Multimedia-Based Instructional Design

COMPUTER-BASED TRAINING
WEB-BASED TRAINING
DISTANCE BROADCAST TRAINING
PERFORMANCE-BASED SOLUTIONS
SECOND EDITION

William W. Lee
Diana L. Owens

Pfeiffer
A Wiley Imprint
www.pfeiffer.com
About This Book

Why is this topic important?
Making training solutions available in a timely manner is increasingly critical to add value to an organization. Training groups that are seen to be responsive and in touch with the corporation’s needs are perceived to add increased value. Therefore, a consistent, replicable, and efficient instructional design model that enables rapid development is increasingly critical. Projects move faster when everyone in a training organization or project team understands, adopts, and follows a consistent model.

What can you achieve with this book?
The purpose of this book is to provide a consistent, replicable, and efficient model that will get training and performance solutions to market at the time they will provide the optimum benefit.

How is this book organized?
This book is divided into four parts. Part One is Multimedia Needs Assessment and Analysis. This part explains the activities that must be completed for twelve types of analysis and assessment and a rapid analysis model that can be used once each of the individual activities is completely understood. Tools are provided for each type of assessment and analysis to document and track the data and results of analysis. Part Two is Multimedia Instructional Design, which explains how to develop a Course Design Specification. A Course Design Specification creates the “rules” for all project members to follow to make a project run more efficiently and effectively. Again, tools are provided to complete each activity. Part Three is Multimedia Development and Implementation, which outlines the common and unique elements of producing computer-based, web-based, distance broadcast, and performance-based solutions. Useful task tracking and development tools accompany the explanation of each delivery media. Part Four is Multimedia Evaluation. This part describes how an organization can develop an evaluation strategy and, further, how to create an evaluation plan for each project. Specific instructions on how to collect and analyze data within each project plan are included to help project teams complete an evaluation that is credible, consisting of both validity and reliability. Four appendices contain completed examples of tools, and a fifth appendix shows examples of the tool templates that are included on the CD ROM.
About Pfeiffer

Pfeiffer serves the professional development and hands-on resource needs of training and human resource practitioners and gives them products to do their jobs better. We deliver proven ideas and solutions from experts in HR development and HR management, and we offer effective and customizable tools to improve workplace performance. From novice to seasoned professional, Pfeiffer is the source you can trust to make yourself and your organization more successful.

Essential Knowledge  Pfeiffer produces insightful, practical, and comprehensive materials on topics that matter the most to training and HR professionals. Our Essential Knowledge resources translate the expertise of seasoned professionals into practical, how-to guidance on critical workplace issues and problems. These resources are supported by case studies, worksheets, and job aids and are frequently supplemented with CD-ROMs, websites, and other means of making the content easier to read, understand, and use.

Essential Tools  Pfeiffer’s Essential Tools resources save time and expense by offering proven, ready-to-use materials—including exercises, activities, games, instruments, and assessments—for use during a training or team-learning event. These resources are frequently offered in looseleaf or CD-ROM format to facilitate copying and customization of the material.

Pfeiffer also recognizes the remarkable power of new technologies in expanding the reach and effectiveness of training. While e-hype has often created whizbang solutions in search of a problem, we are dedicated to bringing convenience and enhancements to proven training solutions. All our e-tools comply with rigorous functionality standards. The most appropriate technology wrapped around essential content yields the perfect solution for today’s on-the-go trainers and human resource professionals.
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To Walter M. Lee

—Bill Lee

To my husband, Terry, for his feedback and support, wonderful sense of humor, and the many things I have learned from him that have contributed to this text

To my parents, Luella and Bill Dubois; my son, Rob MacKey; and his wife, Jessica, for their constant demonstrations of love, encouragement, and support

—Diana Owens
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And to all of you whom we have worked with over the years who have mentored us, guided us, given us constructive criticism and feedback, and allowed us to experiment and be creative, you are too numerous to mention—but without all of you, we would never have gained the experience to share with others.

To our families, friends, and colleagues over the years—we couldn't have done it without you behind us and beside us.

Thank you!

February 2004

William W. Lee
Euless, Texas

Diana L. Owens
Cross Roads, Texas
INTRODUCTION: \hspace{10pt} GETTING THE MOST FROM THIS RESOURCE

WO! So much has changed since the first edition of our book went to print in 2000 (which really means we began writing it in 1999)! Everything from changes in terminology to attempts to define consistent standards. Learning management systems (LMS) have proliferated since our first edition. These LMS have often incorporated learning content management systems (LCMS) to deliver learning activities and track them. And we have been learning too! We want to update those of you who purchased the first edition on how all of this has impacted the instructional design model.

