?
• Flexible enough to assess the learning outcomes of students with disabilities?

Consideration of these questions will assist in the development of curricula that will improve learning outcomes for all students.
## Practice: Make This Site More Accessible

Examine your organization or institution’s official web site for cultural and technical accessibility. Suggest at least five ways that it can be made more accessible or inclusive.

<table>
<thead>
<tr>
<th>Accessibility Issues</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
<td></td>
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<td>5.</td>
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</tr>
</tbody>
</table>
**Writing for Multiple Intelligences**

**The Philosophy 101 Homepage**  
(http://www.arts.ualberta.ca/phil101/index.html)

How many intelligences does this site support? Check them off.

Think of a way to support at least two more intelligences.

<table>
<thead>
<tr>
<th>Intelligence</th>
<th>Evidence or suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linguistic</td>
<td></td>
</tr>
<tr>
<td>Logical-mathematical</td>
<td></td>
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<tr>
<td>Spatial</td>
<td></td>
</tr>
<tr>
<td>Musical</td>
<td></td>
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<tr>
<td>Bodily-kinesthetic</td>
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<tr>
<td>Interpersonal</td>
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<tr>
<td>Intrapersonal</td>
<td></td>
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<tr>
<td>Naturalistic</td>
<td></td>
</tr>
</tbody>
</table>
## To Do List

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Date</th>
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<tbody>
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</tbody>
</table>
SELECTING AND EVALUATING LEARNING OBJECTS

Concept Guide
Finding the Right Resource

- How do you or your colleagues typically find suitable online learning resources?

- How do you track and store these resources for future reference?

- How do you share information about good online learning resources with others? How do you find out about good resources?

Use

- How can online learning resources be used to enhance your teaching?

- How do you use online learning resources to enhance student learning?
• How do you use online learning resources to enhance or fast track the course development process?

Evaluation
• What criteria do you use to determine the value of online learning resources?

• How do you communicate your ideas about online learning resources to others?

Questions and Goals
Use this form to record your questions about the trends and challenges in e-Learning facing you and your learning organization.

As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals

1.

2.

3.

<table>
<thead>
<tr>
<th>Questions</th>
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</table>
Key Terms
This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary common to learning objects.

- Learning object
- Repository
- Metadata
- Usability
- Re-purpose
- Standards
- Modular course design
- Free-standing
- Applets
- Electronic documents
- Peer review
- Granularity
- Search engine
- Streaming
- Monolith

Evaluating Learning Objects
Longmire (2000) stresses that learning objects should be adaptable to maximize their use and lists the following attributes:

- Modular
- Free-standing
- Adjustable to fit a variety of learning situations
- Non-sequential with no references to prior or future instruction
- Confined to a single learning objective
- Adaptable to a broad cross-section of users
- Not tied to formatting so that it can be re-purposed to various learning situations
Reusability & Re-purposability
To what extent can the learning object be used in a variety of levels, disciplines or courses?

Granularity
Does the size of the learning object allow for use in a variety of learning contexts?

Instructional or Learning Value
To what extent does the learning object meet the needs and values of instructors or students?

Meta-data Value
Does the meta-data allow for easy retrieval from one or more repositories? Does the meta-data described allow for retrieval on the basis of a variety of content?

Flexibility
To what extent can the learning object be modified to accommodate different learning styles or prior learning levels?

Philosophy
To what extent does the learning object fit with the philosophical context of the learning environment, instructors and students?

General Agreement of Developers
To what extent is there agreement on the instructional soundness, sequencing and size of the learning object?

Merlot’s Peer Review Guidelines
The following is based on Merlot’s guidelines for peer review of learning objects and covers the areas identified by Merlot committees as crucial to learning object evaluation:
Content Quality

• How accurate is the content?
• How significant is the content to the discipline?
• How thorough is the treatment of the content?
• Is the content part of core curriculum in the discipline area?
• To what extent is the content difficult to teach or learn?
• Is the content a prerequisite for advanced material?

Instructional Potential

• How appropriate is the resource for my students given their age, background knowledge and other personal characteristics?
• Does the resource stimulate
  o Understanding of concepts, rules or principles
  o Skill development of procedures
  o Critical thinking
  o Attitudinal development
• Is the resource written clearly and logically for learners?
• Is the resource appealing to use?
• To what extent does the resource promote active learning and student engagement with the content?

Usability

(Ease of use for both instructor and student based on first-try access)

• Does the resource work on different platforms and browsers?
• Will students have to download necessary plug-ins? Is a link readily available to do this?
• Is the resource easy to navigate and easy to use for first-time users?
• Is the resource visually appealing and easy to read?
• Is the resource accessible to persons with disabilities?
Evaluation Rubric for Blue Web’n

Format
- User Friendly
  Clear scope, easy to understand and use, includes appropriate, clearly labeled links
- Aesthetically Courteous
  Graphics are quickly downloaded and relevant, text is easy to read. Background is subdued and coordinates with text colors and graphics. Someone using a 640 X 480 monitor doesn’t have to scroll to the right.
- Aesthetically Appealing
  Attractive and creative use of graphics and colors

Content
- Credible
  Information is accurate, complete, and maintained
- Useful
  Content is meaningful, difficult to convey, and/or quintessential
- Rich
  Information is rich and likely to be revisited
- Interdisciplinary
  Integrates several content areas or disciplines

Learning Process
- Higher-order Thinking
  Challenges learners to think, reflect, discuss, hypothesize, compare, classify, etc.
- Engaging
  Process engages the learner
- Multiple Intelligences or Talents
  Effectively integrates at least three intelligences or talents (language, math, intrapersonal, interpersonal, spatial, musical, physical, natural)
Standards Checklist

Technology
- Can the learning object be used on both Macs and PCs?
- Does the learning operate equally effectively in both Netscape and Internet Explorer?
- Is the learning object easily accessible with standard computer software without the user having to spend time or money to upgrade?
- Is the meta-data used to describe the object one that allows for retrieval based on a variety of criteria?
- Is the object easily retrievable?
- Does the object operate in a variety of tools such as course or learning management systems?

Instructional
- Does the learning object function in a way that allows for use in different courses or as a freestanding unit?
- Have terms been standardized and is language consistent to allow for modularization in different learning environments?
- Have proper methods of Web design been used to ensure an accessible and comprehensive presentation?
- Does the learning object avoid referring to previous content such as chapters, courses or objectives?
- Have technical terms been presented in easily read formats through the use of tables or bullets or through supplied definitions or glossaries?

Social
- Has the learning object been designed for a broad audience of users that would typically view this type of content?
- Does the learning object avoid use of regional, cultural or organizational terms?
- Has the learning object been designed to be inclusive for a variety of users?
- Does the learning object avoid elements that contribute to gender, racial or other biases?
- Has the resource been designed to ensure accessibility by people with disabilities?

### To Do List

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<th>What</th>
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</table>
Concept Guide

Developing Effective e-Texts

• What does the term “effective” mean in your context? Write a statement on which you could base an evaluation.

Thinking About the Reader

• Describe your own experience of reading on the Web. What problems do you encounter?

• What design techniques have made online reading easier for you?

Thinking About Roles

• What are the characteristics of the e-Reader?
• What are the obligations of the e-Writer?

Thinking About the Content
• Will adapting your content to a hypertext environment affect its meaning or impact?

• Which, of all the techniques for enhancing readability, interests you the most? Is most relevant for your content?

Thinking About the Environment
• How will you design your e-Learning environment to reflect and support your discipline?

Questions and Goals
Use this form to record your questions about message design.

As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals
1.

2.

3.
Key Terms

This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary used to describe message design guidelines for Web content.

- Message design
- Re-purposing
- Hypertext
- e-Text
- Scannability
- Readability
- Hypertext
- Animation
<table>
<thead>
<tr>
<th>Some Functions</th>
<th>A Book</th>
<th>The Internet</th>
<th>Television</th>
</tr>
</thead>
</table>
| Selecting the contents    | • Table of Contents  
                          • Index                              | • Menu  
                          • Navigation bar                     | • TV Guide  
                          • Special channel                     |
| Deciding on the reading sequence | • Pages are numbered sequentially  
                            • Page numbers relate to Table of Contents | • Are there main topics in a hierarchy?  
                            • By linking to topics of interest, sometimes contained within the text | • Controlled |
| Understanding concept relationships |                                |                                           |                                         |
| Using page layout conventions to guide reading | • Top to bottom             | • Navigation at top or bottom of page |                                         |
| Applying metacognitive skills | • Making notes in margins  
                        • Highlighting passages |                                           |                                         |
| Marking your place        |                                     |                                           | • Controlled                           |
| Evaluating progress       |                                     |                                           | • Use of commercials                   |
### The Reading Experience (continued)

<table>
<thead>
<tr>
<th>Pacing the process</th>
<th>Some Functions</th>
<th>Television</th>
<th>The Internet</th>
<th>A Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to work</td>
<td>Using tools</td>
<td>Keyboard</td>
<td>Internet connection</td>
<td>Compact size</td>
</tr>
<tr>
<td>Reading speed known</td>
<td></td>
<td>Mouse pad</td>
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<td></td>
<td></td>
<td>Drilling down</td>
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<td>Pop-ups</td>
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<td>Hyperlinks</td>
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<td>Commercials</td>
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<td>Length of program</td>
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<td>Audio and video required</td>
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<td>Internet format</td>
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<td>Other?</td>
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<td>Other?</td>
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</tbody>
</table>
Susan B. Anthony, a powerful speaker and writer, campaigned for temperance and abolition as well as women’s rights. Like many suffragettes, she saw parallels between the lack of rights and opportunities for women and the bondage of slavery. When the Fourteenth Amendment to the Constitution granted the vote to black males, Anthony fought unsuccessfully to have women included. In this speech from 1859, Miss Anthony urged her audience to “make the slave’s case our own.” She further entreated, “Let us feel that it is ourselves and our kith and our kin who are despoiled of our inalienable right to life, liberty, and the pursuit of happiness, that it is our own backs that are bared to the slave-driver’s lash... that it is our own children, that are ruthlessly torn from our yearning mother hearts.”

A Worked Example…

1. Think of one parallel now. Is there a similar parallel anywhere in the world, currently?

When the Fourteenth Amendment to the Constitution granted the vote to black males, Anthony fought unsuccessfully to have women included. In this speech from 1859, Miss Anthony urged her audience to “make the slave’s case our own.”

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2. Read the Fourteenth Amendment. How might it have been amended to include women?

3. Why were women not included at this time?

4. In our time, what sociopolitical context influenced the Equal Rights Amendment?

She further entreated, “Let us feel that it is ourselves and our kith and our kin who are despoiled of our inalienable right to life, liberty, and the pursuit of happiness, that it is our own backs that are bared to the slave-driver’s lash... that it is our own children, that are ruthlessly torn from our yearning mother hearts.”

5. What did Anthony mean by these words?

Return to the three questions at the beginning of this module. Each question forms a topic on the class discussion board. You have one week to formulate and post an evidence-based comment to each question.

**Checklist: Using Hypertexts**

Use hypertexts to provide:

- [ ] Documentation
  - [ ] By general or specialized references by topic
- [ ] Short, self-contained topics
- [ ] Background information
- [ ] Extended or supplementary information
- [ ] Multimedia (e-Texts)
- [ ] Three-dimensionality
- [ ] Multimodality
- [ ] Online communications
- [ ] Multiple paths to a topic
- [ ] Active links to alternative information sources
<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Use for…</th>
<th>Your Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperlink</td>
<td>Takes the reader to a different location in the site, or to another site. Can also take the reader to an image, a tool, a conference, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot Spot</td>
<td>A clickable spot in a picture or text. Indicated when the cursor changes shape when passed over an image. Images or text may have many hidden hot spots.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drill down</td>
<td>Clicking on a hot spot allows you to “peel back” a layer in an image that has many underlying layers. Online art galleries often use this feature.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pop-up</td>
<td>A small window of text, a menu, an image, etc., that is superimposed over top of a hot spot or link. The reader may have to manually close the window to return to the underlying text.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll-over</td>
<td>When the mouse is moved over the screen, various hot spots are revealed, containing additional information. Clues are color changes, font changes, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Icon</td>
<td>A visual representation of an idea or an action; a metaphor. Icons are effective only when their meaning is recognized instantly by the reader.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drag and drop</td>
<td>An interactive function. Usually, an object must be physically moved to a “target” on the screen before an action takes place. For example, a puzzle might be constructed by dragging and dropping the pieces into the right locations.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Language of Interactivity (continued)

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Use for…</th>
<th>Your Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point and click</td>
<td>Placing your cursor on a hot spot may reveal a roll-over. Sometimes you must point to a spot or link and then depress the mouse button. Taking this action often leads to more extended information or choices.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bullet</td>
<td>A symbol (like an arrow, a check mark, a star) used in a criteria list. Can appear as a pop-up window: the reader selects an item. Contain fields, buttons, and often layers. Word-processing programs contain many dialogue boxes.</td>
<td>A visual object that indicates a choice or an action for the reader. There are many different kinds of buttons. Buttons may contain descriptive text.</td>
<td></td>
</tr>
<tr>
<td>Dialogue box</td>
<td>A visual object that indicates a choice or an action for the reader. There are many different kinds of buttons. Buttons may contain descriptive text.</td>
<td>Menus show a hierarchy of choices to make. Usually, selecting one item on the menu opens up new choices or new locations.</td>
<td></td>
</tr>
<tr>
<td>Button</td>
<td>Menus may also cascade from the right or the left of the screen.</td>
<td>The menu will stay stable if the mouse button is depressed. In other words, the reader must hold the menu open.</td>
<td></td>
</tr>
<tr>
<td>Menu</td>
<td>Menus found at the top of the screen. Very common in productivity tools.</td>
<td>Menus found at the top of the screen. Very common in productivity tools.</td>
<td></td>
</tr>
<tr>
<td>Pull down</td>
<td>Menus may also cascade from the right or the left of the screen.</td>
<td>The menu will stay stable if the mouse button is depressed. In other words, the reader must hold the menu open.</td>
<td></td>
</tr>
<tr>
<td>Drop down</td>
<td>Equivalente to page turning. A scroll bar is a column on one side of the screen in which a small button resides. Dragging the button up or down takes the reader to different parts of the page.</td>
<td>Equivalente to page turning. A scroll bar is a column on one side of the screen in which a small button resides. Dragging the button up or down takes the reader to different parts of the page.</td>
<td></td>
</tr>
</tbody>
</table>

Scroll bar
<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Use for…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keying In</td>
<td>The reader uses the keyboard to provide information, often in a dialogue box.</td>
<td>Often an icon, or visual representation, of an idea. Must intuitively carry the meaning for the text it has replaced.</td>
</tr>
<tr>
<td>Metaphor</td>
<td>A type of menu where hot spots are hidden under related images. The reader navigates by point-and-click or roll-over functions.</td>
<td>The reader navigates by point-and-click or roll-over functions.</td>
</tr>
<tr>
<td>Image Map</td>
<td>A type of menu where hot spots are hidden under related images. The reader navigates by point-and-click or roll-over functions.</td>
<td>A type of menu where hot spots are hidden under related images. The reader navigates by point-and-click or roll-over functions.</td>
</tr>
<tr>
<td>Sidebar</td>
<td>Contains additional information or links that extend the text. Is usually placed to the right of the text.</td>
<td>Usually an application that must be downloaded or added to the reader’s machine to allow him/her to play video, read Javascript, etc.</td>
</tr>
</tbody>
</table>
Adult Learners and Hypermedia Environments

Multimodal Learning

Over the past decade, learning technologies have evolved from environments in which highly structured information is presented electronically, to environments where the learner is supported in meaning-making or in constructing knowledge. This shift in control from the computer to learner is evident in multimedia and, in particular, hypermedia environments, where the onus is on the learner to make decisions about optimal learning paths and semantic linking.

David Jonassen (1990, 1994, 1996), Roger Schank (1993), and Brent Wilson (1999) are three of many learning theorists who believe that learners should be “doing something, not just watching something” and that if this occurs, “multimedia offers serious improvements to instruction through computers.” (Yaverbaum, 1997, p. 141). Both multimedia and hypermedia environments have the ability to support and/or create active learning environments, affording the learner opportunities to engage with and think about the information (Hill, 1998). In the best of these contexts, learners must develop their own learning strategies, which is a cognitive process that encourages deep learning. If this process involves the social negotiation inherent in collaborative decision-making with others, knowledge construction is much enriched. Thus, the learning environment is much enhanced through the dynamic, interactive, and visual capabilities of multimedia learning. (Crosby & Stelovsky, 1995).

Ewing, Dowling, and Coutts (1998) have identified several features of the World Wide Web (Web) as an information source. In brief, information is semantically structured by creators of Web sites who embed links to other information according to their own individual or personal preferences and perceptions. These embedded links are dynamic, evolving almost daily, and are extended by the site users who follow the links through multiple stages and branches. In this process, the user is making his/her own semantic links or building a personal pathway structured by the way that the information is connected or the meaning that he/she brings to the relationships. The amount of information and the rate at which it is expanding is unknown and unknowable.

Although hypermedia environments have great potential to foster the critical thinking required to actively structure them for learning, they have to date resembled early CD-ROMs, that is, they are mostly linear text (Child, 1998). Ewing, Dowling, and Coutts (1998) speculate that the potential richness of hypermedia has not been realized because traditional perspectives on structuring learning tasks do not correspond easily to these environments. Planning for computer-based learning has been based on identifiable outcomes, with structured objectives on which activities are based and assessed. Teachers may have trouble re-conceptualizing their roles as instructional planners, just as learners may be confused about how to proceed with a structured task in the context of unstructured environments (Ewing, Dowling, & Coutts, 1998). Carver, Lehrer, Connell, and Erickson (1992, in Child, 1998) suggested that the lack of effective implementation of multimedia environments is rare because both teachers and students...
The Learning Benefits of Hypermedia Environments

The instructional paradigm is shifting from a teaching environment to a learning environment, with a focus on “practice-centered learning.” This orientation aligns with adult learning theory (andragogy), in which the notion of self-directed learning is fundamental to the design of learning contexts. Hypermedia environments support self-directed, life-long learning if structured to stimulate and motivate learners to be able to independently locate the resources necessary to continue learning (Diaz, 1998).

Technologies that facilitate self-directed, practice-centered learning and meet the andragogical challenge include hypermedia, real-time chats, threaded discussion, and tools such as VRML, Shockwave, and Java applets that make the Web interactive while delivering rich content. These technologies have been related to both learning and cost effectiveness, as they tend to influence the ways in which a learner represents and processes information (Kozma, 1991) as an active strategy in which he/she is required to structure the learning process as a co-designer of his/her own experience. Diverse learning and cognitive styles are supported through multiple presentations of information, improving retention and performance, and increasing motivation to learn (Crosby & Stelovsky, 1995; Daugherty & Funke, 1998; Oz & White, 1993; Yaverbaum et al., 1997).

Criticizing conventional educational environments that help to shape ‘compliant thinking.’ Hill (1998) describes learners who lack the “orientation, mental models, and strategies (or capabilities for creating them) for open-ended learning environments, where divergent thinking, multiple perspectives, and independent learning are critical” (p. 79).

Learning is now deemed heavily influenced by social interactions and environmental factors such as culture, technology, and instructional practices. As educators and researchers increasingly accept the views of Vygotsky, (1978) and Bruner (1986) that interaction is the origin of all mental activity and growth, student learning is increasingly analyzed in a social context. From this perspective, meaning is seen as a negotiation and knowledge building process within a learning community (Bonk & Reynolds, 1998). These communities, characterized by their open-ended nature, are exemplified by the Web, which shows significant promise by its very structure, or lack of it, and in its support of communication tools that enable dialogue across and among diverse communities of knowers.

