

# INTRODUCTION

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## GETTING THE MOST FROM THIS RESOURCE

### **Purpose**

The training field is undergoing an evolution from a craft based on fads and folk wisdom to a profession that integrates evidence into the design and development of its products. Part of the training revolution has been driven by the use of digital technology to manage and deliver instructional solutions. This book provides you with evidence-based guidelines for both self-study (asynchronous) and virtual classroom (synchronous) forms of e-learning. Here you will read the guidelines, the evidence, and examples to shape your decisions about the design, development and evaluation of e-learning.

### **Audience**

If you are a designer, developer, or consumer of e-learning, you can use the guidelines in this book to ensure that your courseware meets human psychological learning requirements. Although most of our examples focus

on workforce learning, we believe instructional professionals in the educational and academic arenas can equally benefit from our guidelines.

## Package Components

Because many of our guidelines pertain to use of media elements such as audio and animation that are difficult to illustrate in a book format, we have included two examples on the accompanying CD. The CD includes the following items:

- How to Design a Relational Database: Multimedia Example Lesson
- How to Design a Relational Database: Multimedia Counter-Example Lesson

The counter-example lesson can be run in two ways. First, you can play the lesson in regular mode. In addition, if you click on the commentary button, you can hear a summary of the violations.

Our guidelines checklist, found in Chapter 16, is also placed on the CD, allowing you to print it out and refer to it in a more convenient format.

## Package Components

Table I.1 summarizes the content of the book's chapters. In this second edition, two new chapters have been added. Chapter 9 provides evidence on the best ways to segment and sequence e-learning content. Chapter 15 introduces the research and issues surrounding games and simulations in e-learning. In addition, we have expanded the first edition with virtual classroom examples that show how to adapt our guidelines to a synchronous e-learning environment.

**Table I.1. A Preview of Chapters.**

| <i>Chapter</i>                     | <i>Includes</i>   |
|------------------------------------|---|
| 1. e-Learning Promise and Pitfalls | <ul style="list-style-type: none"> <li>• Our definition of e-learning</li> <li>• e-Learning development process summary</li> <li>• Research on e-learning effectiveness</li> <li>• Potential pitfalls in e-learning</li> <li>• Three architectures for e-learning design</li> </ul> |

Table I.1. (Continued).

| <i>Chapter</i>  | <i>Includes</i>  |
|---|--|
| 2. How People Learn from e-Courses  | <ul style="list-style-type: none"> <li>• An overview of human learning processes and how instructional methods can support or disrupt them</li> <li>• A brief explanation of what makes a good research study and what the statistics mean</li> </ul>  |
| 3. Applying the Multimedia Principle: Use Words and Graphics Rather Than Words Alone            | <ul style="list-style-type: none"> <li>• Evidence for whether learning is improved in e-lessons that include visuals</li> <li>• Types of visuals that best promote learning</li> <li>• Who benefits most from visuals?</li> <li>• Static illustrations versus animations</li> </ul>  |
| 4. Applying the Contiguity Principle: Align Words to Corresponding Graphics                     | <ul style="list-style-type: none"> <li>• Evidence for the best placement of text and graphics on the screen</li> <li>• Evidence for sequencing of text or audio in conjunction with visuals</li> <li>• Effective and ineffective applications of the contiguity principle, as well as the psychological basis for the results</li> </ul> |
| 5. Applying the Modality Principle: Present Words as Audio Narration Rather Than On-Screen Text | <ul style="list-style-type: none"> <li>• Evidence for presenting words that describe graphics in audio rather than in text</li> <li>• When the modality principle does and does not apply</li> <li>• Effective and ineffective applications of the modality principle, as well as the psychological basis for the results</li> </ul>     |
| 6. Applying the Redundancy Principle: Explain Visuals with Words in Audio OR Text: Not Both     | <ul style="list-style-type: none"> <li>• Evidence for use of audio to explain graphics rather than text and audio</li> <li>• Situations in which adding on-screen text to narration is a good idea</li> </ul>  |

(Continued)

Table I.1. (Continued).

| Chapter  | Includes   |
|--|--|
| 7. Applying the Coherence Principle: Adding Interesting Material Can Hurt Learning                         | <ul style="list-style-type: none"> <li>• Evidence for omitting distracting graphics and stories, sounds and background music, and detailed textual explanations</li> <li>• Evidence for omitting extraneous words added for interest, to expand on key ideas or for technical depth</li> </ul>                       |
| 8. Applying the Personalization Principle: Use Conversational Style and Virtual Coaches                    | <ul style="list-style-type: none"> <li>• Evidence for conversational style, voice quality, and polite speech to improve learning</li> <li>• Evidence for best use of computer agents to present instructional support</li> <li>• Evidence for making the author visible to the learner through the script</li> </ul> |
| 9. Applying the Segmenting and Pretraining Principles: Managing Complexity by Breaking a Lesson into Parts | <ul style="list-style-type: none"> <li>• Evidence for breaking a continuous lesson into bite-sized segments and allowing learners to access each segment at their own rate</li> <li>• Evidence for sequencing key concepts in a lesson prior to the main procedure or process of that lesson</li> </ul>              |
| 10. Leveraging Examples in e-Learning  | <ul style="list-style-type: none"> <li>• Evidence and guidelines to transition from examples to practice assignments through fading</li> <li>• Ways to ensure examples are processed by adding questions</li> <li>• How to design examples that support learning of procedural and strategic skills</li> </ul>       |
| 11. Does Practice Make Perfect?  | <ul style="list-style-type: none"> <li>• How to design practice that supports job skills</li> <li>• Evidence and guidelines for design of effective practice feedback</li> <li>• Determining the amount and placement of practice in your lessons</li> </ul>   |

**Table I.1. (Continued).**

| <i>Chapter</i>   | <i>Includes</i>  |
|--|--|
| 12. Learning Together Virtually                            | <ul style="list-style-type: none"> <li>• Descriptions of types of computer-supported collaborative learning</li> <li>• Factors that lead to learning in use of online collaborative facilities</li> </ul>  |
| 13. Who's in Control? Guidelines for e-Learning Navigation | <ul style="list-style-type: none"> <li>• Distinction between learner and program control</li> <li>• Evidence for the accuracy of student decisions over their learning</li> <li>• Guidelines for ways to implement learner control</li> </ul>  |
| 14. e-Learning to Build Thinking Skills                    | <ul style="list-style-type: none"> <li>• Evidence about the effectiveness of thinking-skills training programs</li> <li>• Guidelines for design of e-learning to promote thinking skills, including use of job-specific cases, making thinking processes explicit, and defining job-specific thinking skills</li> </ul>                                |
| 15. Simulations and Games in e-Learning                    | <ul style="list-style-type: none"> <li>• What are simulations and games?</li> <li>• Evidence for effectiveness of simulations and games</li> <li>• Techniques to balance motivation and learning, including matching game types to learning goals, making learning essential to game progress, building in guidance and managing complexity</li> </ul> |
| 16. Applying the Guidelines                                | <ul style="list-style-type: none"> <li>• A checklist and summary of the guidelines in the book</li> <li>• Four short discussions of how the guidelines apply to e-learning samples</li> </ul>  |

## Glossary

The Glossary provides definitions of the technical terms used throughout the book.