Another unexpected surprise for us is that the first edition of the book has been translated into four languages: Korean, Japanese, and two Chinese dialects. “Thanks” from the authors to our international audience!

The major thing we have found that has not changed is how complicated the issue of e-learning is. As a matter of fact, it has become even more complicated. Figure I.1 graphically represents all of the components that need to be considered when implementing learning, including e-learning.
Figure I.1
Components of E-Learning Implementation

Infrastructure
(LAN, WAN, Computer Hardware)

Competency Models
Content
• SCORM
• Blend
• Rapid Development Tool
• ID Process

LMS
ID Tracking Tools
Performance Management System
Development Plans

Learning and Support
Training Organization

Employees
Customers
Vendors
Families

Marketing/Advertising

Benefit/Profit

Input
Output
This book only deals with the learning components of this model. The inputs to implementing learning usually go through some training organization or learning function whether learning is delivered centrally, say through a corporate university, or if it is decentralized and distributed through numerous training functions within one organization. Many companies are creating new positions called chief learning officers (CLOs) to coordinate and implement this increasingly complex issue.

Trying to stay on the leading edge of technology is nearly impossible. But our continued involvement in the learning arena has brought many of the changes to our doorstep, and we have also gone looking to answer questions for our customers. So we thought it was time to update the book with what we have learned and to bring it more into line with our continually evolving philosophy.

When we began the first edition, the term for online learning was “multi-media.” Now it’s “e-learning.” Multimedia now means what it always should have—“multiple media.” That’s how we always defined it. So we will continue using multimedia to refer to blended solutions (yet another relatively new term).

The emphasis is still very much on multimedia. Maybe even more than at any time before in the discipline of training and learning! Maybe to the extreme! We have seen many instances where “everything to the web” was the dictum. Unfortunately, most of those efforts were less than successful because insufficient thought was given to the process of translating everything in learning to one medium. Most of the edicts are for economic reasons only. While we believe that most of what can be learned can be learned through some electronic medium, given the advances in web technology, we still believe strongly that decisions should be made in a systematic manner based on what the needs are for technology-based solutions for training delivery and solving business issues.

The reason for the emphasis on multimedia is still much the same. In a global corporate environment that is increasingly becoming a virtual world whose people are connected by technology, the need for rapid communication, continuous information flow, and speed to market is critical. Maintaining the business construct of everyone in the same room at the same time is increasingly difficult and often implausible. The need for virtual training to keep people connected is imperative. Yet the physical classroom remains a major delivery method, even though, for large numbers of participants, connecting virtually can be just as effective and more economical.

Economics is a reason to use e-learning, but only if you have the infrastructure in place. Companies that upgraded their technical infrastructure for Y2K, which...
became a non-issue, were well positioned to move into e-learning after September
11, 2001. Those companies that decided to move to e-learning for economic rea-
sons after 9/11 often found that the technical capabilities that were required were
not there and that the investment in the required technology was too expensive.

There is still a lot of discussion about e-learning not meeting everyone’s learn-
ing style. We like what our friend Susan Guest, the vice president of e-learning at
Baxter Pharmaceuticals, said recently, “If you were in the financial and accounting
business and you told your employer that you had a different accounting method,
you would be told to use the system the company uses. However, we still say that
e-learning won’t work for everyone because it doesn’t meet everyone’s learning
style, so we have to have a variety of ways to deliver training.” We agree with Susan.

And with some of the great software we have seen recently, various learning styles
are accommodated. It is not e-learning that has been holding learning back, but the
design of e-learning. Too much e-learning has been designed using traditional
methodology, much like taking an instructor-led course and delivering it through
CBT or WBT. The two media require completely different constructs. Besides, in-
tructor-led training that is basically lecture doesn’t meet everyone’s needs either.
Auditory learners make up only about 30 percent of the total population. A well-
constructed instructor-led course that uses action learning, activities, PowerPoint®,
video, and games accommodates learning styles just as the same course would using
e-learning. However, e-learning has the additional advantages of delivering a con-
sistent message, is available on demand when the learner needs it, and reduces the
costs and personal inconvenience associated with traveling to receive training. The
“rule of thirds” is becoming pretty standard in the industry. “People retain one-third
more, in one-third less time, at one-third the cost.” This is well documented by the
Department of Defense and can be found in Teitelbaum and Orlansky (1996).

Noonan’s (1993) message is even more relevant ten years after he wrote that if
the training function is ever to escape “corporate America’s basement,” it must
transform into an organization that ties solutions to business needs and help
achieve corporate goals and objectives.