The social environment results in learning gains and increased creativity of outcomes that develops from collaborating and working in groups (Nelson & South, 1999). Internet-based communication tools such as e-mail, Internet-relay chat (IRC), threaded
discussion forums, and synchronous conferencing enable dialogue that can help
students think critically and make better decisions. Using computers as collaborative
tools can be seen as a type of social constructivism whereby knowledge is generated and
problem-solving skills are scaffolded through group activity (Clements & Natasis,
1992). In these groups, students frequently reach a state of conflict that must be
reconciled in the form of a solution. The solution represents a “qualitatively different
third perspective (combining) two opposing ideas into a coherent, higher-level idea”
(p 243). Cooperative learning and cooperative problem-solving groups enhance
opportunities for generative learning, generating a wider diversity of ideas, more
reflective thinking, and increased creative responses (CTGV, 1990, 1992; Oliver, Omari,

Open-ended, hypermedia, collaborative environments are more engaging, can support
diverse interests and cognitive styles, support independent and self-directed learning,
increase retention and performance, and enhance critical-thinking and problem-solving
skills by exposing learners to multiple perspectives. However, unless designed carefully
these environments can be problematic and counter-productive for adult learners. Many
of these problems stem from the very elements that make hypermedia environments so
unique and effective: open-endedness, self-directed learning strategies; learner con-

Design Challenges for Adult Learners

An early supporter of hypermedia texts, Jonassen (1988, 1990) accentuated the
structural differences of a hypertext-based organization of knowledge over the linear
representation found in textbooks. According to him at that time, because hypertext
is a node-link system based upon semantic structures, it should map fairly directly the
structure of knowledge it is presenting (Tergan, 1997). However, Jonassen acknowl-
edged that it is not merely the structure of the information that is important, it is the
“active and constructive processing of the learner to meet the cognitive requirements
of the anticipated task which are relevant for effective processing of hypertext” (Tergan,
1997, p. 260). He subsequently described the greatest problem related to hypertext-
based learning as “how learners will integrate the information they acquire in the
hypertext into their own knowledge structures... Learners must synthesize new
knowledge structures for all the information contained in the hypertext...” (Jonassen,
1996, p. 190)

Similarly, Myers (1993, in Oliver, 1999) found that students needed a semester or even
a school year to learn how to process hypermedia deeply. Simply embedding strategies
in the system did not cue higher-order thinking unless the teacher similarly cued the
students. Most learners cannot cope adequately with such complex systems and keep
on studying texts in a fashion that is quite similar to linear text processing, following
frames of information as presented in computer-based tutorials. A major result of this
and related studies is that learning outcomes are ultimately determined by the quality
of learners’ goal-oriented activity, although learners who are more field-independent
or who are domain experts, may perform better in unstructured environments (Tergan, 1997; Wenger & Payne, 1996).

Research shows that users are often unable to explore hypertext without experiencing navigational problems at some point. McDonald and Stevenson (1996), describe the keyhole problem, in which learners don’t understand the position of hypertext nodes in relation to the rest of the document, since it may be hidden. Detriments, other than the lack of adequate overview of the scope of resources, include cognitive overload, inefficiency because more time is spent learning how to navigate rather than processing information, and interference with the critical and creative comprehension necessary to solve open-ended problems (Oliver, 1999).

Interestingly, however, Mayes, Kibby, and Anderson (1990), in McDonald and Stevenson (1996), suggest that in certain circumstances, disorientation may be a necessary precondition for conceptual understanding. For example, in discovery learning the whole point is that learners should engage in a continual process of restructuring their knowledge by integrating the new information encountered into existing knowledge structures.

There is evidence that hypertext-based learning may be enhanced when it is integrated into a broader educational context. According to Cunningham, Duffy and Knuth (1993) the successful use of a hypertext system in university classes is mainly due to the instructional supports offered (i.e. explicit modeling and scaffolding and the system’s embeddedness in a social context.)

**Designs for Effective Hypermedia Environments**

Is there an appropriate theory of learning for hypermedia environments? Many theorists believe that Piaget’s theory of accommodation provides an epistemological basis for planning for experiences in which thinking and learning involves making links through new knowledge and past knowledge by organizing, ordering, classifying, identifying relations, transforming, and explaining.

Similarly, Nunes and Fowell (1996) and Ryser, Beeler and McKenzie (1995) suggest that hypermedia most effectively supports tasks requiring the acquisition of high-level skills of problem-solving and critical thinking. Learners actively increase their knowledge and understanding by working in collaborative learning environments that encourage them to adjust their views of the world. In this view, learning is likely to be the result of active involvement in internal mental processes (thinking) while interacting with others.

Interaction, especially in cooperation learning activities, appears to be a key factor for success in many hypertext-based learning tasks. Equally important, however, is the intellectual and technical support provided as adults learn to navigate these environments and structure their own learning in ways appropriate to the learning tasks and outcomes. The essential components of an effective hypermedia environment then, are: well-defined goals and explicit scaffolding support (Guzdial & Kehoe, 1998; Tergan,
Numerous models of learning have been examined for those best supported by hypertext frameworks. Learning is suggested to be most effective if it is embedded in social experience and if it is situated in authentic problem-solving contexts that entail cognitive demands relevant for coping with real life situations. In this notion, learning is characterized by the cognitive ability to effectively criss-cross landscapes of information (Spiro, Feltovich, Jacobson, & Coulson, 1988, 1991) represented by the semantic units in hyperdocuments and the development of cognitive flexibility. Opportunities to critically reflect on new learning are maximized by social activity and the expectation that new conceptions will be shared and negotiated in dialogue with others (Fosnot, 1998; van Dusen & Worthen, 1993).

Embedding opportunities for reflection and summarization in social conversation helps solidify student learning and restructure student knowledge (Bonk & Reynolds, 1997). Naturally, how all participants share representations is a key issue in the design of these learning environments. Zhao (1998) suggests that the critical feedback of peers is required for learners to reshape their ideas and learn new information that they might not discover on their own. Another closely related factor is conceptual conflict resolution. According to Harasim (1990), group controversy may lead members to question their own concepts and seek new information and perspectives.

Apprenticeship learning and goal-based scenarios (GBS) are two learning designs that show promise for critically reflective, socially-based, authentic learning. Both are based on the idea that the learner acts as his/her own agent in determining learning progress and taking more executive control as he/she negotiates navigates a learning task.

Apprenticeship learning is when students learn through active participation in a task. At first it may be limited as students gain an understanding through observation and making small contributions, but the involvement develops into full participation and eventually task ownership (Guzdial & Kehoe, p 290, 1998).

Goal-based scenarios are where students are provided with an interesting situation in which they have goals to achieve. Students have the resources and tools with which to achieve goals. Progress is compared against a model of a successful process. When students fail they are provided with conceptual and process information in the form of a story of practice to allow them to understand and correct their faults. Often there is no single correct process and as learners articulate their learning in conversation with peers and coaches, they begin to move toward a personal conception of domain expertise. Browsing is not an effective instructional strategy in either of these environments, as it supports incidental rather than intentional learning (Tergan, 1997). Rather, cognitive strategies such as the creation of a conceptual map require the learner to trace and elaborate his/her learning progress.
How can we design a virtual community that supports learning? Schrage (1991) offers a model that highlights the importance of collaboration. According to Schrage, the goal is to create a shared experience rather than an experience that is shared. An experience that is shared is passive. A shared experience is one that is participatory and can be understood by comparing a conversation or a discussion (negotiated discourse) to a lecture or a television broadcast (didactic instruction).

McLellan (1997) outlines 13 design themes in Schrage’s model of virtual community: competence, a shared, understood goal; mutual respect, tolerance, and trust; creation and manipulation of shared spaces; multiple forms of representation; playing with representations; continuous but not continual communication; formal and informal environments; clear lines of responsibility but no restrictive boundaries; decisions that do not have to be made by consensus; virtual presence; selective use of outsiders for complementary insights and information; and collaboration (p. 186). Hypermedia environments that support communications tools and that are structured by a problem-solving model are able to support the self-directed and collaborative learning in which adult learners are successful.

**Checklist: Goal-driven Information Design**

If you want e-Readers to:

**Learn and Retain**

- Clarify
- Simplify
- Be direct
- Provide repetition and reinforcement
- Provide authentic examples and practice
- Modularize
- Include assessment and remediation
- Present information in a variety of modalities

**Have Fun, Include**

- Variety and surprises
- Randomness and wit
- Unpredictable events that change each time the ‘product’ is used
Ways to interact

Media

Understand, Use

- Conceptual explanations
- “How it works” illustrations and videos
- Graphs and charts
- Simulations
- Practice with feedback

Experience, Design For

- A high level of interactivity
- Learner control
- Realistic sights and sounds
- Authentic experiences (e.g. role play)

Join, Include

- Well-defined features
- Clear explanations
- Current events and archives
- Toll-free numbers
- Interactive order forms

Get Answers, Design A

- Reference-style organization
- Fast access
- Searchable index of contents
- Site map
- FAQs
- Live response to queries (e.g. Ask Jeeves)
# Guidelines for Enhancing Readability

<table>
<thead>
<tr>
<th>Guideline Number</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enhance scanning by providing clear links, headings, short phrases and sentences, and short paragraphs.</td>
</tr>
<tr>
<td>2</td>
<td>Use many carefully selected headings, with names that conceptually relate to the information or functions they describe.</td>
</tr>
<tr>
<td>3</td>
<td>Increase the number of headings.</td>
</tr>
<tr>
<td>4</td>
<td>Use a variety of forms and levels of headings (style, font size, etc.) to convey information hierarchies.</td>
</tr>
<tr>
<td>5</td>
<td>Write simple, straightforward headings that contain information about the content.</td>
</tr>
<tr>
<td>6</td>
<td>When appropriate, increase the font size.</td>
</tr>
<tr>
<td>7</td>
<td>Use familiar fonts, sans serif if possible.</td>
</tr>
<tr>
<td>8</td>
<td>Use fonts consistently.</td>
</tr>
<tr>
<td>9</td>
<td>Use style elements carefully and only to carry meaning (clues to the nature of the content). Don’t ever use underlining for emphasis.</td>
</tr>
<tr>
<td>10</td>
<td>Use bright color to attract the eye.</td>
</tr>
<tr>
<td>11</td>
<td>Use vertical and horizontal whitespace to enhance readability.</td>
</tr>
<tr>
<td>12</td>
<td>Use about the half the screen width for the text area.</td>
</tr>
<tr>
<td>13</td>
<td>One chunk answers one question about one subject for one purpose.</td>
</tr>
<tr>
<td>14</td>
<td>Each topic contains only one-third to one-fifth of a paper page.</td>
</tr>
<tr>
<td>15</td>
<td>Separate chunks by a double-space.</td>
</tr>
<tr>
<td>16</td>
<td>Use sideheads, sidebars, and key words in the margin to enhance learner control and to provide additional context.</td>
</tr>
<tr>
<td>17</td>
<td>Reduce text to a maximum of 50% of the word count of the printed version.</td>
</tr>
<tr>
<td>18</td>
<td>To counter the loss of context, repeat contextual information each place it is needed and provide links to related information.</td>
</tr>
<tr>
<td>19</td>
<td>Aim for a readability level no higher than Grade 10 for post-secondary audiences; Grade 8 for general audiences.</td>
</tr>
<tr>
<td>20</td>
<td>Archive long, complex academic or technical papers.</td>
</tr>
<tr>
<td>21</td>
<td>Replace complex sentences with shorter, simple sentence structures.</td>
</tr>
<tr>
<td>22</td>
<td>Sentences should be no longer than 20 words; paragraphs no longer than five sentences.</td>
</tr>
<tr>
<td>23</td>
<td>Use the active voice wherever possible.</td>
</tr>
<tr>
<td>24</td>
<td>Change from the third person to the first person where appropriate.</td>
</tr>
<tr>
<td>25</td>
<td>Convert serialized lists to bulleted lists.</td>
</tr>
<tr>
<td>26</td>
<td>Place important information at the top of the page, or &quot;above the fold&quot; (in the first screenful of information), to ease scanning.</td>
</tr>
<tr>
<td>27</td>
<td>Most navigation pages should not scroll.</td>
</tr>
<tr>
<td>28</td>
<td>If reading speed is important and response time is reasonably fast, use links, or paging, rather than scrolling.</td>
</tr>
<tr>
<td>29</td>
<td>Provide balance for visual and verbal elements so that they are equally distributed vertically and horizontally.</td>
</tr>
<tr>
<td>30</td>
<td>Break complex visuals into smaller, simpler visuals (chunking).</td>
</tr>
<tr>
<td>31</td>
<td>Avoid excessive detail.</td>
</tr>
</tbody>
</table>
### Guidelines for Enhancing Readability (continued)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>Present an image in close proximity to related text.</td>
</tr>
<tr>
<td>33</td>
<td>Redundancy is essential. The visual should not present a different concept from the text.</td>
</tr>
<tr>
<td>34</td>
<td>Audio should support other texts.</td>
</tr>
<tr>
<td>35</td>
<td>Always design animation for user control.</td>
</tr>
</tbody>
</table>
| 36 | The interface exists to enable user interaction.  
- Identify users’ goals and design interfaces to provide the means to achieve them  
- Images, audio, animation and video all come with significant overhead for the user e.g., downloading files, installing plug-ins, enduring delays, etc. |
| 37 | Make sure the media on your web site is relevant.  
- Moving images may detract attention from main content  
- Use e-texts only if they help communicate a message (or improve access) |
| 38 | Send media to the user only in response to an explicit request.  
- You don’t always know ‘what you’re getting into’ when you load a site  
- You have a bit more leeway if you are designing for students in a course because they must wait for media to excel in course (as long as it is relevant)  
- Include high-bandwidth pages on a secondary page that users can access when and if needed |
| 39 | Provide information about your media so users can make informed decisions.  
- Provide previews and descriptions, summaries, thumbnails |
| 40 | Provide different views for different types of users. |
| 41 | Leave control in the hands of the user.  
- Interaction with media should always be user-driven  
- Don’t include prescribed playback |
| 42 | Design the interface to be transparent. |
| 43 | Metaphors should make intuitive sense to the user. |
Sample Storyboard

Tips for Chunking Text

- Split your online document into multiple, hyperlinked pages of topics.
- Break up your text into short, self-contained topics.
- Label chunks to clearly identify their content.
- Recognize that chunking requires compromise and judgment.
- For William Horton (1994), “Dividing a subject into discrete topics is as much art as science and requires compromise and judgment” (p. 109).
- Use a storyboard to represent a single screen.
- Write, edit, and review topics in random order.
- Use links to elaborate on topics, define key words, explain acronyms, etc.
- Use either a fixed or variable size strategy (Horton, 1994)
  - With the fixed size strategy, all topics are the same length, usually the size of a paper page or a computer screen or window.
  - With the variable size strategy, the size of the topic varies to fit the content.
Making Sense of Learning Specifications & Standards: A Decision Maker’s Guide to their Adoption (Original Version)

A simple working definition of the term e-Learning is “learning or training that is prepared, delivered, or managed using a variety of learning technologies and that can be deployed either locally or globally.” The promise of e-Learning is that it provides leadership with powerful new tools for improving capability development, speed, and performance whether their organization operates in one geography or many. Just as the rise of information technologies fundamentally changed the nature of how work gets done in organizations, the emergence of learning technologies is fundamentally changing the nature of how people learn to do that work.

The fundamental learning model hasn’t changed: Learning professionals still help others learn how to do things they couldn’t do before. In non-academic settings, this means they remain focused on providing leadership with the ability to build organizational capacity and improve performance. Learning technologies are simply a sophisticated new tool that enables each learning professional to be more productive at helping others learn.

Understanding the Standards Concept

As we have seen historically with battles over such things as railway track gauge, telephone dial tones, videotape formats, e-mail protocols, and the platform battles between Microsoft, Apple, Sun, HP, and others, companies often start out with proprietary technology that will not work well with others. However, these technologies often do not meet the needs of end-users, and thus, the market typically drives the various leaders from business, academia, and government to work together to develop common “standards.” This allows a variety of products to co-exist. This convergence of technologies is very important for the consumers of these technologies because products that adhere to standards will provide consumers with wider product choices and a better chance that the products in which they invest will avoid quick obsolescence. Likewise, common standards for things such as content meta-data, content packaging, content sequencing, question and test interoperability, learner profiles, run-time interaction, etc., are requisite for the success of the knowledge economy and for the future of learning. Fortunately, the first versions of these standards and specifications are now arriving. The question is this: How are we to integrate these standards into our plans for the future as well as into our current projects? Why should an organization care about the emergence and convergence of learning standards? The answer boils down to the organization protecting and increasing the return on its investment in the learning technologies it purchases and in the learning content and services it develops. Thousands, if not millions, of dollars will be spent on these technologies, content, and services to improve knowledge and skills. If the systems cannot grow, be sustained, maintained, and delivered to the learners, the investment will be wasted or seriously less effective in achieving results.
Chunked Version

Millions of dollars will be spent on learning technologies, content, and services to improve knowledge and skills. The investment will be wasted if the systems cannot grow, be sustained, maintained, and delivered to learners.

1. Why should an organization care about the emergence and convergence of learning standards?
2. How are we to integrate these standards into our plans for the future as well as into our current projects?

e-Learning is “learning or training that is prepared, delivered, or managed using a variety of learning technologies that can be deployed either locally or globally.”

The Promise of e-Learning

Whether your organization operates in locally or internationally e-Learning, it:

• Provides leadership
• Uses new tools to improve:
  o Capability development
  o Speed
  o Performance
• Is fundamentally changing the nature of how people learn to do work

The fundamental learning model in organizations:

• Building organizational capacity
• Improving performance
• Professionals helping others learn

Understanding the Standards Concept

Companies often start with proprietary technologies that do not work well with others. End-users encourage the industry to develop common standards. Benefits include wider choice and improved lifespan of products.

In the e-Learning industry, standards are being developed for:

• Content meta-data
• Content packaging
• Content sequencing
• Question and test interoperability
• Learner profiles
• Run-time interaction
• And others

Writing for Clarity
Active Voice

1. The redesign of PSYCE 104 for Web-supported, distance delivery was intended by the instructor to provide a guided learning experience in which students were encouraged by their coaches to plan and evaluate their own learning.

   The instructors redesigned PSYCE 104 for Web-supported, distance delivery that provided a guided learning experience. The coaches encouraged students to plan and evaluate their own learning.

2. Millions of dollars were lost after the decision made by the major shareholders.

   The major shareholders made a decision that lost millions of dollars.

Bullets

The instructor for RELIG 101 in the Fall of 1997, Dr. Ehud Ben-Zvi, was unhappy with the typical course structure, which saw a change of instructors for the winter term. Among his concerns were the class size (74 students), difficulty in providing access to source materials, amount of content to cover by didactic means, lack of authentic context in which to learn, diminished classroom interaction, and lack of personal contact with students.

In fall 1997, Dr. Ehud Ben-Zvi re-designed RELIG 101 because he was concerned about:

• The change of instructors after the first term
• Class size (74 students)
• Providing access to source materials
• Amount of content to cover by didactic means
• Lack of authentic context in which to learn
• Diminished classroom interaction
• Lack of personal contact with students
The Inverted Pyramid

(Original Version)

It is a well-known proposition in public finance theory that an income tax system cannot meet all of the following three criteria: 1) equal treatment of all families with the same total household income (i.e. horizontal equity), 2) progressive taxation so that taxpayers with higher incomes pay a higher percent of income in taxes (i.e. vertical equity) and 3) the absence of an incentive or penalty for family formation (i.e. a subsidy or penalty for living as a couple). To see this, imagine that we have the following four groups of people: Case 1) two unrelated people living separately, each earning $25,000; Case 2) Two people living together (i.e. a family), each earning $25,000; Case 3) Two unrelated people living separately, one earning $50,000, the other earning nothing and, finally, Case 4) Two people living together (i.e. a family), one earning $50,000, the other earning nothing.

The total taxes paid by each group were considered. Equal treatment of families with the same household income implies that taxes should be the same for cases 2 and 4. That cases 1 and 2 should pay the same taxes, as should cases 3 and 4 were implied by the absence of a marriage or family formation penalty or subsidy. Together this would imply that all four groups should pay the same taxes. But if this is true, progressivity has been violated, because the same taxes are being paid in cases 1 and 3. Progressivity requires that the average tax rate be higher when income rises, so that a single individual earning $50,000 must pay more total taxes than two individuals living separately who each earn $25,000.

Adapted from the Canadian Policy Research Networks paper Tax fairness for one-earner and two-earner families: An examination of the issues. Online at http://www.cprn.org

(Adapted Version)

What is the issue?

A fair income tax system would meet three criteria:

1. Horizontal equity
2. Vertical equity
3. The absence of an incentive or penalty for family formation

We will illustrate these principles with four case studies.

Please continue…
Checklist for Using Links Effectively

☐ Provide context for links whenever possible (for example, “To begin video clip, download = 50 seconds”).

☐ Always use underlines or some other visual indicator (e.g. a stacked list of items) to indicate that words are links.

☐ Use blue underlined text for all unused links when possible.

☐ Use text links. Do not use image links.

☐ Do not require users to move the mouse to see when the pointer changes to a hand (mine sweeping).

☐ For a graphic link, the term “click here” has been shown to increase recognition that the graphic is a link.

☐ Clearly indicate when a link will move users to
   a. The same page,
   b. A different page in the same Web site
   c. A page on a different Web site

☐ Label links descriptively so that users can discriminate between similar links.

☐ If clicked once, an internal link should change colour in each instance it occurs on the site.

Adapted from: Research Based Web Design and Usability Guidelines
http://www.usability.gov/guidelines/index.html
## To Do List

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
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</table>
Concept Guide

Learning Modalities and Characteristics

- What is your preferred learning modality?

- Think about a group of learners with whom you work. What proportion of the group are verbal learners? What proportion prefer other modalities? Test your assumptions by discussing with the group.

Forms of e-Text

Visual

- What are the key characteristics of visual texts that support learning?

- When are visual texts most effective?
Audio
  • When should you use audio?
  • What should you be careful about using audio?

Video
  • Why is video such a compelling e-Text?
  • What accessibility issues are related to video?

Animation
  • Would the use of animation be effective for your audience?

Slides
  • How can electronic slide shows enhance cognitive outcomes?

Learning Outcomes
  • What e-Text is best for:
    o Affective outcomes?
    o Cognitive outcomes?
    o Psychomotor outcomes?

Questions and Goals
Use this form to record your questions about the use of e-Texts.
As you read, return to this form to record new ideas, resources, and additional questions.
Personal Goals

1.

2.

3.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
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</table>

Key Terms

This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary used to describe message design guidelines for Web content.

- Animation
- Sensory Modality
- Multi-channel
- Mental Model
- Others?

Incorporating Graphical Images

- Draw attention to significant areas of a graphic using visual cues such as arrows or circled portions.
- Use high quality images when the user has to learn to identify or recognize a feature, such as a tumor on the lung.
- Position graphics near the related text.
Where appropriate the graphic should be captioned.

Have users create their own illustrations for key concepts. This could be accomplished with a drawing tool, by clicking on component parts, by dragging parts of a model together or offline.

Provide both realistic and abstracted detail by using a line drawing to draw the user’s attention to the relevant features of the more detailed graphic.

When using an image, give users explicit instruction on how and when to use the graphical information in their learning.

Limit color use to four - space is a better organizer than color when separating information on a single screen.

Use color conventions but pay attention to cultural differences.

Remember that colors will be displayed differently on different systems. Err on the side of caution and try out on as many systems as possible.

Do not overuse animation for motivational purposes.

Do not use animation if material of significance is appearing elsewhere on screen.

When using animation, provide an option to repeat the sequence.

Make animation respond to the actions and decisions of the user, if possible.

Provide user control over dynamic displays.

While animation occurs, keep the rest of the screen static.

Use consistency – for example, always fly from the left for screen transitions.

Adapted from: Schwier & Misanchuk (1993) and Jonassen (1982)

Video in Domains of Learning

Experiential or cognitive objectives can be achieved by using video to show or document otherwise inaccessible:

- Places
- Viewpoints
- Complex or large-scale technical processes
Video in the motivational and affective domains:

- Stimulates appetite to learn
- Provokes and mobilizes
- Encourages use of a particular strategy by demonstrating its success
- Personalizes
- Facilitates identification with a model
- Reassures, entertains, fascinates, delights
- Gives life, enhances relevance/authenticity
- Changes attitudes/appreciations

Adapted from: Schwier & Misanchuk (1993)

Applying Message Design Guidelines

The Very Real Dangers of Executive Coaching

Harvard Business Review (06/02) Vol. 80, No. 6, P. 86; Berglas, Steven

Over the past decade and a half, there has been a growing trend in the business world promoting the use of executive coaches for upper management individuals who need fine-tuning, but what worries Steven Berglas, the author of this article and researcher at UCLA’s School of Management, is that most of these coaches are not trained in psychological issues, but are chosen instead because of their success as lawyers, business academics, consultants, and even athletes. Coaching by such individuals can lead to quick fixes for deep-rooted problems, given the business world’s propensity for effortless change. For faster results, coaches often employ methods that reject introspection, applying a band-aid where perhaps a deeper look was needed. Coaches not trained in psychological subtleties can often treat the symptom rather than the problem, such as assertiveness training, which may allow an executive to make himself
heard more clearly, but will not address the fundamental issues that led to his lack of assertiveness in the first place. Also, coaches can wittingly or unwittingly exert an overbearing influence on their pupils, causing executives to overly rely on their advice. Before selecting a coach, companies should psychologically evaluate any employee slated for coaching to determine if it will really benefit the individual. They should also hire independent mental health experts to review coaching results.

(www.hbsp.harvard.edu/hbr)

From: Daily News: ASTD
Notes Outline

**Keys to effective presentations**

- Know your outcomes
- Know your audience
- Organize for the domain, outcome, and audience
- Get attention
- Keep participants ACTIVELY engaged
- Assess

**Suggestions:**

- Use an upcoming lecture as an example
- Write down one outcome
- Write a short sentence describing the characteristics of your audience
- Write one idea for getting attention and preparing participants for the lecture. What is this phase called?
- Think of two ideas for encouraging active listening
The Environment

<table>
<thead>
<tr>
<th>Large Audience/Large Room (30 +)</th>
<th>Small Audience/Small Room (&lt; 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less interaction</td>
<td>More interaction</td>
</tr>
<tr>
<td>Less intimacy</td>
<td>More intimacy</td>
</tr>
<tr>
<td>Darker room required</td>
<td>Brighter room OK</td>
</tr>
<tr>
<td>Large screen size important</td>
<td>Smaller screen OK</td>
</tr>
<tr>
<td>Larger fonts</td>
<td>Medium-size fonts</td>
</tr>
<tr>
<td>Powerful audio speakers (on projector is best)</td>
<td>Audio OK from computer output</td>
</tr>
<tr>
<td>Audience noise a factor</td>
<td>Audience comments heard by all</td>
</tr>
<tr>
<td>Small distractions; attention diverted easily</td>
<td>Direct eye contact holds attention</td>
</tr>
<tr>
<td>Use more media elements</td>
<td>Fewer media elements necessary</td>
</tr>
<tr>
<td>Use broad gestures</td>
<td>Use facial expressions</td>
</tr>
<tr>
<td>More likelihood of diversity</td>
<td>More possibility of homogeneity</td>
</tr>
<tr>
<td>Take questions at end</td>
<td>Deal with arising questions</td>
</tr>
</tbody>
</table>

Adapted from: The Business Week Guide to Multimedia Presentations

Presentation Style

<table>
<thead>
<tr>
<th></th>
<th>Do</th>
<th>Don’t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gestures</strong></td>
<td>• Use natural gestures</td>
<td>• Rehearse gestures</td>
</tr>
<tr>
<td></td>
<td>• Orient yourself to mouse and keyboard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use a wireless remote pointer/control</td>
<td></td>
</tr>
<tr>
<td><strong>Facial expression</strong></td>
<td>• Smile</td>
<td>• Show anxiety about the technology</td>
</tr>
<tr>
<td><strong>Eye contact</strong></td>
<td>• Look at the audience</td>
<td>• Look at the technology or the screen</td>
</tr>
<tr>
<td></td>
<td>• Use pauses effectively - you are in control of pacing</td>
<td>• Pause consistently</td>
</tr>
<tr>
<td></td>
<td>• Look at a visual, then at audience</td>
<td>• Read text from the screen</td>
</tr>
<tr>
<td></td>
<td>• Expand on points on screen or provide examples</td>
<td></td>
</tr>
<tr>
<td><strong>Movement</strong></td>
<td>• Move about the room</td>
<td>• Stay anchored to the podium or computer</td>
</tr>
<tr>
<td></td>
<td>• Use points to interact with audience</td>
<td></td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>• Leave a 2-second pause between points or visuals</td>
<td>• Fill in pauses with “um…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Immediately fill up silence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Plan humor</td>
</tr>
<tr>
<td><strong>Voice</strong></td>
<td>• Project your voice beyond the back row</td>
<td>• Speak over video</td>
</tr>
<tr>
<td></td>
<td>• Let sound clips finish before Speaking</td>
<td>• Describe what the audience will see unless it needs explanation</td>
</tr>
</tbody>
</table>
Tips for Good Presentations

Know Yourself

• Preferred learning style = teaching style

• Comfort with environment
  o Room arrangement
  o Room size
  o Group size
  o Use of technology
  o Support available

• Comfort with pedagogical values
  o Expert or facilitator?
  o Teacher-centered or learner-centered?
  o Structured or open?

Know Your Audience

• Learning characteristics

• Experiences

• Expectations and needs
  o Content
  o Learning context

Identify Key Outcomes and Domains

• 1 key concept = 10-15 minutes

• Cognitive, affective, psychomotor

• Match assessment strategy to outcome

Match Approach/Strategy to Domain

• Low to high-level learning

• Behaviorist to constructivist approaches

• Autonomous to relational experiences

• Use of media
• Time to learn
• Structure: set/body/closure

When and How to Use Media

<table>
<thead>
<tr>
<th>Media Type</th>
<th>Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>• Authoritative&lt;br&gt;• Literal&lt;br&gt;• Main/key concepts&lt;br&gt;• Evocative words and phrases</td>
</tr>
<tr>
<td>Graphics</td>
<td>• Backgrounds, visual elements&lt;br&gt;• Use thematically, metaphorically&lt;br&gt;• Customize to audience&lt;br&gt;• Use to show detail (exploded)&lt;br&gt;• Use for conceptualization of abstract ideas&lt;br&gt;• Illustrate procedures</td>
</tr>
<tr>
<td>Photos</td>
<td>• Visually rich, detailed&lt;br&gt;• Evocative&lt;br&gt;• Show realism&lt;br&gt;• Use for dramatic impact</td>
</tr>
<tr>
<td>Charts, graphs</td>
<td>• Data visualization&lt;br&gt;• Comparative studies&lt;br&gt;• Literal&lt;br&gt;• Conceptualize data without much text</td>
</tr>
<tr>
<td>Video, animation</td>
<td>• Realistic, descriptive&lt;br&gt;• Entertaining&lt;br&gt;• Conveys temporal information&lt;br&gt;• For psychomotor demonstrations&lt;br&gt;• Dramatic impact&lt;br&gt;• Gains attention&lt;br&gt;• Use animation to clarify complex concepts&lt;br&gt;• Describes motion&lt;br&gt;• Conveys emotion&lt;br&gt;• Simulated situations</td>
</tr>
<tr>
<td>Sound</td>
<td>• Audible cues&lt;br&gt;• Realistic effects&lt;br&gt;• Emphasize points&lt;br&gt;• Subliminal message&lt;br&gt;• Narration</td>
</tr>
<tr>
<td>Music</td>
<td>• Mood and tone&lt;br&gt;• Evocative&lt;br&gt;• Cultural/emotional connotations</td>
</tr>
<tr>
<td>Orientation Elements in Various Media</td>
<td></td>
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<tr>
<td>---------------------------------------</td>
<td></td>
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<tr>
<td><strong>Books</strong></td>
<td></td>
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<tr>
<td>Main sections, chapters within (subsections), may include marginalia and other cues.</td>
<td></td>
</tr>
<tr>
<td>Navigation/Orientation</td>
<td></td>
</tr>
<tr>
<td>Immediately apparent - from front to back. Tables of contents, page numbers, index.</td>
<td></td>
</tr>
<tr>
<td>Content Architecture</td>
<td></td>
</tr>
<tr>
<td>Main sections, chapters within (subsections), may include marginalia and other cues.</td>
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<tr>
<td>Information Elements</td>
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<tr>
<td>Text, possibly graphic images.</td>
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<td>Newspapers &amp; Magazines</td>
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<td>Television</td>
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<tr>
<td>Cued by music, pacing. Commercial breaks occur regularly. Timed episodes.</td>
<td></td>
</tr>
<tr>
<td>Cued by music, pacing. Commercial breaks occur regularly. Timed episodes.</td>
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<td>Multimedia</td>
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<td>Could be modularized, linear sequential, or random (hypertext).</td>
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<tr>
<td>The Web (fill this one in by yourself)</td>
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<tr>
<td>Orientation/Orientation</td>
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<tr>
<td>Signs, directional arrows and floor index. Doors, sometimes color.</td>
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<td>Content Architecture</td>
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<tr>
<td>Rooms, lobby, stairwells, elevators.</td>
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<tr>
<td>Information Elements</td>
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<tr>
<td>Text, audio, motion video, graphic images.</td>
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<tr>
<td><strong>The Web</strong> (fill this one in by yourself)</td>
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</tbody>
</table>
Checklist for Message Design

Scannability

- 2-3 levels of headings
- Headings are meaningful
- Use of emphasis
- No blue or purple text for emphasis
- Reduce italics
- Upper and lower case
- Sidebars
- Marginalia
- White space
- Layering
- 100-150 words per page

Clarity

- Small chunks
- Each chunk contains 1 main idea
- Few paragraphs
- Bulleted lists
- Abstracts
- Pullouts
- Consistency
- Reduce bolding in text
- Move links out of paragraph
- Directions provided

Orientation

- Headings as anchors
- Site map
- Progress indicator
Metaphors

Important information in top third of page

**Writing Style and Tone**

- Active voice
- Short sentences
- Focused chunks
- Informal or conversational
- Consistency

**Accessibility**

- Learning style preferences
- At least two representations of same content
- Culturally meaningful
- Fast downloads
- Fewer plug-ins
- Readability (5-8)

**e-Texts**

- Appropriate use of:
  - Graphical images
  - Video
  - Audio
  - Animation
  - Electronic slide shows
- Accessibility for perceptual modalities

**Quality**

- Edited
We do love our families. A 1992 survey of Albertans revealed 92 percent of us thought a happy family life is essential to our lives. This came way ahead of other staples like a good income (34 percent thought this was essential) or a satisfying sex life (29 percent of the vote). Family as their greatest joy was described by eighty-three percent. These numbers would seem to be bolstered by our marriage rate, which in 1994 was the highest in Canada. That leap is being given more serious thought than ever before. As recently as 1995, men on average tied the knot for the first time at a relatively immature 22; their brides were only 20. By 1995, first-time grooms were waiting until they were past 28 before pledging their troth to 26.3-year-old brides. What’s more, we’re producing fewer kids and making more money. Alberta’s female labour force participation rate, the highest in Canada, has helped to more than double average family income, after inflation, since 1971. In 1996, our average family earned $55,269; among two-earner families with children, the figure topped $65,000. Despite these rosy statistics, our family lives are being put under increased strain by the failure of government and the workplace to keep pace with the changes. Those income figures aren’t so fat when you’re an Alberta single mother, whose mean earnings are only $23,650; more than a third of those receiving child support had to scrape together some semblance of a life on incomes of less than $15,000 per year.

To Do List

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</table>
STRUCTURING THE E-LEARNING ENVIRONMENT

Concept Guide

Content

• How is the content in your discipline structured?

• Can you describe your discipline as a genre?

Organizational Schemes

• What are the appropriate ways to organize information for your content area?

The Design Shell

• What is the most effective way to sequence your content?
Content Management

- Do you have a plan that supports sustainability of your resources?

Questions and Goals

Use this form to record your questions about structuring the e-Learning environment. As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals

1.

2.

3.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
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</table>

Key Terms

This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary common to information architecture.

- Navigation
- Interface
Information architecture
Metaphor
Genre
Design shell
Organizational scheme

Course Information Checklist

Introduction
- Instructions
- Technical and help information
- Preamble
- Rationale for learning design
- Description of learning community
- Instructor information – contacts, etc.
- Tutor information
- Security issues
- Timetable

Course announcements
Objectives/goals
Resources (e.g. library)
Course description/syllabus
Prerequisite knowledge or completed courses
Style of instruction
Expectations for participation (e.g. participate in discussions once a week)
How to prepare for course
Study tips
Learning strategies needed
Course length
Grading policy, etc.
Copyright statements, disclaimers
Checklist: Planning Steps for e-Learning Environments

- Define the key messages
- Define the information types and functionality
  - What is the purpose of the (site)?
  - Who are your readers?
- Define logical relationships
- Define links between information types
  - Define the tool/technology
  - Identify media elements
- Brainstorm and conceptualize
- Perform any required research and development related to advanced technologies
  - Will the reader require specialized hardware or software (e.g. plug-ins)?
  - Will the majority of your audience be able to access the material?
  - Should you design for the highest or the lowest common denominator?
  - What will be the media mix?
- Test the functionality of the information architecture and navigation
  - Storyboard
  - Rapid prototyping
- Identify specialized resources required to complete the projects
- The nature of the team
- Outsourcing

Based on Mok (1996)

## Selected Domains and Organizing Frameworks

<table>
<thead>
<tr>
<th>Domain</th>
<th>Skills/Knowledge</th>
<th>Framework</th>
<th>e-Texts &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviation</td>
<td>Training, procedures, decision-making, perception</td>
<td>Task analysis, objectives hierarchies, practice, criterion-referenced testing</td>
<td>Simulations</td>
</tr>
<tr>
<td>Computer programming</td>
<td>Problem-solving, procedural training</td>
<td>Whole-part and part-whole, problem-based, developing schemas, situated practice</td>
<td>Problems, active learning, link theory with practice</td>
</tr>
<tr>
<td>Concept learning</td>
<td>Forming hypotheses, classifying attributes</td>
<td>Connecting to memory, relating concepts, develop rules, discriminating, inductive and deductive</td>
<td>Examples and non-examples</td>
</tr>
<tr>
<td>Engineering</td>
<td>Problem-solving, decision-making, mathematical and spatial skills, management skills</td>
<td>Concept formation, scaffolding knowledge</td>
<td>Self-directed, experiential, simulated design activities</td>
</tr>
<tr>
<td>Second language learning</td>
<td>Understanding, communication, conscious monitoring, error correction</td>
<td>Association, reinforcement, imitation, Schema, rule structures, meaning Interaction</td>
<td>Emphasis on communication, authentic environments in which to practice</td>
</tr>
<tr>
<td>Management</td>
<td>Skills, abilities, and personal development</td>
<td>Discriminate between perceptions and reality, Concrete experience, reflective observation, abstract conceptualization, active experimentation (Kolb)</td>
<td>Interaction with others, modeling, role playing, coaching, cases</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Resources, heuristics, control processes, and beliefs</td>
<td>Problem-solving, acquiring higher-order rules</td>
<td>Problem-solving, direct application</td>
</tr>
<tr>
<td>Medicine</td>
<td>Decision-making, reasoning, problem-solving, sensory-motor ability, attitudes</td>
<td>Memory and recall, problem-based</td>
<td>Case study, problem-solving, simulations</td>
</tr>
</tbody>
</table>
### Selected Domains and Organizing Frameworks
(continued)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Skills/Knowledge</th>
<th>Framework</th>
<th>e-Texts &amp; Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military</td>
<td>Team skills, leadership, technical, decision-making, memory</td>
<td>Criterion-referenced, mastery learning</td>
<td>Experiential learning, social learning</td>
</tr>
<tr>
<td>Procedural</td>
<td></td>
<td>Declarative or knowledge, production rules,</td>
<td>Demonstration, modeling, coaching, work</td>
</tr>
<tr>
<td>learning</td>
<td></td>
<td>mental models</td>
<td>towards automaticity</td>
</tr>
<tr>
<td>Reading</td>
<td>Attention, concept formation, imagery, language, memory, perception</td>
<td>Letter-sound correspondence, increasing</td>
<td>Cognitive and social tasks,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>importance of semantic-linguistic aspects</td>
<td>comprehension</td>
</tr>
<tr>
<td>Sales</td>
<td>Gaining attention, understanding needs, presentation of products, handling</td>
<td></td>
<td>Role-playing, simulations,</td>
</tr>
<tr>
<td></td>
<td>objections, closing, follow-up</td>
<td></td>
<td>apprenticeship, coaching,</td>
</tr>
<tr>
<td>Trouble-</td>
<td>Diagnosis and repair</td>
<td>Hypothesis generation, testing, hypothesis</td>
<td>Extensive practice with feedback</td>
</tr>
<tr>
<td>shooting</td>
<td></td>
<td>evaluation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research skills</td>
<td></td>
</tr>
</tbody>
</table>

*Adapted from the (Greg Kearsley) TIP database*

*http://home.sprynet.com/~kearsley/tip*
## To Do List

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Concept Guide

Continued from Chapter 7…

Content
Supporting cognitive processes

- Do the activities included in your content reflect several levels of cognitive processing?

Navigation
Think about an effective interface you have used. Why was it effective?

Schemes and metaphors

- Does your content reflect an organizing metaphor?
Visual design elements
• How do visual elements reflect orientation cues?

Questions and Goals
Use this form to record your questions about active learning.
As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals
1.
2.
3.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Key Terms
This chapter may contain words and phrases that are unfamiliar. Use this list as a guide to the vocabulary common to information architecture.

☐ Semantic networks
☐ Cognitive tool
☐ Mind tools
Goal-based Scenarios

Attributes of GBS

- Learn-by-doing simulation
  - Students pursue a goal by practicing target skills and by using relevant content knowledge
  - During simulation, students receive just-in-time coaching at the moment where they want to use the information
- GBS can be software environments or live role-plays, but they all:
  - Contain a rich amount of content
  - Support interesting and complex activities
  - Are inherently motivating
  - Creates a model in which students learn ‘how-to’ rather than ‘know-that’
  - Are contextualized

Constructing a GBS

According to Schank and his colleagues, a GBS comprises seven essential components:

1) Learning goals
   - 2 categories – process knowledge and content knowledge
   - GBS can include both
     - e.g. make a good argument by backing up claims with evidence obtained through research (process goal), and learn the factual, historical, etc. information relating to the content domain in order to make the argument (content goal)

Design step:
   a. Focus on the skill set you want students to practice with related content knowledge
2) Mission
   • A mission is a performance goal
   • Should take the form of a significant plausible action goal to be achieved
   • The mission includes the skills and knowledge needed to achieve the learning goal
     o e.g. “develop a set of guidelines to present to your supervisor…”

   Design step:
   a. Identify the outcome in the form of a product to be designed or completed
   b. Product should demonstrate the achievement of learning goal

3) Cover Story
   • The background story line that creates the need or context in which the mission is to be accomplished
   • Should contain enough opportunities for the student to practice learning goals etc., and be interesting and motivating
     o e.g. “The large multinational company you work for has been forced to downsize. Thirty-thousand employees have been let go. Morale among the remaining employees worldwide is very low….”

   Design Steps:
   a. Write the story
   b. The student takes on an important role in the story
   c. The role is pivotal and requires student to develop skills identified The story is relevant, important, and personally appealing

4) Role
   • Who the student is in the simulation or cover story
   • What role is best in the cover story to help student achieve and practice skills
   • Role is:
     o Active
     o Interesting
Design Steps:

a. Check the characters and roles in the story
b. Is the student’s role the right one, the one that actually has to do the work required to solve the problem?

5) Scenario Operations

- Includes all the activities required in order to work toward the mission goal
  - e.g. scenario operations could include asking for expert opinions, compiling a reference list in case the boss asks for the evidence, presenting more than one strategy with pros and cons, interviewing stakeholders, reading about similar instances where this happened and a decision was made.

- Decision-points arise during scenario operations
  - The effects of the decisions made signal progress toward mission or could signal expectation failure, a “teachable moment”
  - Expectation failures can be anticipated and built in and should scaffold the learning
  - Failure only occurs if decision is made hastily without good research

- Includes numerous scenario operations of varying complexity
  - Each operation should support achieving mission goal

Design steps:

a. List all the learning goals required to achieve the mission
b. List all the scenario operations needed to achieve the goal
c. List all the decision points to be made for each scenario operation, along with expectation failures and consequences

6) Resources

- Must be plenty of well-organized and easy-to-access resources to use during scenario operations
- Students must be able to ask for information that helps in decision-making
• Information can be supplied in terms of stories
  o Stories can be a variety of forms
  o Stories are slightly different to make student adjust memory for new learning
  o Lessons are embedded in the stories
  o Resources are often experts telling their own stories of their own experiences

Design Steps:
  a. Collect resources in many different formats
  b. Each story should contain a lesson relevant to scenario operation
  c. One story could be just different enough from another that student must adjust understanding or change opinion slightly to adjust (in other words, experience an expectation failure). Stories must be indexed so that they are retrieved easily when needed.

7) Feedback
• Expectation failure must be properly indexed so that it can be retrieved and used in the right context at the right time
• Feedback occurs through consequence of actions (natural), through coaches (mediated) who scaffold student through tasks or through domain experts who tell stories that pertain to the experience
• Feedback needs to be indexed and retrievable

Design Steps:
  a. Match appropriate kind of feedback to the resources and decisions. If online, identify coaches that are available at the right time to scaffold
  b. Collect expert stories from domain experts and index

8) I’ve adding the eighth step, reflection.
• Students in same simulation should share stories and plans to
  o Enrich database of available resources
  o To identify their expectation failures
  o Correct or predict what they could have done
  o Working collaboratively to achieve mission goals will enhance communication, interpersonal, human relations, reasoning skills, etc.
9) And the ninth step, retrieval (see Chapter 4)
   • Stories are retrieved, coded, and stored
   • Learners add to story repository
   • Learners add to resource repository

**Goal-based Scenarios-Planning Template**

<table>
<thead>
<tr>
<th>Component</th>
<th>Key elements</th>
<th>Design ideas</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem statement</strong></td>
<td>• Well-structured</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ill-structured</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Learning goals</strong></td>
<td>• Process knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Content knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mission</strong></td>
<td>• Performance goal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Skills and knowledge needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Stated in form of product that demonstrates achievement of learning goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cover story</strong></td>
<td>• The story that creates the context</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Interesting, motivating, authentic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Goal-based Scenarios-Planning Template (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Key elements</th>
<th>Design ideas</th>
<th>Resources</th>
</tr>
</thead>
</table>
| Role(s)       | • Who the learner is in the cover story  
• Role is as active participant  
• Role is realistic                 |              |                            |
| Scenario Operations | • All the activities planned to achieve mission  
• Varied complexity  
• Decision-points which have consequences  
• Expectation failures  
• Scaffolding                          |              |                            |
| Resources     | • Expert stories  
• Easy-to-access  
• Other relevant information in various forms (links, print, each other) |              |                            |
| Feedback      | • Expectation failures indexed                                                 |              |                            |
| Reflection    | • Learners share stories and plans  
• Identify expectation failures and corrections/predictions                      |              |                            |
| Retrieval     | • Knowledge mining  
• Collection and indexing of stories  
• New resources added (learner-identified)                                       |              |                            |
What Makes a Good Case Environment?

A cover story:

- Presents one or more lessons relevant to the domain
- Is descriptive, not prescriptive
- Is authentic; realistic
- Is written in a way that encourages learner to draw on personal experience (resonates)
- Is complex
- Contains a rich amount of content
- Supports interesting and complex activities
- Is inherently motivating, appealing
- Are perturbing
- Contains embedded lessons (or rules)
- Creates a “need to know” in the learner
- Requires the learner to take an authentic role
- Is well-indexed by “rule” and retrievable when needed
- Anticipates expectation failure
- Requires learner to engage in the same kind of activities that present the same type of cognitive/affective challenges as those in the real world

Expert Stories:

- Represent a variety of situations
- Are models of expert thinking in the domain
- Are not based on the correct or incorrect way to perform a task, but relate experiences of the expert in a similar situation
- Do not present the expert standard (see above)
- Create a model in which students learn “how-to” rather than “know-that”
- Are incidents of just-in-time coaching
- Are contextualized
- Are the stories of events
Can be in a variety of forms

Ideally contain a variety of media elements

Scaffold student memory

Enhance cognitive flexibility by providing multiple representations of content

Indices:

Contain stories, told by experts, relating their own experiences with a similar situation

Contain stories that are slightly different, to make the learner adjust memory for new learning

Are structured to allow the addition of related stories

Are transparent to use

Are based on rules or reasons
### Problem-based Planning Template

A PBL environment comprises six components. Jonassen has represented these as nested spaces.

<table>
<thead>
<tr>
<th>Component</th>
<th>Attributes</th>
<th>Objects</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem context</strong></td>
<td>physical, socio-cultural, and organizational climate revealed by authentic documents</td>
<td>Mission statements, balance sheets, annual reports personal stories, video clips, interviews with key people</td>
<td>May be audio/video, virtual, or narrative/text</td>
</tr>
<tr>
<td></td>
<td>identify community of stakeholders and their values, beliefs, customs, skills and performance levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Problem representation</strong></td>
<td>Must be perturbing and appealing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learners should engage in the same kind of activities that present the same type of cognitive and affective challenges as those in the real world (authenticity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>Objects</td>
<td>Attributes</td>
<td>Notes</td>
</tr>
<tr>
<td>-----------</td>
<td>---------</td>
<td>------------</td>
<td>-------</td>
</tr>
<tr>
<td>Related cases</td>
<td>Multiple, related cases</td>
<td>Scaffold student memory with case-based reasoning</td>
<td>Case index</td>
</tr>
<tr>
<td></td>
<td>Multiple, related cases</td>
<td>Human knowledge is encoded as stories about experiences and events</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multiple, related cases</td>
<td>Provide multiple interpretations, perspectives and viewpoints of content</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information resources</td>
<td>Learner-selected, just-in-time information</td>
<td>Information banks and repositories</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Text documents, audio/video, graphics, animations, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive tools</td>
<td>Tools that support thinking, performance, representation; information-gathering</td>
<td>Databases, spreadsheets, mind maps, CMC</td>
</tr>
</tbody>
</table>
### Problem-based - Planning Template (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Attributes</th>
<th>Objects</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation/collaboration tools</td>
<td>Discourse communities</td>
<td>Lists</td>
<td>Threaded discussion forums</td>
</tr>
<tr>
<td></td>
<td>Knowledge-building communities</td>
<td></td>
<td>Bulletin boards</td>
</tr>
<tr>
<td></td>
<td>Communities of learners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social/contextual support</td>
<td></td>
<td>Support groups, workshops, coaching, etc.</td>
<td></td>
</tr>
</tbody>
</table>

http://www.ed.psu.edu/~jonassen/CLE/CLE.html  
http://curry.edschool.virginia.edu/go/ITCases
## Presentation and Communications Tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use</th>
<th>Pro</th>
<th>Con</th>
<th>Asynch</th>
<th>Synch</th>
<th>Present</th>
<th>Communicate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E-mail</strong></td>
<td>For quick response For urgent announcements For impact To communicate same message to all at once For a discussion list or newsgroup</td>
<td>Quick One-to-many High impact Encourages immediate response Easily accessible</td>
<td>Lack of non-verbal cues Can seem abrupt Time management Too accessible?</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td><strong>Chat</strong></td>
<td>Brainstorming Social purposes Microworlds Role playing</td>
<td>Immediate Social</td>
<td>Keyboarding skills</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td><strong>Threaded discussion</strong></td>
<td>Collaborative work Extended discussion Social purposes</td>
<td>Encourages higher-order learning Community building Supports multiple perspectives Equity for time and space</td>
<td>Complex to facilitate Time management Security, privacy, ethical issues May not support learning culture Dominant participants</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Screen-sharing e.g. white-board</strong></td>
<td>Sharing work in progress Collaborative activities such as data analysis</td>
<td>Interactive Some can be recorded and archived</td>
<td>Technical issues Non-standard platforms</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
## Presentation and Communications Tools (continued)

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use</th>
<th>Pro</th>
<th>Con</th>
<th>Asynch</th>
<th>Synch</th>
<th>Present</th>
<th>Communicate</th>
</tr>
</thead>
</table>
| Audio conf | Two-way live interaction when only dialogue can be recorded and archived | Outline keeps on track  
Check on affective issues (voice)  
Active learning esp. if advance preparation required of participants | Withdrawal of participation, passive if one-way experience needed  
Time zone coordination  
Telecommunications expensive in some countries | ✓      | ✓     | ✓       | ✓           |
| Video conf | Presentation  
Expert lecture  
Group checks  
Involvement of distance learner  
Show movement  
Demonstration | Can be recorded and archived  
Community building  
Check on affective issues | More expensive than audio  
Technical issues  
Bandwidth & technical support concerns  
Can be one-way  
Time zone coordination | ✓      | ✓     | ✓       | ✓           |
## Presentation and Communications Tools (continued)

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use</th>
<th>Communication</th>
<th>Con</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webcast</td>
<td>Demonstrations, Debate, Interview, Q&amp;A, Panel discussion, Stump the experts, Press conference, Reference desk, Imposter test, Round-robin lecture, Oral exam</td>
<td>√</td>
<td>Technical issues, Bandwidth, May not proprietary software, Expensive for some users</td>
<td>Archived events, Direct interaction</td>
</tr>
<tr>
<td>e-Texts</td>
<td>Content delivery</td>
<td></td>
<td>May be text heavy, Inappropriate use, Accessibility issues</td>
<td></td>
</tr>
</tbody>
</table>

Technical issues, Bandwidth, May not proprietary software, Expensive for some users...
Checklist: Visual Elements and Information Hierarchy

Interface

☐ Where is the navigation bar?

☐ Is the bar placed appropriately on the page?

☐ Is this interface a metaphor?

☐ Does the interface design support the structure of the information experience?

Size

☐ Which element drew your attention first?

☐ Does this of element represent the most important information on this site?

☐ Identify the headers on the page. How is size used to suggest how to best use the site?

Placement

☐ Does the interface communicate how to sequence your experience?

☐ An English-speaker reads from left to right and top to bottom. Does the placement of elements support this process?

☐ Look at the way the visual elements are grouped on the page. Does this tell you anything about their logical relationships?

Color and Contrast

☐ Are color and contrast used as clues or cues to meaning or relationships?
Where was your eye drawn first? Is color/contrast used well to direct your attention to the most important information first?

Whitespace is a design element that can be used to show relationships of information. Although not really a color, is the whitespace used well on this site?

Movement

Is movement used as an element in this interface? If so, does it help or hinder the user?

Rules of Navigation

<table>
<thead>
<tr>
<th>Rule</th>
<th>Planning Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface should be easily learned.</td>
<td></td>
</tr>
<tr>
<td>Avoid simple page-turners; offer alternatives.</td>
<td></td>
</tr>
<tr>
<td>Keep the written text simple.</td>
<td></td>
</tr>
<tr>
<td>Visual elements should represent the relationships of ideas.</td>
<td></td>
</tr>
<tr>
<td>Communicate clearly and concisely.</td>
<td></td>
</tr>
<tr>
<td>Use active, positive, polite language.</td>
<td></td>
</tr>
<tr>
<td>Keep the process as visual as you can; use clear visual messages.</td>
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</tr>
<tr>
<td>Use consistent screen formats.</td>
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</tr>
<tr>
<td>The style throughout the environment should be coherent.</td>
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</tr>
<tr>
<td>Provide feedback. For example, the expected response to an action.</td>
<td></td>
</tr>
<tr>
<td>Make sure users know what they have to do and the steps to get there.</td>
<td></td>
</tr>
<tr>
<td>Provide help.</td>
<td></td>
</tr>
<tr>
<td>Keep users engaged without frustration; be economical.</td>
<td></td>
</tr>
<tr>
<td>Interface should support the users’ goals and objectives.</td>
<td></td>
</tr>
<tr>
<td>Don’t make assumptions about understanding, e.g. color, icons.</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Element</th>
<th>Media</th>
<th>Hot?</th>
<th>Emphasis</th>
<th>Size</th>
<th>Font</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Title</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Header</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Navigational Tools</td>
<td></td>
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</tr>
<tr>
<td>Lesson Title</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lesson Subtitles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section Titles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Background</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cues</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Buttons or Icons</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Design Matrix: Language Specifications

<table>
<thead>
<tr>
<th>Element</th>
<th>Decision Point</th>
<th>Project Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing</td>
<td>Readability</td>
<td>Tone, Voice, Spelling, Sentence structure, Contractions, Colloquialisms, Abbreviations used, Acronyms used, Cues, Specialized vocabulary, Indices, glossaries, etc., Level, Language of instruction</td>
</tr>
<tr>
<td>Grammar Usage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language Usage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Design Matrix: Visual Design

<table>
<thead>
<tr>
<th>Element</th>
<th>Decision Point</th>
<th>Project Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Screen Elements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of concepts per screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of lines per screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of words per line</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Question frames</td>
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<td><strong>Color: Background and Text</strong></td>
<td>Instructional screens</td>
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<td>Footers</td>
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<td>Colors per screen</td>
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### To Do List

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Date</th>
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</table>
Concept Guide

User-centered Design

- What UCD concepts from Chapter 3 apply to your course materials?

- How will you know if you have met the needs of this group?

The Process of Usability

- How will you know if your e-Learning environment is effective?

- What methods can you use to meet your evaluation goals?

- What methods do you need to explore further?
Applying the Results

- Does your context support usability testing?
- Pragmatically, how can you use the results of an evaluation?

Groups that have benefited

- Identify the top 10 usability guidelines for your target audience.

Questions and Goals

Use this form to record your questions about usability testing.

As you read, return to this form to record new ideas, resources, and additional questions.

Personal Goals

1.

2.

3.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Related information</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
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</table>

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Sample Usability Plan

A problem-based learning environment was developed for a third-year course in the Faculty of Law.

The Design

A wealthy client, age 62, is updating her will. Chief operating officer of a family company, she seeks legal advice related to succession planning, tax planning, and dispersal of a diverse portfolio of assets.

The design involves a problem statement, a set of resources that includes text documents of previous wills, current tax laws, business and personal correspondence with the legal firm, statutes and financial statements; profiles of the company’s business officers and family members; audio interviews with the client, her colleagues, her family members, and her financial advisors; and so on.

The learner in this scenario takes the role of the head lawyer on a team that includes two legal assistants and a financial advisor. The team must produce a new will. The team “meets” by asynchronous threaded discussions and is supported by a web site that includes all the resources and links to related sites. An expert legal coach is available by e-mail.
The design interface is based on an office environment with visual representations of:

- A filing cabinet containing the documents
- A telephone for the expert coach
- A computer for the threaded discussion
- A tape recorder for the interviews
- A day planner for annotated note-taking

**The Plan**

A prototype site for the interface has been developed using PowerPoint. The documents and other artifacts are available in print form only.

For the first phase of the usability test only the interface will be evaluated. The effectiveness of the visual office metaphor is the focus of the first test.

The plan calls for six participants, all third-year law students. Each student will receive one free movie pass as a thank you for participating. Each participant will have completed the traditional version of this course, which has been delivered in a lecture format.

The participants will test the interface in three groups of two, while a graduate student in the Instructional Technology program in the Faculty of Education observes and takes notes on the slide version of a print-based PowerPoint document. Following the procedure, all participants will join a focus group led by an evaluator.
Application for Ethics Approval

Description of Project and Procedures for Observing Ethical Guidelines

Usability Test for Law 301

Name of Applicant: Dr. Katy Campbell

Section 1:

Please provide a general overview of your proposed research. Limit your response to one page.

Purpose of Study:

This is a test of the effectiveness of the interface design for Law 301.

Methodology:

Six third-year law students will work in three groups of two to evaluate the interface. Each pair will be observed by an Education student (Master's in Instructional Technology).

Following Stage 1, all participants will be invited to join a focus group led by an evaluator from the Population Lab. The focus group questions are attached. With consent, the discussion will be recorded and later transcribed. In addition to the evaluator, a second recorder will take notes by hand.

Nature of Involvement of Human Participants:

Participation will be solicited by direct invitation in all third-year law classes. Volunteer participants will have successfully completed Law 301 in the first term.

Each participant will be supplied with a description of the redesigned course and an outline of the test plan.

Participants will receive a movie pass on completion of the test. Names of participants will be kept confidential.

Are underage or “captive” participants involved? Yes______ No___x___

If “yes” provide details” (Please attach any consent forms to be used.)
Section 2:
Please describe clearly the specific procedures for observing the University’s ethical guidelines for research involving human participants. Confine your response to two pages.

1. Explaining purpose and nature of research to participants:
   Each participant will receive a written description of the usability test. Participants will have an opportunity to ask questions when solicited and during the test. A letter of consent must be obtained.

2. Obtaining informed consent of participants: (Consent forms must be attached.)
   See attached

3. Providing for exercising right to opt out:
   Participants will be advised that they have the right to withdraw consent at any time during the test. If withdrawing, they have the right to withdraw consent for using their comments.

4. Addressing anonymity and confidentiality issues:
   Participants’ names will be kept confidential; participants will not be identified by name on observation protocols or on focus group transcripts.

5. Avoiding threat or harm to participants or to others:
   Participants may withdraw from the procedure at any time without penalty. Participants’ identities will be kept confidential.

6. Other procedures relevant to observing ethical guidelines not described above (e.g. training assistants directly involved in data collection):
   The test will involve three graduate students from the Instructional Technology program. These evaluators will have successfully completed IT 298 (Formative Evaluation). The students will sign a confidentiality agreement.

APPLICANT: Please submit the completed application form and all accompanying materials (consent forms, copies of instruments, sample interview questions) to the Research Ethics Board representative in your Department of the Faculty of Education, the School of Library Studies, or the Faculty of Extension.

When the application has been reviewed, a copy of the form will be returned to you.
Consent Form

I, hereby, consent to participate in the research study entitled Usability Test for Law 301 conducted by Dr. Katy Campbell and/or an associated research assistant. This study is conducted under the auspices of the Academic Technologies for Learning unit in the Faculty of Extension, University of Alberta.

The purpose of the study is to investigate the issues related to usability of the interface for Law 301.

☐ I understand that my participation in this study is completely voluntary.

☐ The general approach to this study is clear to me.

☐ I understand that the results of this research may be published or reported, but that my name or identity will not be associated in any way with the published results, unless requested.

☐ I understand that my comments will be held in the strictest confidence.

☐ I understand that my comments may be recorded and transcribed.

☐ I understand that I will have the opportunity to approve the inclusion of my interview data in the study.

☐ I understand that I can withdraw from this study at any time and that if I do my data may also be withdrawn.

☐ I understand that my anonymity may be compromised if I choose to participate in a focus group. That is, other focus group participants will be able to identify me.

Date: __________________________________________

Signature: ________________________________________
Facility and Facilitator Checklist (2000)

The purpose of this form is to gather information about the server and lab environments where one of your faculty member’s projects will be delivered. This data will also guide and facilitate hardware and software purchases, student and faculty training, and planning for project implementations and delivery.

Server Configurations

**LAN Server**

<table>
<thead>
<tr>
<th>OS: (Circle One) Macintosh</th>
<th>NT</th>
<th>Unix - flavor?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAM:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage:</td>
<td></td>
<td></td>
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<tr>
<td>Backup system:</td>
<td></td>
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</tr>
</tbody>
</table>

**Web Server**

<table>
<thead>
<tr>
<th>OS: (Circle One) Macintosh</th>
<th>NT</th>
<th>Unix - flavor?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAM:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage available for each project:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web server software product name:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Version: __________________________

MIME types configured?

Flash Y/N  
Director Y/N  
Authorware Y/N  
JavaScript Y/N  
RealMedia Y/N

Database Connectivity: No/Yes

If Yes:  
Cold Fusion No/Yes  
ASP No/Yes  
Other
FrontPage Extensions activated or willing to activate? Y/N

Remote Access (procedure for getting files to Web server) FTP No/Yes Other __________

Indexing support Excite No/Yes Microsoft Index Server No/Yes Other __________

CGI support No/Yes If Yes, please describe the procedure:
____________________________

Streaming media support: Real Networks Y/N NetShow Y/N QuickTime Y/N

Does your institution/department support an Internet-based conferencing/web delivery software package such as: WebCT, Lotus Notes, Web Board? No/Yes

If Yes (which one(s))
___________________________________________________________________________
___________________________________________________________________________

Lab and Desktop Computers

Student Lab Hardware

Type (Macintosh)
Model: __________________________
OS: __________________________
CPU: __________________________
RAM: __________________________
Storage: _______________________
CD-ROM: No/Yes If Yes - Speed 2X, 4X, 8X or faster?
Sound capable: No/Yes If Yes – Headsets or speakers?
Microphone: No/Yes
Color capable: No/Yes If Yes – Color Depth = 256, 64 K or Millions of colors?
Networked: No/Yes If Yes, what is Lab network speed? ____________

**Type (Windows95/98/NT)**

Model: ________________

CPU: ________________

RAM: ________________

Storage: ________________

CD-ROM: No/Yes If Yes - Speed 2X, 4X, 8X or faster?

Sound capable: No/Yes If Yes – Headsets or speakers?

Microphone: No/Yes

Color capable: No/Yes If Yes – Color Depth = 256, 64 K or Millions of colors?

Networked: No/Yes If Yes, what is Lab network speed? ____________

---

**Software Configuration of Lab and Desktop Computers**

**Student Lab Software**

*Type (Macintosh)*

Browser type/version(s): ________________

Plug-ins supported:

QuickTime: Y/N - If Yes what version? ________________

Shockwave: Director/Flash; No

If Yes, what version? ________________

Authorware; No If Yes what version? ________________

Real Media: No/Yes - If Yes what version? ________________

Adobe Acrobat: No/Yes - If Yes what version? ________________

NetShow: No/Yes - If Yes what version? ________________

Other: ________________

Java enabled: No/Yes

JavaScript enabled: No/Yes

Cookies enabled: No/Yes

Additional comments:

*Type (Windows95/98/NT)*

Browser type/version(s): ________________
Plug-ins supported: QuickTime: Y/N; Shockwave: Director/Flash; Authorware
Real Media Y/N
Adobe Acrobat? No/Yes - If Yes, what version? __________
NetShow No/Yes - If Yes, what version? __________
Other: ____________________________

Java enabled: No/Yes
JavaScript enabled: No/Yes
Cookies enabled: No/Yes
Additional comments:

**Internet Access: Students**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do students have e-mail accounts?</td>
<td></td>
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<tr>
<td>Campus labs allow access to e-mail?</td>
<td></td>
<td></td>
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<tr>
<td>Campus labs access to Web browsing?</td>
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<tr>
<td>Remote access to e-mail?</td>
<td></td>
<td></td>
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<tr>
<td>Remote access to Web browsing?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Modem pool provided and supported by institution? No Yes
Is access free of charge No Yes (How much/hour/month? ______)
Please rate accessibility as: Poor Average Excellent
Is access limited to a certain amount of time? No Yes
What maximum connection speed is available? 56 kps Cable ASDL
Modem pool provided and supported by a corporation or state? No/Yes
Is access free of charge No Yes (How much/hour/month?) __________
Please rate accessibility as: Poor Average Excellent
Is access limited to a certain amount of time? No Yes
What maximum connection speed is available? 14.4 or 28.8 or faster?
What online resources (library databases, etc.) are available to on and off-campus students?__________________________________________
_____________________________________________________________________________
## Internet Access: Faculty Members

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do faculty members all have e-mail accounts?</td>
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<tr>
<td>Do they have easy access to computers?</td>
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<tr>
<td>Access to Web browsing from same computer?</td>
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</tr>
<tr>
<td>Remote access to e-mail?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote access to Web browsing?</td>
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</tbody>
</table>

*If Faculty access is different than student, please complete the following:

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
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</thead>
<tbody>
<tr>
<td>Modem pool provided and supported by institution?</td>
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<tr>
<td>Is it free of charge?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>(How much/hour/month?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate accessibility as:</td>
<td>Poor</td>
<td>Average</td>
</tr>
<tr>
<td>Is access limited to a certain amount of time?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What maximum connection speed is available?</td>
<td>14.4 or 28.8 or faster?</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modem pool provided and supported by a corporation or state?</td>
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<td></td>
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<td>Is it free of charge?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>(How much/hour/month?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate accessibility as:</td>
<td>Poor</td>
<td>Average</td>
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<tr>
<td>Is access limited to a certain amount of time?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What maximum connection speed is available?</td>
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</tr>
</tbody>
</table>

What online resources (library databases, etc) are available to your faculty members on and off-campus?

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### Contact Information for LAN Administrator/Web Master

Name:

E-mail: Phone:
Quality Review Checklist

Alessi and Trollip (1991) advise evaluating each module or unit of instruction six times, once for each part of their quality review checklist. The checklist is comprised of the following seven categories:

**Language and Grammar**
- Reading level
- Bias, including race, religion, age, gender
- Technical terms and jargon
- Consistency
- Spelling, grammar and punctuation
- Visual display, such as spacing

**Surface Features of the Display**
- Visual design of displays
- Forms of representation
- Quality and display of text
- Input devices
- Navigation

**Questions and Menus**
- Menu interface
- Quality of embedded questions
- Feedback

**Pedagogical Issues**
- Learner control
- Design for diverse learners
- Motivation
- Active learning supports
- Interactive tools
Invisible Functions of System
- Student management
- Security
- Retrieval functions

Subject Matter
- Goals, outcomes
- Message design
- Support for higher-order thinking
- Architecture
- Scope and sequence

Off-line Materials
- Print-based resources
- Student manual
- Help sections
- Directions
- Instructor manual
- Auxiliary materials
- Other resources

The authors suggest numbering each screen display or page to provide a reference for the evaluators and to help you locate the section needing revision.
<table>
<thead>
<tr>
<th>Method</th>
<th>Purpose</th>
<th>Description</th>
<th>People &amp; Tools</th>
<th>Issues</th>
<th>Type of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coaching</td>
<td>Provide better training, documentation</td>
<td>Participants ask questions of an (domain) expert coach Interaction between expert and user can be observed</td>
<td>Evaluator Domain expert 4+ users Recording devices Paper/pencil</td>
<td>Effectiveness Efficiency Satisfaction</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Co-discovery</td>
<td>Helps users verbalize and problem-solve</td>
<td>Two users work together on a task or scenario and help each other verbalize observation</td>
<td>Evaluator 3+ groups of 2 Recording devices</td>
<td>Effectiveness Satisfaction</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Performance Measurement</td>
<td>Obtain quantitative data about a participant’s performance on a task, benchmarking</td>
<td>Goals are identified and rated for importance (e.g. # of tasks that can be completed in 30 minutes) Issues are quantified</td>
<td>Evaluator Technician to record test Recording devices 1-way observation System tools</td>
<td>Effectiveness Efficiency Qualitative</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Method</td>
<td>Purpose</td>
<td>Description</td>
<td>People &amp; Tools</td>
<td>Issues</td>
<td>Type of Data</td>
</tr>
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<td>-------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Question-asking Protocol</td>
<td>Understand participant's mental model of system and tasks</td>
<td>Testers ask users direct questions and answer based on test goals, but can also be in response to a user's actions.</td>
<td>Evaluator 4+ users</td>
<td>Checklist Recording device</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Teaching</td>
<td>Tests a user's understanding of system and identifies design errors that confuse users</td>
<td>Experienced users work with novice users explaining learning tasks.</td>
<td>Evaluator at least 2 groups of 2</td>
<td>Recording device</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Thinking-aloud Protocol</td>
<td>Develop user’s metacognitive strategy for user</td>
<td>Participants are asked to describe their thoughts, feelings, questions, etc. as they work through a learning activity.</td>
<td>Evaluator 4+ users</td>
<td>Recording device is helpful</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Scenario Building</td>
<td>Understand user’s requirements and expectations</td>
<td>Users design one or more real-life scenarios for accomplishing a task.</td>
<td>Evaluator 4+ users</td>
<td>Features required to complete the task successfully are rank-ordered</td>
<td>Qualitative</td>
</tr>
</tbody>
</table>

### Inspection Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Purpose</th>
<th>Description</th>
<th>People &amp; Tools</th>
<th>Issues</th>
<th>Type of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Walkthrough</td>
<td>Test the design of an interface by completing a series of tasks and evaluating their &quot;understandability&quot; and ease of learning</td>
<td>Testers determine interface components needs to complete the task Walk through task telling a “credible” story about why a user would choose that action. Success or failure stories</td>
<td>2-4 usability experts 0-2 developers</td>
<td>Effectiveness</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Feature Inspection</td>
<td>Identify missing features and features to be eliminated or improved</td>
<td>Feature of the design is challenged against a “use case”</td>
<td>Evaluator</td>
<td>Effectiveness</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Heuristic Evaluation</td>
<td>Discover usability problems, and provide strategy for addressing the issues</td>
<td>Based on general usability guidelines framework developed for design or system critique</td>
<td>4+ evaluators</td>
<td>Effectiveness</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Pluralistic Walkthrough</td>
<td>Increases probability of finding problems from a range of perspectives and needs</td>
<td>Participants encouraged to individually describe experience or record observations, followed by group discussion</td>
<td>Evaluator Developer 2+ users</td>
<td>Effectiveness</td>
<td>Qualitative</td>
</tr>
</tbody>
</table>

### Inquiry Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Purpose</th>
<th>Description</th>
<th>People &amp; Tools</th>
<th>Issues</th>
<th>Type of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>Observe use of system in authentic learning environment</td>
<td>Observation and interviews, and the collection of actual work &quot;artifacts&quot;</td>
<td>Evaluator 2+ users</td>
<td>Effectiveness, Satisfaction</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Observation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focus Group</td>
<td>Achieve consensus about design issues</td>
<td>Participants who are brought together to have a moderated discussion about the environment or learning activity</td>
<td>Evaluator 6-9 users</td>
<td>Effectiveness, Satisfaction</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Interview</td>
<td>Probe or follow-up responses from other tests</td>
<td>Structured or unstructured</td>
<td>Evaluator 2+ users</td>
<td>Effectiveness, Satisfaction</td>
<td>Qualitative</td>
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<tr>
<td>Questionnaire</td>
<td>Identify issues, Analyze experience</td>
<td>A series of questions requiring either quantified or open-ended responses, or both</td>
<td>Evaluator 20+ users</td>
<td>Effectiveness, Satisfaction</td>
<td>Quantitative</td>
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Focus Group Protocol

You have all spent a few hours helping us evaluate the interface of a new course. We appreciate your commitment of time because it is very important to design an interface that helps students use the course materials in the most efficient and effective ways.

You provided very useful feedback to the evaluators while you were working in your pairs. We will summarize the information you gave us and make it available for you to look at. We will also summarize what you tell us today. All together, this information is going to help us make substantial changes to the Web site so that we end up with a good course.

Today, we want to get a sense of your experience of using the course Web site.

1. The interface design was based on a common metaphor. Can you describe the metaphor?
2. Is the metaphor appropriate for the task?
3. Did the metaphor help you find what you needed in the Web site?
4. How did you feel about the experience of using this interface? For example, did you feel that the interface supported your task? How did it support the task?
5. How can we improve the navigation experience for this Web site?

Sample Interview Protocol: Potential Faculty Interview/Focus Group Questions

Current Use of WebCT Tools

1. What WebCT tools are you using?
   a) Content Delivery Tools
      i) Course content path
      ii) Presentation Tool
      iii) Assignment Drop Box
      iv) Glossary
      v) References
   b) Communication Tools
      i) Bulletin Board
      ii) Calendar
      iii) Chat
      iv) E-mail
c) Student Management and Tracking
   i) Student Grades
   ii) My Grades
   iii) Student Tracking
   iv) Page Tracking

d) Online Quizzes and Surveys
   i) Quizzes for grades
   ii) Quizzes for self-assessment
   iii) Surveys

Reasons for Using WebCT

2. Why did you decide to use WebCT for this course?
3. Is size a factor in deciding to use WebCT? If yes, please explain.
4. Is the time of day in which the classroom component is scheduled a factor in deciding to use WebCT?
5. Is the course level a factor in deciding to use WebCT? If yes, please explain.

Use and Changes in the Use of Web-tools over Time and Reasons for Changes

6. Is this the first course you’ve taught using WebCT? If no, how has your WebCT use across courses changed over time? Please describe and explain reasons for the changes.
7. Can you talk about the instructional strategies and uses of WebCT that you felt worked and what didn’t work and why.

Changes in Student Experience as Learners

8. Do you feel that there are any changes the students need to make to be successful learners in this mixed-mode learning environment?
9. Have you taught this course before without the use of technology? If so, do you feel there is a difference in student performance?
10. How do you feel your use of WebCT has made an impact on student’s learning?
Integration of WebCT and Classroom Instruction/Move to Flexible Learning Environment

11. How has the availability of WebCT affected the way you use your in-class time?

12. Do you feel you have more contact time with students than before? Do you feel that you do most of your teaching in class? Has the role of lectures changed? Has in class attendance decreased due to your use of WebCT? If so, was that your intention? Do you see that as a benefit or a drawback to using WebCT?

Usability Checklist

Krug’s #1 Rule of Usability, “don’t make me think,” elaborated in his book of the same name, cautions designers against making the learner think unnecessarily. Krug says, “…every time she has to ask herself, ‘where is that?’ or ‘how do I get there?’ or ‘what is this supposed to be?’ is adding to the (learner’s) cognitive workload, distracting attention from the task at hand.”

This checklist, a synthesis of the usability guidelines reported in this book, is designed to help you resist creating that extra cognitive load.

The Content

☐ Content is up to 80% of page design

Make print option available for:

☐ Documents longer than 2-3 screens
☐ Academic or technical papers
☐ Text-dense documents
☐ A module with many smaller modules or chunks
☐ On printable document, don’t fix page width

Information Architecture

To make important concepts more prominent:

☐ Use headings
☐ Use color
Use emphasis
Use style
Use whitespace
Place near top of page
Use images more frequently on secondary pages than primary pages

Ways to organize information (Wurman):
- Category
- Spatial
- Alphabetical
- Time
- Continuum

Other ways to organize information (Rosenfeld & Morville):
- Topical
- Task-oriented
- Audience-specific
- Metaphor-driven
- Hybrid

Key headings are either:
- Bolded
- In a distinctive colour
- Set off by more white space
- Nearer the top of the page
- Or a combination of all

Other headings:
- Use 2-3 levels of nested headings

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Meaningful, not cute
Make first word important

Related concepts
- Related visually as well
- Use similar visual style
- Group under a menu or heading
- Place in same screen area
- Use outlines

**e-Texts (Media)**

Accessibility
- Subtitle video
- Mix media formats
- Present same information in multiple formats
- Provide optional transcripts for e-Texts
- Accommodate different levels of technology
- Use high production values for e-Texts

International users
- Use generic objects that are not culture-specific (e.g. don't use American flag)
- Include cross-cultural summary
- Disguise or diminish national differences
- Hide audience-specific details
- Use an icon or simplified drawing instead of a photograph
- Obscure or omit textual labels
- Pick universal symbols, avoiding:
  - Gestures
  - Mythological beings
Puns
Religious symbols
Totems

Music
- Use universal forms such as instrumental versions of jazz
- Be careful that melodies have same meanings in different cultures
- Avoid music with strong regional or national associations (e.g., reggae)

Video
- Use sparingly only where it is important to convey emotion, depict fact or history, and show natural movement.

Other recommendations:
- Avoid using images or parts of peoples’ bodies
- Dress people modestly
- Minimize indication of social or economic class
- Keep relationships among people simple, polite, slightly formal
- Keep hands as generic as possible
- Use cartoon characters when possible and appropriate.

Links are:
- Obvious
- Contextualized (e.g., click here for....)
- Consistent
- Conventional
- Not embedded in text
Readability

☐ Grade 5-8 for general audience (or international)
☐ Grade 8-10 for professional/post-secondary audience
☐ Emphasis for important words
☐ Bulleted lists

Fonts

☐ Sans serif for online reading
☐ Serif for printed documents
☐ Don’t mix font styles
☐ No smaller than 12 point
☐ Use title or sentence case, not all uppercase
☐ Text stays still (e.g. doesn’t flash)

Content Structure

☐ Inverted pyramid
☐ Use topic sentence (for scanners)
☐ One idea per paragraph
☐ Place detailed or elaborated information on secondary page
☐ Chunk text
☐ Link chunks
☐ Use sidebars and pull-quotes
☐ Reduce number of words (50%)

Language

Readability and International Issues

☐ Concise, objective language
☐ Simple sentence structure
☐ Active voice
☐ Limit use of metaphors
Limit pronouns
Eliminate jargon
Avoid local expressions and idioms (e.g. sportuguese)
Use internationally known references
Don’t use relative expressions (e.g. domestic or international travel)

Make numbers easy:
Spell out currency formats
Decimal points differ
State dates clearly with words and numbers
Make time zone known
Include international units of measure
International telephone number formats

Other recommendations:
Spell out abbreviations and acronyms
Use high-quality, proper spellings
Avoid long, intensive modifier strings – use just one modifier before the word it modifies
Use ‘alerting words’ such as ‘first, second third’ or ‘note, remember, caution’
Spell-check, then proofread

The Online Environment
Accessibility
Use HTML heading tags (H1, etc.) to facilitate scanning
Use meaningful page titles (for search engines)
Each page has its own title
Eliminate articles (e.g. ‘the’) in page titles
Avoid images, like site maps, that need precise mousing
List download times and file sizes beside e-Texts
Note length of play for audio and video

Color
High contrast between text and background to speed reading process
Remember some users are colorblind
Plain color backgrounds or subtle patterns

Navigation
Use navigational conventions
  Directional arrows
  Back button
  Home icon
  Site id
  Labels
  Search box
Hyperlinks are blue and underlined
Use standard icons
Provide a search tool in obvious location
Use “breadcrumbs”
Navigation pages don’t scroll
Minimize instructions
Menus on left side or at top
Navigation bar: at top or bottom but not side of screen
Make hyperlinks obvious
Don’t use links within the same page
Don’t include every piece of content or link on site map, only general overview
User may not recognize graphical cues
Every page on the site should link to the front page or home page
Visual Design

- Create a clear visual hierarchy
- Break pages up into clearly defined areas
- Left justify text
- Headings should be just one double-space from the first line of regular text that follows

Information Retrieval

- Use Table of Contents for sites with hierarchical organization and larger sites.
- Important content goes above the fold
- Depth of site is 3-5 mouse clicks

The Facility

- Headphones available for audio texts
- Stations are accessible
- Full view of display screens from each station
- Sufficient access hours
- If authentication required, information provided
- Technical support is available


The Case of Accounting Re-design

The Faculty of Management offers a senior-level undergraduate course in the Accounting and Finance major in the Bachelor of Management degree. The course has always been offered once a year in regular term, in a face-to-face setting. The primary mode of delivery is lecture, with one small-group project, a mid-term exam (multiple-choice and open-ended questions), and a final paper. Class size is 15-20.

The learner population is historically in the fourth year of the degree, with an average age of 21, over 75% white males from urban settings. By the third year of the program, the target audience has become more homogenous, high achieving, and highly
competitive. They typically have excellent mathematical skills. End of course evaluations rate the lectures high but the group work fairly low on a scale of effectiveness and satisfaction.

A private firm, Financial Planning Educators, Inc. (FPE), has approached the program chair. The firm works closely with the public sector, providing paper-based courses to government employees and other personnel who wish to upgrade their credentials and progress through the ranks. The government has indicated an interest in providing upgrading opportunities for departmental bookkeepers, administrative assistants, and risk managers.

The Faculty and FPE agree to collaborate in re-designing the FP course to be offered in an e-Learning format. The new delivery format will be an option for full-time accounting students, but will be the only opportunity for government employees to participate, as they are scattered across the country. The client has agreed to establish small learning labs, one or two networked stations, in each department that has more than four employees enrolled in the course. The department has also promised to be the test site for the first version of the course, i.e. the pilot. However, the employees will not be allowed work time to participate; they will be required to study during regularly scheduled leisure and meal breaks. If they successfully complete the course, they may also apply to the institution to have the course credited towards a future or in-progress diploma from the Faculty's Continuing Professional Education division.

The professor who usually teaches the course and another more junior faculty member are given release time to develop the course. The chair has also retained the services of a well-regarded instructor who runs his own accounting company during the day and teaches at night in the MBA program. The Deputy Minister has identified a departmental manager to work half-time with the course development team and the FPE agrees to provide, under a non-disclosure agreement, all of their current course materials and to review the design at various stages.

The team does a needs assessment and discovers that the majority (80%) of the new clients or learners are female, with an average age of 38. They report being comfortable with computer technology for work, but report only moderate experience and comfort with using the Internet. Most work full-time and have families. About 30% have taken a previous course in the diploma or have begun working on the FP certificate from FPE. Of 200 survey respondents, only ten have had an online learning experience.

The course team designs the course to be a blended delivery over six months. It will be case-based. There will be an intensive weekend seminar mid-way through the course that all participants will be expected to attend in person. During the seminar the small group project teams will be formed and the case presented. The team will have the opportunity to work together for one day to strategize their work plan. The seminar leader assigns roles.

The mid-term examination is eliminated. Instead, each learner will prepare an individual case assignment. The grading system changes to reflect the importance of the collaborative group project, i.e. the case is valued at 50% of the final grade.
The course materials remain heavily text-based. The team decides to make them all available as document sets within the Web course. The documents include the class notes, ten academic papers, and sample cases. No print versions are offered.

However, because the team agrees that interviewing skills are essential, two video clips showing two different interviews (one showing inappropriate interactions) are included on the site. A number of still images of charts, graphs, tables, etc. extend accounting concepts. A class discussion board is available and the groups are expected to communicate using this tool. Their group discussions are worth 15% of the total grade.

The team has eight months to develop the new course design. The pilot course will run over the winter session in the next academic year. Based on evaluation results, the faculty will decide whether to include this course format in the regular course calendar and whether to continue the relationship with FPE to develop other courses.

**Sample Usability Plan**

The usability testing strategy for this course is described by intended instructional outcomes, usability test goals, representative user profile, recommended methods and timelines, and proposed evaluation team descriptions.

**Outcomes and Related Goals**

The course is redesigned to:

- *Increase flexibility* for full-time students in the program
- *Provide access* to other learning communities
- *Address needs* of older women learners who work full-time
- *Use a problem-based strategy*

**UserProfile**

There are two intended audiences:

1. Fourth-year students: majority male, high achieving, with logical-mathematical skills
2. Career female government employees: lower academic attainment levels, workplace environment, little study time, family and social responsibilities, low to moderate computer skills (related to learning online)

Participants should include 4+ target users from each group.
Recommended Strategy

There are a number of key goals to evaluate:

1. Can users transform learning expectations from a didactic, lecture-based approach (and related assessment strategies) to a collaborative, problem-based approach (and related assessment strategies)
2. The learning needs of group #2 – for example, will content need to be structured differently?
3. How to accommodate both learners in the workplace and learners in a traditional academic setting. For example;
   a. Short work sessions (15-30 minutes)
   b. Security issues (e.g. firewalls)
   c. Computer literacy
   d. Readability levels
   e. Access issues (e.g. bandwidth for video)
   f. Accreditation issues
   g. Individual vs. collaborative learning environment
   h. Blended delivery approach – proportions, pacing
   i. Gender, age issues
   j. Culture of workplace vs. culture of institutional setting
   k. Learner support

The usability strategy will need to proceed in several stages and will involve at least three user groups: government employees, management students, and a combination of both.

There are five key areas to evaluate:

1. Pedagogical approach
2. Delivery format
3. Learner support
4. Assessment strategy
5. Design of online environment

Timelines

Explorative Phases

Phase I: inquiry-based (6 weeks):

• Needs assessment of target users
• Baseline for group 1 (management students) – course evaluations, etc.
• Learning environment assessment (on campus, at work, at home)
• Field observations, user survey and facilities questionnaire

Phase II: testing (4-6 weeks)
• Prototype of interface
• Prototype of short case (paper and slides)
• Sample assessment strategy
• Co-coaching and think-aloud protocols
• Focus group
• If time permits, pluralistic walkthrough
• Location: in campus lab, at government department and in the homes of three employees (minimal access to moderate)
• Sample different times of day

Evaluation Phase III: (4 months)
• Pilot of first term of redesigned course
• One-to-one interviewing, cognitive walkthroughs, questionnaires, focus groups

Evaluation Team Roles and Responsibilities
• Manager, participant observer from each target user group, three evaluators, graduate student in accounting area

Data Elements: Some Guiding Questions…
- Is text the best information element?
- What is the purpose of the video?
- What must the reader have in order to use this site (plug-ins)?
- If you choose to use video, what must you consider?
- What information elements are used to carry the main message?
- If the user can’t see the video, is the meaning of the content affected?
How are graphical images used?
When graphics are used, how do they relate to the text?
Could the writer have conveyed the message as effectively using other data elements?
Why did the writer choose the visual design?
What purpose does it serve?
Why is audio included?
Would audio alone have been effective?
Can you think of any cautions/challenges when using audio?
Is animation used well?
Does animation enhance interactivity?
Is animation necessary for learning?
What is your reaction when animation is over-used?

To Do List

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E-LEARNING TRENDS – THE MOBILE ENVIRONMENT

Concept Guide

The Mobile Computing Scene

• Has your institution explored m-Learning?

• Does your organization have a technology plan that includes emerging technologies?

m-Learning Environments

• Think of an effective way to incorporate m-Learning in your context.
Advantages of m-Learning

- Describe two advantages of m-Learning for your discipline.

Challenges of m-Learning

- How does the screen size of a handheld device affect readability?

- Text entry is a challenge for mobile learners. Name another challenge in developing m-Content.

- Commercial m-Content is available through publishers and other developers. Are you aware of any providers for your discipline?

- Libraries are exploring policy and implementation issues related to e-Books. What is the biggest challenge for library specialists and how can it be resolved?

M-Learning in HE

- Several pilot projects are described. Many of these projects involve professional faculties and/or training organizations. What outcomes have been achieved?

The m-Reader

- Do m-Readers have different or unique accessibility needs or support needs from e-Learners?

Questions and Goals

Use this form to record your questions about m-Learning.

As you read, return to this form to record new ideas, resources, and additional questions.
### Personal Goals

1. 

2. 

3. 

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### Key Terms

- m-Learning
- m-Learning environments
- Mobile computing devices
- Personal Digital Assistant
- Just-in-time learner
- E-book
- Virtual reality displays
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A Story of Practice
John Boeglin and
Psyce 104 – Procédés
Psychologiques de Base

This is the account of one instructor’s journey from teaching in a face-to-face lecture mode to a distributed, Web-based, blended model. This story is told through excerpts from:

- An original project proposal for the Partnership
- A recent conversation with John
- Published papers
- The course Web site
- Charts and graphs from the evaluation of the pilot

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• Development tools (e.g. the critical path)...
...and is interspersed with my analysis.

John Boeglin, Associate Professor in Faculté Saint-Jean (FSJ), teaches undergraduate and graduate Psychology courses and graduate level research courses. FSJ is a faculty in which French is the language of instruction. As the only French-speaking institution in Western Canada, FSJ serves native French speakers and those who wish to learn in a bilingual environment. Many of these learners live in rural and remote areas and/or hundreds of miles from the campus. Concern for increasing learning opportunities for these communities was at the core of John’s intention to re-purpose his large enrollment introductory Psychology course for both an on-campus and a distance population.

The story “plot” unfolds in the same sequence as the chapters in the text. Over a year he:

• Considered the challenges of re-purposing a face-to-face course, for which he has carefully accumulated mostly print resources.
• Analyzed environmental, social, and instructional contexts in which the new course will be taught.
• Explored the planning process and identified the resources he will need to be successful.
• Re-examined his course and his intended outcomes.
• Learned about the Web as a delivery platform, integrating synchronous technologies, and learning content management systems and related tools.
• Designed an environment that aligned his outcomes with the needs of his learners.
• Adapted his existing content, creates new content, and found additional online resources, or objects.
• Learned about strategies for effective online interactions.
• Evaluated the pilot course and revised it for the second term.

As you read this chapter, think about your own progress. Does John’s approach seem logical? Can you relate to his experiences? Can you take away a new idea or avoid a problem?
Challenges and Trends at the University of Alberta

The Institutional Context

The University of Alberta is a large, urban, research-intensive, publicly funded institution. The university has 16 faculties, including a Law school, a Medical school and teaching hospital, a Business school, and very large Science, Arts, and Education Faculties.

Established in 1908, the university has always been primarily residential. The approximately 30,000 full-time students have come onto campus for classes that are scheduled Monday through Friday, from 8 a.m. to 5 p.m. Classes scheduled after those times are considered evening classes. During intercession (May through August) courses from every Faculty are available, including intensive summer institutes and academic travel experiences, for example, a mortuary archeology dig at Lake Baikal in Siberia (Department of Archeology).

The University of Athabasca (AU), in the province of Alberta, is a virtual university whose entire curriculum is delivered at a distance through a blend of print packages, the Web, media that are mailed out or educational programs carried on a learning channel on local television, and audio and videoconferencing. Accordingly, the University of Alberta is distinguished by senior administration as “primarily a face-to-face institution.” Very few undergraduate programs are offered entirely online or in alternative or flexible formats. Students registered full-time at the University of Alberta who need or prefer a more flexible approach to their programs may complete courses at Athabasca University for transfer credit at the University of Alberta. In recent years, AU’s student population has included increasing numbers of University of Alberta students who are seeking more options in the way they learn.

With no intention of competing with AU, the university has adopted WebCT™, a learning content management system, and has funded several academic and technical service support units to encourage its approximately 2000 faculty/instructors to develop Web-enhancements for their face-to-face undergraduate courses. Interest and activity vary among Faculties, with most Faculties adopting blended learning models to support their full-time, on-campus undergraduates. Several Faculties have developed entirely online environments for graduate or continuing professional programs.

The Faculty Context

Faculté Saint-Jean is the university’s only Faculty in which French is the language of instruction. Courses range from undergraduate first-year Chemistry or History courses through Masters level courses in Education and French Literature. Although FSJ teaches largely in a face-to-face mode, it is one of the Faculties who has made a commitment to the distance delivery of selected courses into other western provinces and the Territories in Canada.
Since many of its learners are off-campus, FSJ has delivered many of its courses in alternative formats since 1984. For the most part, course content was contained in print packages mailed to the learner’s home and learning was supported through regular audio teleconferences. In the late 1980’s FSJ began exploring videoconferencing solutions. In 1997, they obtained funding for an in-house (PictureTelä) videoconferencing facility and, subsequently, an additional Smart Classroom. At that time, several faculty members became interested in exploring the Internet as an instructional platform. Between 1984 and 1993, the Faculté offered over 40 courses in an alternative format to learners in Western Canada.

John remembers the rationale for re-purposing Psyce 104 for an e-Learning delivery.

In the fall of 1998, PSYCE 104 was scheduled for simultaneous delivery to on- and off-campus students by way of interactive videoconferencing. This particular initiative arose out of Faculté Saint-Jean’s commitment to develop and implement alternative delivery technologies for its regular and distance education programs. Since this delivery format represented a significant departure from the face-to-face format of previous years, particularly in terms of physical, social, and technical constraints, the entire course content had to be redeveloped. This development process involved, among things, repackaging the lecture content into smaller segments, incorporating more opportunities for interactivity into the lectures, and paying more attention to the preparation of visual materials to be used during the lectures. It was during the early stages of this redevelopment process that we decided to further enhance the course by way of online teaching and learning support.

Boeglin & Campbell, 2002

The Learning Context

access to technology and opportunities to learn

Alberta North is a coalition of small rural colleges and other training agencies. In the early 1990s, the coalition established a provincial network of community learning centers - in high schools, libraries, and town halls - that could support online learning through access to the Internet and in some cases through a videoconferencing classroom. Rural, northern, and out-of-province communities with a French-speaking population, some without Internet Service Providers, were able to participate in virtual classrooms that were supported technically at a low level.

changing learner

In 1997, the Dean asked John to teach a mixed mode course for the fall of 1998. The model would combine a face-to-face class with several learners in different distance communities joining at the class time. By combining
the classes only one faculty member was needed to teach. The distance students were junior undergraduates, although several were employed older adults, who had families. Several of the students on campus were also older adults with jobs and families. The remainder were “typical” undergraduates. One on-campus student did not have French as his first language; the rest were native French speakers or completely bilingual.

Since the distance learners were employed during the day, the class was scheduled for one evening a week. In this sense, the on-campus learners were expected to conform to the needs of the distance students, rather than vice versa. The on-campus students had extensive technical and learning support, through staffed networked computer labs in the Faculty and on the rest of the campus, and high-speed access to the Internet either through the University or personal ISPs. The distance students had to depend on the Alberta North community sites, which were not always staffed and did not have the same kind of access.

The distance students paid a premium on the regular tuition fees for a three-credit course and expected a comparable level of quality and support. The Faculté, through John, was expected to ensure a trouble-free delivery, technical support from a distance, and the same learning resources and activities, at the same time, as for the on-campus students.

In reality, John assumed more roles or more complexity in his traditional role than before. He was the curriculum planner, content developer, teacher, videoconferencing expert, technical troubleshooter, and facilitator, as well as the tutor and the evaluator, both of student learning and of the course design and delivery. At the same time, he would have to become comfortable with a new delivery platform through WebCT, learning the LCMS, related productivity tools, and new approaches to teaching.

**The Business Case**

In the Introduction, you saw that key stakeholders within the business and education communities have made recommendations for the design of e-Learning environments that include:

- Expert-rich content and curriculum
- Ease of use
- Flexibility and convenience
- Continuous assessment
- Real-time feedback, tracking and metrics
- Multimedia simulations
In the next section, John addresses Five Key Questions about his Psychology course and the expectations of the administration for a combined distance/F2F delivery. As you follow his process of decision-making, keep the elements of the Business Case in your mind. For example, how does he address the issue of quality assurance?

**Making a Decision for e-Learning**

By 1998, John had taught university-level psychology for two decades. He had had early experience with videoconferencing and audioconferencing at another university. He had developed a set of resources (or objects) that included course notes, overhead transparencies, copies of articles and other information, pictures and slides, video, textbooks, and a databank of multiple choice questions. He worked hard every year to refine his teaching approaches and was known by students to be a knowledgeable, interesting, and effective lecturer. His course evaluations bore this out.

But John was at a point in his career where he was seeking new challenges and opportunities to stretch himself as a teacher.

At the time we were looking at reaching out to our Francophone and Francophile students who for geographical and other reasons were unable to come to Faculté to take courses and so were looking at alternative teaching and learning technologies.

Our first videoconferencing course was delivered in January of 1998. So all the prep work that was going on for this course kind of piqued my interest, I volunteered myself... I was interested in exploring this technology for my introductory psychology courses...

Given that we had no expertise at the Faculté, I had heard very good comments about ATL from (a colleague)... and that's how I ended up with ATL for the next 30 years! Everything came together at the right time....and also I was coming to the end of my first term as Associate Dean so it was an excellent opportunity to move off and do something totally different for awhile.
At the same time, he was responding to changes in student expectations and behaviors that were influencing his own planning.

The lectures are well organized and informative (according to student evaluations) but lack pizzazz (my auto-evaluation). Lectures include lots of overheads, videos, and classroom demonstrations to which the students are generally very receptive. Unfortunately, there is a significant amount of factual information that must be presented during class time, which leaves very little, if any time for theoretical reviews, research reviews, group discussions or guest speakers. Although students are encouraged to ask questions or share relevant experiences, there is little active participation during class time. There is a textbook for the course that is not particularly interesting (outdated French adaptation of a widely used American textbook) nor is it visually appealing (Quebec-based editors have very limited production budgets). According to the University Bookstore, fewer than half the students actually buy the textbook.

Partnership proposal, 1997

In 1996, one of his colleagues worked with Academic Technologies for Learning (ATL) to develop an Internet-based French grammar course. He had been satisfied with the support he had received. As Associate Dean Academic, John had dealt first-hand with implementation issues for this course. He wondered whether he could apply those lessons, his desire for a new instructional project and potential research study, and the need of FSJ to support learners at a distance.

ATL had a program in 1997 that would support the redevelopment of John’s course. The Partnership was designed to provide course release, for one term, to faculty members who were committed to developing a resource, course, or program with a significant technology component. With the help of an instructional designer in ATL, interested faculty members developed a proposal that described their course, identified goals for redevelopment and specified deliverables, and anticipated an appropriate timeline. ATL evaluated the project, and assigned a course development team for the length of the project. Each partner was expected to identify personal professional development goals and to collaborate in designing an evaluation model. The partner was designated a personal work area in ATL’s Studio, where he/she was to work intensively with their team over the life of the project (usually about one year). John’s partnership contract is included at the end of the story.

In this excerpt from John’s Partnership proposal (1997), he talks about his personal and professional goals.
John’s partnership proposal was accepted in the fall of 1997 and he was assigned a core course development team consisting of an instructional designer, videoconferencing expert, graphic artist, and Web designer.

**Five Key Questions**

John had personal professional goals for immersing himself in this intensive experience. Both he and his team recognized that the process would require re-evaluating his instructional methods and course planning approach, as well as his carefully accumulated set of learning resources. The resources would need to be re-purposed into learning objects and new objects might have to be developed or located. He would have to learn new technical and design skills.

*Who are the Learners or Readers?*

The answer to this key question should suggest a rationale for a technology-mediated approach

- Do the learners in this course, for some reason, need or require a different or alternative approach to my “regular” course model? If the answer is yes, consider an alternative design or delivery.
- Would an alternative approach be best supported by technology use? If the answer is yes, explore the characteristics of the learning technologies available.

---

Over the past several months, Faculté Saint-Jean has organized several discussions, demonstrations as well as a workshop to promote the use of its videoconferencing facility. While academic staff members have shown a significant amount of interest, there is very limited professional support for initiatives of this nature. In the present case, I am turning to ATL for conceptualization and production support for the videoconferencing portions of these courses as well as for the creation of a course Web site. If this proposal is approved, the knowledge and expertise that I will have acquired during my partnership with ATL will allow me to undertake similar initiatives for the other psychology courses that I teach. It will also enable me to serve as a role model and resource person for other colleagues at Faculté Saint-Jean wishing to undertake smaller projects.

**Partnership proposal, 1997**
We began this project by discussing the nature of the typical undergraduate in FSJ, compared to the new community of learners at a distance.

There has been some interest expressed for access to introductory, university-level courses from individuals in non-urban centers who are unable to come on campus on a regular basis...by offering one or two different courses each semester, over a period of two to five years, interested individuals will be given the opportunity of completing the first year of our BA program by way of innovative synchronous and asynchronous teaching and learning methodologies.

Partnership proposal, 1997

Many faculty assume that a class of undergraduate students in a first-year introductory course is homogeneous. For example, students are described as:

- Young, under or close to 20 years of age
- Full-time, on campus during the day
- Having part-time jobs, if they work at all
- Single
- Fluent in the language of instruction (in this case, French)
- Computer literate
- Open to innovation
- Probably local

However, as we saw in Chapters 1-3, the demographics on our campuses are changing. John’s F2F class actually did contain students with this profile, but it also contained:

- A single mother
- A student not fully bilingual
- A student who worked full-time

access issues And, although there were degrees of computer literacy, in 1998 few students had access to an Internet connection or computer at home and were initially resistant to the Web component of the course, especially the online discussions.

The distance students were more of a mystery. The communities from which FSJ learners had come in the past and that had an Alberta North center were previously surveyed for
their interest in the course. However, they were not asked for their age, access situation, or family situation.

Because we didn’t know who the students were in advance, we decided to design the course to meet the needs of the “minimally connected” learners, with:

- Limited access to a computer
- A low-speed modem
- No color

In other words, we designed for the distance learners rather than the on-campus learners.

We also suspected that the distance learners might be older and work during the day. In that case, those learners might also be nervous about the technology – the actual computer use as well as the learning approach.

Did the characteristics of the identified learners suggest a technology-mediated design?

John talks about aligning his instructional goals with course design.

Providing pre-session access to lecture outlines highlighting the key concepts to be covered helped students organize the material for learning. The outlines also supported a guided, note-taking strategy during the face-to-face lectures.

The videoconferencing was limited to a single three-hour session each week, so we wanted to provide students with unlimited access to all course materials, plus have ample opportunities to interact with me and the other students in the course. Hyperlinks were there to actively pursue knowledge construction outside of the regularly scheduled weekly meetings. For example, we hoped that participation in an online threaded discussion would require students to prepare evidence and personal narratives related to the discussion topic.

Boeglin & Campbell, 2002

What Learning Goals or Information Outcomes do you want to achieve?

The answer to this key question should suggest a rationale for a technology-mediated approach:

- Are the learning outcomes primarily cognitive and/or affective? Psychomotor outcomes are more difficult to achieve on the Web.

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• Are the learning outcomes best supported by or are enhanced by using e-Learning strategies? For example, if flexible access is a desired outcome, an e-Learning environment might be appropriate.

Psyce 104 is an introductory psychology undergraduate course. Psyce 104 and 105 (Term II) are required for the Bachelor of Arts. The learning outcomes for the existing Psyce 104 were primarily cognitive in nature.

The original course design involved cognitive activities, including reading and discussion in class, that ranged from knowledge and comprehension through higher-order skills. Research and academic writing skills were introduced. Student learning was assessed through a mid-term and final multiple-choice exam and a mid-term academic paper on a relevant issue in Psychology. Through these activities individuals for whom French was a second language were also supported in improving their fluency.

John’s inventory of teaching resources, while extensive, was difficult to keep current. Appropriate resources in French were not easily available in Canada and were expensive to import from Europe. He wanted to add resources, some from alternative sources that could be manipulated directly by students.

However, John was frustrated that his classroom interactions were dominated by the presentation of information. He was looking for ways to increase both the frequency and cognitive level of discussion in the class. He was interested in ways to encourage learners to prepare in advance for the lecture themes and to participate actively, rather than furiously taking copious notes.

John also wanted to encourage peer-to-peer interaction in this course. Since the class was often large (up to 120 students) and students came expecting a lecture there was little opportunity for discussion. The

Up until that time, PSYCE 104 had been delivered using a lecture-based teaching strategy. According to student evaluations extending over a period of several years, the lectures were usually well-organized and informative, though not particularly exciting. The lectures were enhanced with overheads, videos, and in-class demonstrations to which the students were generally receptive. Unfortunately, given the significant amount of content to be covered during class time, there was very little time left for group discussions or other forms of social interaction that could have created a more active, or participatory, learning environment. Moreover, students were reluctant to ask questions or to share their relevant experiences during class time, even when encouraged to.

Boeglin & Campbell, 2002
structure of the class and the amount of material to be covered did not encourage collaborative, project-based activities. John wanted to increase social interaction, increase learner expertise, and develop a community of learners.

Aspects of e-Learning environments that aligned with John’s instructional goals included:

- Alternative content presentation
- Increased interaction through discussion forums
- Access to new and alternative resources
- Ability to design cognitive tools
- Media
- Active learning activities such as group projects

Could an e-Learning Environment Support Intended Learning Outcomes?

How will you know when this happens?

The answer to this key question should suggest approaches to learning assessment that are authentic and that are appropriately or better accomplished using features of an e-Learning environment. For example, the cognitive level of discussion can be assessed because the online discussion results in transcripts of the interactions.

Learner assessment had been accomplished mainly through timed multiple-choice examinations and a mid-term academic paper. John felt he could enhance the learning that occurs through self-assessment by providing online quizzes that contained meaningful feedback, a component of the learning management system in WebCT™. He could evaluate online discussions by applying a critical thinking rubric and setting academic criteria for responses that aligned with the goals of academic research and writing (e.g., providing evidence for responses). As a result, he was able to replace the mid-term paper with extended online discussions to meet similar learning outcomes.

What other components of an e-Learning environment provide alternative and improved assessment capabilities? John saw the online quizzes as an effective cognitive learning tool.

Self-assessment can take the form of online quizzes and things like that. Seems to me that that provides opportunity for them….in much the same way that you can learn from reading you can learn from online practice quizzes with feedback…. 
Is the Web the Best Learning/Information Environment for this Course?

This key question should be asked last, rather than first. Identifying a delivery environment in advance of developing an understanding of your learners, evaluation of your learning outcomes and resources and activities to meet these goals, and the nature of learning assessment tends to constrain your planning process and your instructional creativity. Our best advice is to seek the delivery technology to support your instructional goals.

John’s instructional context, need to support diverse learner needs, and professional goals related to personal growth in methods of effective teaching, indicated a partial e-Learning solution. At this point it was possible to explore the delivery technologies that were available and appropriate and to develop a design blueprint for the learning environment.

John remembers asking himself why he wanted to develop a Web-based environment.

Is it because you want to cater to hundreds... of students at the same time? Is it because of off-campus as opposed to face to face? Is it because you have a special interest in technology? Is it because you are deeply convicted that this technology is deeply motivating and engaging for your students?

Another reason for having introduced the Web-based component of this course, which was initially supposed to be a strict videoconferencing course. I wanted the Web-based component to enhance interaction outside of the normally scheduled classes once a week.

Finally, will e-Learning add Value to the Teaching or Learning Experience?

This key questions really has three parts.

1. Will a cost-benefit analysis evaluating the value to the institution of developing an e-Learning environment reveal that the investment of the extensive personal and institutional resources required - including time, personnel, and delivery support- are justifiable? For example, will new communities of learners, that were previously excluded, be supported?

2. Considering your academic career, personal teaching style and strengths, willingness to take risks and possibly make personal and professional sacrifices and time available for a steep learning curve, will designing an e-Learning environment be a good personal investment? For example, will you learn valuable new instructional skills that translate to your F2F teaching?

3. Will your learners have learning opportunities that were not previously available or will they learn more efficiently or effectively? For
example, will they be involved with new peers with new perspectives to share?

John made a decision to proceed with a course redesign, given all the implications described above. What have you decided?

The Planning Process

In this section, John’s design decisions are discussed in the context of five decision points in the planning process:

1. Outcomes
2. Audience
3. Activities
4. Assessment
5. Resources

Earlier you saw a checklist of seven advantages of Web-based learning. As you follow John’s planning process, compare his decisions with this list. Is this checklist helpful in guiding your design decisions?

Seven Advantages

- Active learning
- Real-world context
- Depth of coverage
- Critical and creative thinking
- Time for reflections
- Collaborative learning
- Developing information literacy skills

John’s course architecture reflected several of these elements:
Outcomes

John’s goals included:

- Increasing classroom participation
- Encouraging students to prepare the basic content so that he could elaborate on core topics in class
- Improving cognitive results
- Increasing and improving student/instructor interaction outside of the class
- Supporting peer discussions
- Developing effective research skills
- Improving academic writing
- Including more recent and interactive learning materials
- Distributing resources quickly
- Supporting learners who had been excluded
He explored Web-based environments with these goals in mind. *Would just one or even two of these goals have rationalized his decision to develop an e-Learning environment?* 

John recalls his primary goal or motivation as improving accessibility.

> Within my context, it (the project) was to enable Francophone/Francophile students to take University undergraduate courses for credit that they wouldn’t ordinarily have access to. So that would be the primary reason...

> It’s an accessibility issue. I was responding to accessibility for my students.

John felt that he could enhance his course significantly by supporting meetings with a course Web site. For example, he made his course syllabus available from the homepage of the course. Although he prepared a print copy of the syllabus, the online version could be updated quickly and be immediately accessible. The university’s policies on plagiarism and behavioral guidelines were also available from the homepage so were expected to be followed without exception.

Static resources that would otherwise be mailed out to distance students were kept current and there was no delay in receiving updates.

**cognitive outcomes**

Cognitive outcomes were supported by embedded questions, cognitive tools such as notes outlines, course notes that highlighted key points, and quizzes for self-assessment. Figure S.2 shows the structure of each topic, which corresponded to a synchronous lecture.

**Figure S.2. Topic Structure**

<table>
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<th>Table of Contents</th>
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<tr>
<td>- 1. Introduction</td>
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<tr>
<td>- 2. Méthodes de recherche</td>
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<tr>
<td>- 2.1. Diapositives</td>
</tr>
<tr>
<td>- 2.2. Étapes de la recherche, Collecte des données, Éthique dans la recherche</td>
</tr>
<tr>
<td>- 2.3. Analyse des données</td>
</tr>
<tr>
<td>- 3. Bases biologiques du comportement</td>
</tr>
<tr>
<td>- 3.1. Diapositives</td>
</tr>
<tr>
<td>- 3.2. Organisation du système nerveux, Neurones, Circuits neuronaux</td>
</tr>
<tr>
<td>- 3.3. Transmission de l’influx nerveux, Neurotransmetteurs</td>
</tr>
<tr>
<td>- 3.4. Système endocrinien</td>
</tr>
<tr>
<td>- 4. Bases biologiques du comportement (suite)</td>
</tr>
<tr>
<td>- 4.1. Diapositives</td>
</tr>
<tr>
<td>- 4.2. Structure du cerveau</td>
</tr>
<tr>
<td>- 4.3. Organisation fonctionnelle du cortex cérébral</td>
</tr>
<tr>
<td>- 4.4. Spécialisation hémisphérique</td>
</tr>
<tr>
<td>- 5. Sensation</td>
</tr>
<tr>
<td>- 5.1. Diapositives</td>
</tr>
</tbody>
</table>
Each topic begins with the slides from a PowerPoint presentation that John will use in the face-to-face lecture (e.g. 2.1, 3.1, and 4.1). The students print and bring to class:

- The slides
- A page of key terms and objectives (notes outline)
- Several text screens of notes that highlight the key points of the content for that topic (e.g. 3.2-3.4).

These materials “free” them to participate actively during the F2F sessions. This content was updated and opened directly after the previous lecture so that learners had a week to prepare for the lecture. In the F2F class, John accessed the course Web site to show the learners where to find the content and highlighted the key questions that would be the themes for the next week’s lecture. Figure S.3 is an example of a course page in which key words are highlighted as organizers and the main points are provided in outline format with space for note-taking.

Social and peer interactions were encouraged through the weekly online discussions. These were launched with a provocative question. Discussion groups were formed and, while participating, learners had improved access to John and their group members. John noted that students who would not have known their classmates until well into
the course, if then, were interested in quickly identifying their online partners. Figure S.4 shows the format and developing threads of the class discussion area.

Figure S.4. Threaded Discussions

John was concerned that during the F2F meeting, when the distance learners participated through videoconferencing, that they had opportunities to interact with their on-campus peers. He inserted cues in his lecture outlines to remind himself to include them.

Audience

The class in the fall of 1998 consisted of six students on-campus and three students at a distance, two of which later withdrew. To accommodate the distance learners, the class met for three hours once a week in the evening. FSJ students had the option of taking an alternative section of the course that was scheduled during regular meeting times and that did not involve videoconferencing.

Once the distance students were registered, we contacted them in their communities to survey their technological needs. Not surprisingly, computer access was problematic and limited to the hours that the Alberta North centers were available.

Videoconferencing was a new experience for everyone. Several practice sessions, from the near to the far site were indicated, and scheduled for the month before the course started.
John knew that if he were new to e-Learning, his students would be as well. This assumption held, even if they were familiar with the Internet. We developed a learning handbook that guided them through the course Web site and included examples and strategies for active participation.

The guide did not include a section on videoconferencing, because John would control those interactions on the near site from his instructor station. We assumed that the far sites would have technical support through a scheduled conference. As it turned out, the distance learners were not well supported and often had difficulty interacting during the class sessions, especially during the first class.

Given his FSJ goals, John did not have much leeway in deciding to use videoconferencing technology. At the time, the Faculty and John felt that a synchronous meeting had both cognitive and affective advantages.

John responds to the question…

**What value would an online component have for this combined class?**

…by highlighting the importance for him of affective cues to student understanding, even though he had to balance that with his concern for flexibility and accessibility.

---

**Why synchronous?**

(Online chats) were to reinforce communication outside of regularly scheduled class time (there were online synchronous chats)... but that didn’t work out because it was a bit difficult...

...To recreate a classroom environment outside of the physical constraints of the on-campus classroom, which to my mind is another step to further enrich the learning experience for students...(is) a community-building thing, providing students who are off-campus with a learning environment in which they can learn not only from the instructor but from the other participants, immediately.

...The ability to be able to present and assess content, to provide an opportunity for students to ask questions, or to prevent irrelevant materials... to present information that might facilitate their understanding of the material but also to provide examples for other students who weren't participating in the discussions. Physical presence was important, and because you have the image, the affective presence...you can kind of clue in on facial expressions, cues, the same way that you would in a lecture. You can get a sense through facial expression about how students are interacting with the course content... adjusting... so when they have that question mark look on their faces you know to step and back up a bit.

...So, immediate interactivity and feedback...today's students want feedback and they don't want it in a week's time...

Of course, that's almost putting us in a position of almost having to deal with our courses 24/7, but I think it's interesting when you look at the logs...when do the students come into the course and when do they participate in the discussions...? Most of the time, prime time for them begins after 9 p.m.
A synchronous delivery, while inviting immediate interaction, is less flexible than an asynchronous model. On the other hand, an asynchronous format requires extensive advance development. John chose a blended model for the reasons he describes above, but he had to plan his face-to-face lectures carefully in order to maximize his expensive “on-air time.” He had to rehearse every week to effectively use other synchronous and asynchronous tools. Figure S.5 shows the planning chart for one classroom session.

![Figure S.5. Session Planning](image)

### Activities

John’s goals included improving cognitive and affective outcomes. He was also interested in supporting interdependence among peers, while increasing academic independence for all of the learners. Many first year undergraduates, especially those who are younger, must learn to be self-directed and independent.
The curriculum of Psyce 104, like most junior survey courses, covers a wide range of topics in a relatively short time, usually in 13 weeks. Students are introduced to basic concepts in the discipline and begin to think and act like psychologists – the instructor models the cognitive processes inherent in the field. Learning activities, for example, discussion and debate occur within a framework, which provides evidence for one’s statements. Independent research reflects the actions and products of expert psychologists.

- Academic papers are structured in a particular way
- The American Psychological Association (APA) format is adhered to
- The paper length and form approximate research papers submitted for peer-review
- Language and syntax are appropriate for the field

Active learning is supported through frequent and sustained interaction, realistic practice that occurs in an authentic context, collaborative activities that are based in a community of practice, and meaningful feedback. John wanted to design active learning opportunities that connected learners with each other, wherever they were located, in discussion of relevant topics to the field and resolution of typical psychological problems. Further, in contrast to being the one expert source or the being expected to “supply the right answer,” he wanted the learners to assume leadership and responsibility for academic rigor.

The format of this course reflected most typical first-year large-enrollment designs:

- Regularly scheduled large-group didactic lectures
- Assigned readings from textbooks and other academic sources
- A large amount of content covered quickly
- The presentation of visual models and exemplars through media
- Library research leading to a term paper
- Question and answer sessions
- Assessment through multiple-choice examinations and/or evaluation of an academic paper

Returning to Horton’s comparison of learning activities in different modes, did Psyce 104 lend itself well to re-purposing into a blended e-Learning environment? (go to Table 1.1. Learning Activities and Formats in Chapter 1 in the Handbook).
Assessment

Authentic assessment of learning outcomes in a large-enrollment course can be problematic. Very often, multiple-choice examinations are used as the only form of assessment because:

- They are efficient to administer and grade
- Many students prefer them to other, more time-consuming activities such as writing a term paper
- Instructors have developed a large databank of test items over many years and iterations of the course
- They are less subjective
- They can be randomized
- They can be used as self-assessment
- Grading can be automated
- And other reasons

However, developing multiple-choice test items that assess higher-order thinking skills, affective development, and authentic practice of new learning in the discipline are difficult to accomplish.

John had accumulated a databank of validated test items that allowed him flexibility in constructing mid-term and final examinations, but he was somewhat frustrated that students expected him to teach to the exam and then were annoyed when items on the exam were not covered directly during class discussion. John wanted to increase the amount of time for authentic, deep discussion during class time, provide ways for learners to continually self-assess, and increase interaction that supported higher order affective and cognitive skills. He also wanted to teach for mastery, decrease the time between assessment and student access to grades, and provide more immediate feedback to student responses.

| There was a two-fold purpose for using a multiple-choice item. One is the WebCT tool itself, the quiz, was much easier to use with a multiple-choice format than an open-ended format... The other thing was that the exams in these two courses were multiple-choice, anyway, so the format provided students the opportunity to get a feel for the type of questions they would be asked. Sort of a cognitive rehearsal... |

John used the online assessment tool in the LMS to manage his test item databank, randomly create timed quizzes, permit multiple tries, manage grades, and develop meaningful feedback for each distractor on a test item. He designed the online
asynchronous discussions to be more problem-based, encourage all learners to participate, sustain discussion, and provide a better assessment of higher order cognitive and affective skills (go to Evaluation Methods in Chapter 1 in the Handbook).

During the course introduction, he discussed how contributions would be evaluated, for:

- Relevance
- Alignment with previous threads; building upon emerging threads
- Originality of thought and ideas, and examples
- Evidence for ideas
- Level of critical thinking

John developed an assessment rubric that was included on the course site.

Quite early in the design process he dropped the term paper as it was:

more than compensated for by the participation in the online discussions, which were asynchronous and students were coming in, not once, but several times and I thought that that was more than enough.

How did John use a blended model that included synchronous activities to enhance assessment of student learning?

Resources

Through 1999, ATL offered the Partnership, which provided teaching release and academic support for faculty interested in redeveloping their courses for alternative delivery. John became a Partner in 1997 and is now considered a leader in e-Learning both in his Faculty and in the institution. For example, John has published extensively on his experiences, is leading his colleagues at FSJ in the development of an online Masters program, and works nationally with colleagues to develop and evaluate learning objects and tools for French learners in Canada.

cost-benefit analysis There are many ways to evaluate the “worthiness” of course redevelopment based on a number of factors, including

- Number of times a course will be taught
- Number of students involved
- New learning communities served
• Amount of institutional resources required for development, implementation and sustainability
• Scalability
• Flexibility
• Learning effectiveness

and other factors. A commitment to faculty development and support is also a significant element in the decision-making process.

In this section, John analyzes the redevelopment of Psyce 104 from three angles:

1. People
2. Hard costs
3. Timelines

Now one of the first things I found very helpful... was to do this very nice blueprint (a critical path in MSProject) because the project involved a lot of people (about six team members).... I got a good understanding of the kinds of timelines involved and the different tasks that needed to be accomplished.

This timeline has been recreated in Figure S.5.

There are different models for calculating the “real cost” of an e-Learning environment. John tracked the costs for the personnel resources required, through number of development hours, including his time to learn new processes, models, systems, and tools. He also tracked time for rehearsal, trouble-shooting, and pilot testing, as well as time required to perform site maintenance. Figure S.6 shows a gross breakdown of the time and nature of development tasks.
In evaluating the Partnership Program, ATL has estimated one course team hour of support, including overhead:

**Course team**
- Instructional designer: $150
- Project manager: $100
- Media developer: $75
- Web developer: $75
- Evaluator: $150
- **Total**: $550

**Overhead**
- Infrastructure (*20%): $165
- **Total**: $715

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Other costs related directly to course development support include:

**Media**
- Video (1 hour of finished video) $1,500
- Graphics (2 original graphics) $75
- Text (2 pages of design and mark-up) $75

**Technical support for pilot**
- Network administrator $75
- Synchronous conferencing $125

Since the University of Alberta is publicly funded, these figures reflect subsidized (2002) rates in effect for internal clients.

When John estimated the university’s investment in the course redevelopment, he included his time. Post-secondary institutions struggle with these figures as they consider the value of teaching, research, and service, and the increasing expectations for academic productivity in these areas. Estimates rarely consider the amount of curriculum redevelopment required in addition to the adaptation of existing content to a new delivery platform. For example, John re-examined his resources in the context of both a new platform and a new instructional approach.

Part of the decision-making process for institutions involves the potential recovery of direct costs, the requirement for ongoing support, the value to them of providing flexible learning environments, and the commitment to faculty development, support, and reward for this kind of activity.

The timelines required to develop an e-Learning environment range as widely as estimated costs, but in our experience faculty rarely begin redevelopment with appropriate and achievable deadlines. Our guideline has been a development time of 12 months for a 3-credit course (39 hours of F2F delivery time). *Are you realistically able to commit to this amount of time?*

Even though many LMS advertise an adaptation time of several hours and more recent versions of these systems have improved the instructor interface and development tools substantially, many experts will advise a minimum commitment of 4:1. In other words, a 39-hour course will require 156 hours of development.

Ultimately, ATL’s Partnership Program was not sustainable. Large-scale redevelopment of undergraduate curriculum for e-Learning, in an institution with over 2,000 faculty, cannot be supported through an intensive process that involves a dedicated course team. However, most redevelopment involves a blended learning approach in which only portions of a course are technology-enhanced. In general, blended
approaches include the addition of a threaded discussion, and/or adaptation of limited content to the Web. In some disciplines, practice and self-assessment activities are included in the course Web site. Most often, we see a phased approach in which a course may be redesigned over several years.

What is your reaction to John’s analysis of resources required to redevelop his course?

Summary

You have considered diverse models that critically examine the value-add of an e-Learning environment. All models are multi-faceted; none have a simple formula leading to an objective decision-making process.

However, reasons to redevelop your course are not always appropriately reflected in business-oriented cost-benefit analyses. For example, look at the following checklist.

In your opinion, was John able to check off enough of these reasons to justify the resources he committed to Psyce 104?

Five reasons to go online:

- Including multiple perspectives
- Encouraging semantic linking
- Meeting diverse learning needs
- Increasing and enhancing communication
- Providing global access

Content and Psyce 104

In the first rendition of the course, John concentrated in developing screens where the content was linked directly to the class discussions, but the LMS required a JavaScript to do this. In the end, the direct link was dropped as it became apparent that students wanted to talk about different or extended topics that weren’t reflected in the content pages. Using another tool supported a more current and, for the students, relevant topic.

For critical thinking skills…we embedded questions in course content…and these were set off in the original version… When we designed it originally the questions sent them off to a thread in the discussion forum but the topics changed from the second to the third renditions of the course so the boxes were linked to the discussion forums needed to be changed.

It was just easier to read the calendar and link to the forum from there, the discussion that was launched as of today.

John was looking for ways to chunk the content and minimize the screens of scrolling text.
He developed two versions of a PowerPoint presentation: an elaborated version was used in class and a simplified version was posted ahead of the class to be printed and used as a note-taking guide by the students.

Finally, in each version of the course, John re-evaluated links to external sites, deleting some and adding others. As the redevelopment time began to decrease, he began to annotate the links, expand the glossary, and expand the feedback section on the test items. Figure S.7 is a content page showing some of these elements.

Figure S.7. Course Content

One of the things I remember is the issue of scrolling, so the student was in front of the monitor and there’s a lot of content, so you’re looking for ways to break it up… you have these little boxes where there are questions… so by clicking on the question the student was directed into the discussion

Evaluating Psyce 104

We evaluated the second delivery of Psyce 104 in the fall of 1999 through a multi-dimensional, quantitative and qualitative approach resulting in four data sets:
Set 1

Pencil and paper surveys were administered shortly after the beginning of the term (Week 3) and shortly before the end of the term (Week 12). These surveys consisted of multiple-choice and short answer, open-ended questions dealing with, among other things, students’ impressions of various aspects of the course Web site, any problems or concerns they had, and suggestions for improving the course delivery. In addition, we asked the students to provide a self-evaluation of their computer literacy as well as their attitudes with respect to the use of learning technologies. Open-ended questions included:

- What is your overall impression of videoconferencing in this course?
- What did you like best in this course?
- What are the areas of improvement in this course?
- Have the teaching technologies used in this course changed in any way your own learning strategies?
- Would you recommend taking a course like this to other students?
- Why do you think the instructor chose to use the Internet in this course?

The quantitative items (5-point scale) for the mid-term survey included:

- What is your overall impression of the WebCT site to date?
- Have you had any problems understanding how to use WebCT?
- How comfortable do you currently feel working on computers?
- Have you ever previously used a computer as part of instruction (excluding word processing)?

Set 2

Quantitative and qualitative information concerning the course in general was obtained from the standard, University-wide course evaluation survey conducted at the end of the term.

e.g. The instructor felt comfortable with the technology

Set 3

The WebCT™ tracking tool was used to monitor, among other things, the number of times that the students logged on to the course Web site as well as the frequency with which they used some of the WebCT features and tools (e.g. level of participation in the online discussions). Figure S.8 shows John’s usage profile.
A focus group discussion was scheduled during class time toward the end of the term. Two experienced course evaluators led this activity. The instructor was not in attendance. The students were encouraged but not obligated to participate in the focus group. Almost half of the class did take part in this activity, at which juice and doughnuts were served.

**Learner profile**

The profile revealed by the survey indicated that:

- About 2/3 were female
- Most were from 17-20 years of age, although 1/3 were from 21-29 years of age
- 1/4 had an Internet connection at home
- Only 13% had ever taken a technology-enhanced course

**Results**

One goal of formative evaluation is the application of useful information to course redesign. For example, we found that 1/4 of students tend to log on the course site in
the first week, with the majority visiting the site for the first time two or three weeks into the course. The average number of page “hits” was 224 per student. This means that the course site was visited an average of 2.5 times each day. One implication for course redesign: the majority of students will not visit the course site before each class meeting. With that information, the instructor might need to rethink the reasons for providing an online advance organizer, for example a notes outline for each topic.

A complete reference list at the end of this chapter provides a more substantive appraisal of evaluation results. However, in general the students:

• Felt comfortable with the course design, even suggesting that we add more activities besides the class lecture and discussions
• Wanted more links and other resources
• Found the conferencing activity difficult and time-consuming, but agreed that asynchronous conferencing helped them learn more about the topics and their peer’s understanding
• Appreciated the practice quizzes and the course notes

In this brief overview, did John make progress towards his goals?

Summary

John Boeglin decided to redesign his junior undergraduate, large-enrollment introductory psychology course for a number of inter-related reasons:

• He wanted a new challenge
• He was interested in the pedagogical and delivery potential of the Web
• He needed to support a new learning community
• His faculty had made a commitment to deliver learning opportunities in rural and northern western Canada (distance)
• e-Learning infrastructure was in place at external sites
• The institution encouraged e-Learning development
• He had pedagogical and technical support from ATL
• Through the partnership release time was available
• The Web made more resources in French accessible
• An LMS was supported and training was available
• The LMS improved course management
• He wanted to increase classroom interaction
• He wanted to improve the quality of interaction among peers
• He wanted to encourage both interdependence and self-directed learning
• He wanted to meet affective outcomes
• He wanted to enhance critical-thinking skills
• The curriculum needed redevelopment
• His existing resources had to be evaluated and extended

John committed substantial personal and professional effort to this project. After reading his account, do you feel that he achieved his goals? Would you have made a different decision?

We are at the end of the book, but hopefully far from the end of your own learning process. The decision to develop an e-Learning environment depends on your professional context, institutional support, and disciplinary requirements.

However, ultimately, your decision must be personal and related to your core values and beliefs about learning environments, an understanding of your own teaching style, your risk tolerance level, and an interest in the potential of learning technology to make a difference for learners anywhere in the world.

**Original Partnership Agreement**

**Partnership Agreement**

This contract will provide the basis of an agreement between the Faculté Saint-Jean, John Boeglin and Academic Technologies for Learning.

**Project Title:** Development and implementation of alternative teaching and learning strategies for PSYCHE 104/105

**Project Description (Summary Only):**

Faculté Saint-Jean has undertaken a number of initiatives in order to reach out to Francophone and Francophile students, throughout Western Canada and beyond, and is currently positioning itself to become a role model in the use of alternative teaching and learning strategies.
This project involves two courses, PSYCH 104 and 105, which are to be delivered using interactive videoconferencing technology supplemented by computer-based teaching and learning technology. Support for the design, production, implementation, and evaluation of this project is to be provided through the ATL Partnership program.

Students stand to benefit from this initiative in several ways. First, they will gain access to a wealth of course-related information not readily accessible given the current format of delivery. Second, it will create a window of opportunity for the instructor to change current teaching and learning practices. Third, Francophone and Francophile students will be provided with an opportunity to learn and to communicate in French. For some, this will result in the creation of a community of learners with similar aspirations. For others, in particular those who are more geographically isolated, this initiative may offer a unique opportunity as well as offer a broader sense of community.

Project Start Date: January/98  Project End Date: May/99

Approximate Mid-date: (Prototype presentation) August 07th, 1998

Implementation Date: September/98 (PSYCHE 104); January/99 (PSYCHE 105)

Terms of Instructor Release. Please include dates and times of course release:

Releasing John Boeglin from three courses from September-April in the 1998/99 school year. His two-course release will occur in the fall term of 1998 and his single course release in the 1999 winter term.

A. Intent of this Agreement

It is intended that this agreement reflect a spirit of cooperation, collaboration and negotiation and not to be taken by its specific terms of the “letter of the law.” The terms of this contract are intended to be flexible and negotiable in nature. Its function is to state the expectations, responsibilities and accountability of each party and seek agreement as to the general processes, deliverables, and timelines for the project.

B. Expectations of ATL

1. Payment Schedule

   a)  ATL is agreeing to support this project up to the amount of $9,900. This amount is based on a three course release of John Boeglin, Ph.D. being
paid $3,300/course. Disbursement of these funds will be in the form of three payments or as negotiated.

b) The initial payment of $3,300 and two additional payments of $3,300 and $3,300. The initial payment is to be paid directly to the department within a reasonable time period of the signing of this contract or on a mutually agreed upon date.

c) The second payment is to be paid within a reasonable period following the first deliverable which consists of a presentation of the project prototype, a design report, or a completed storyboard.

d) The third payment is to be made within a reasonable time upon the determination and agreement that reasonable progress on the project has been made by December 1998.

e) These presentations will be made to some or all of the ATL team by the project developer(s) and feedback from the team will be constructive and developmental in nature. Developers will be assisted in bringing the project up to the quality standards and attributes as agreed upon during the sessions.

2. Responsibilities of the ATL

a) The ATL team and the developers will keep accurate logs of all time spent on the project including but not exclusive to time in the studio. This log shall include time spent on organizational, design and development, formal and informal meetings with ATL staff, content creation, and actual programming of the materials. These logs will be submitted or made available to the Manager of the Production Studio and the developer(s) on a regular basis or upon request. The purpose of this record keeping is to provide more accurate information on the resources, money, and time needed to do courseware development.

b) Access to the ATL Production Studio (2-111 Education N), a workstation, hardware and supported software and its library resources. Additional software and hardware needs may be negotiated with the Manager of the Production Studio. Keys to the studio and a workstation can be arranged with a $20 refundable deposit.

c) Access to the ATL team on a formal and informal basis to assist in the ongoing development of the project. Upon the developer’s request this support may include:

- Formal and informal consultation with the ATL evaluation researcher to determine a formative and/or summative evaluation strategy.
- Up to 10 hours of formal and informal consultation meetings with an instructional designer to discuss such issues as a needs
A series of formal meetings with the ATL team:

**Meeting #1.** This initial meeting will introduce the project and partner(s) to the Instructional Designer, Distance Education Coordinator, the Production Studio manager, and the Evaluation Researcher. The project will be presented and discussed in general terms, a preliminary attempt will be made at drawing up an agreement, and a date will be set for presentation of the modified agreement.

**Meeting #2.** The partner(s) will meet with the ATL development team and present the project. Meeting objectives are to introduce people to each other, familiarize the team with the project, begin a determination of the project’s technology requirements and approximate the type and amount of support required. There may be a need to research appropriate technologies if the project developers request it and time permits. Follow-up meetings may be set up to discuss the project requirements or the results of this research.

**Meeting #3.** A demonstration of the prototype around the midpoint of its development cycle. The prototype should include a fully functioning interface complete with navigation, icons, presenting some content and key activities accessed through a complete and functional menu system. The prototype should accurately reflect the overall look and feel of the project, but may need additional content and activities to fill in the “structure.” The ATL development team may offer feedback on additional development needs and will gladly assist with the agreed upon revisions or additions.

**Meeting #4.** A formal event held near the end of the project development cycle involving some of the ATL team and the partner(s). The project will be demonstrated to the ATL team and evaluated to determine whether the project meets the following conditions. All navigational tools, menus, graphics, icons, content and activities should be in place or easily completed. This meeting may also determine if follow-up support for the project is needed and what the nature of that support will be.

- Informal meetings (drop-in or scheduled) upon request of client.
- Programming support including consultation on software use, program authoring (to be negotiated), implementation issues, and troubleshooting of studio hardware and software.
Priority access to ATL training initiatives and an opportunity to be involved in a personalized professional development experience.

C. Responsibilities of the ATL Partner

a) The ATL partner is expected to perform or arrange for the majority of any computer programming or HTML coding required for the project; manage the project itself including copyright and special licensing issues; design decisions; content delivery; facilitation of formal and informal meetings with the ATL team and actively take part in the development cycle of the project.

b) Ensure the return of all ATL resources in good condition, including library resources, hardware, software, and keys as per ATL policy.

c) Participation in a minimum of one Show Time. This activity will be scheduled in advance and involve discussing and/or demonstrating your project and its development to the university community.

D. Project Time Line

Project Start Date: January/98

Project End Date: May/99
REFERENCES