**WHY BUY THIS BOOK?**

One of the reasons to buy this revision, even if you have the original, is that we
have improved many of the tools and added even more. The Media Analysis Tool
in Chapter Eleven is now automated on the CD-ROM. We have also automated

**Introduction**
our objectives analysis process in Chapter Ten. Yes, an automated tool that *almost* writes your objectives for you! The step/action table in Appendix A is also automated and is now called the Project Management Tool to track your instructional design activities and tasks. There is a special URL and password listed on the Links menu of the CD-ROM for Granite Technologies, the company that owns the tool called Xegy™ (pronounced x-è-g) that is used to automate the step/action table. This URL is available only to purchasers of the book. You have ninety days of free access to the Project Management Tool and can use it to track your projects and print the results. Figure I.2 shows the graphical interface of the Project Management Tool.

![Figure I.2](image)

*Source: Used with permission of Granite Technologies*

You can check off each activity and task as you complete it, but even more beneficial is the capability to click on any activity or step and immediately hyperlink to the online tools and worksheets that you use to complete that task. Xegy™ is a
new approach to focusing business intelligence to drive performance. It provides a performance support framework for:

- Rapid prototyping of a strategy roadmap
- Communicating that roadmap uniquely to different workgroups
- Supporting ongoing management of the process
- Tracking results and capturing input for continuous improvement and innovation

Non-technical people can harness technology to build and implement their strategies.

Figure I.3 shows the conceptual framework of Xegy™. The tool can be used as a process management tool, a project management tool, or a performance support tool taking both systems and human factors into consideration. To learn more about Xegy™, see the website www.xegy.com.

We have added chapters on Issue Analysis, developing an Evaluation Strategy, and creating an Evaluation Plan. We have also created a much more robust tool for evaluating e-learning software that replaces the one in the first edition. There is now a tool for making “build or buy” decisions if the solution must be customized or can it be purchased off-the-shelf.

We have found many new examples of user interface design and restructured the section on design to reflect both the objectivist and constructivist theories of instructional design. These are only a few of the changes you will find in this edition.

Our integrated instructional design model transcends whatever media will deliver the solution and is still a major advantage of this book. There are numerous books on the market today on how to design and develop computer-based training, others for web-based training, and still others for distance broadcast training. So why buy this book rather than one of the others?

Other books are well suited for their specific delivery media, but the approach to the instructional design process differs in each one. Most use the traditional instructional design (ID) model with its phases of analysis, design, development, implementation, and evaluation, but they vary in the tasks and activities to complete during each phase.

Consequently, if you want to design for more than one medium, you have to buy a book on each and adjust or adapt your ID model depending on the medium.
So why buy this book? Because it eliminates multiple procedures. Use the process in this book and design in any media!

Instructional designers are intelligent, creative people who eventually figure out how to meld the best components of each design model given time and experience. We all gain experience by working on multiple projects. But time is usually what we lack. We’re often too rushed to reflect on what we did during a project that made it go smoothly—what we did to get over the bumps and around the roadblocks. The revised Multimedia-Based Instructional Design offers time-tested procedures and tools to encapsulate the experience of hundreds of course developers, thereby reducing the time required to reflect on past successes and
problems. Use our book as the basis for projects, and change only those steps you
find work differently and better for your group than the way we suggest. The new
automated Project Management Tool allows you to make this customization.

WHO SHOULD BUY THIS BOOK?

Our revised edition of Multimedia-Based Instructional Design is intended for the
same audience as the first, but allows us to share the updated information and
knowledge we have gained since the first edition. It is for course developers (in-
structional designers, authors, project managers) who are beginning their first mul-
timedia project, as well as for experienced designers of large projects that require a
systematic process that everyone can follow. It is well suited for use by project teams
when there is a mixture of experienced and new developers. It imparts a consis-
tent message to those project teams that find members matrixed in and out of
projects and that use a combination of internal and outsourced resources.

Although the book discusses many issues encountered by internal training de-
partments, multimedia consulting companies should also find the tools valuable
and the tips for managing customer expectations enlightening.

FOCUS OF THE BOOK

Our philosophy is to focus on the human-performance arena. This focus presents
challenges to multimedia development groups whose philosophy reflects a more
traditional approach. We agree with Tom Gilbert (1996) that the purpose of all in-
struction is to affect human performance through learning or performance sup-
port. If multimedia development groups move into the human-performance area,
they open new horizons of opportunities to work within an organization and be-
come more valuable. We recommend Judith Hale’s The Performance Consultant’s
Fieldbook: Tools and Techniques for Improving Organizations and People (1998) to
help your group make the necessary shift to performance consulting. Lee and
Krayer’s Organizing Change: An Inclusive, Systemic Approach to Maintain Produc-
tivity and Achieve Results (2003) is also a good companion book to this one be-
cause it uses the instructional design model and expands its use to enterprise-wide
solutions that can transform a training department into an organizational devel-
opment department by providing the knowledge, skills, and tools to expand the
department’s capabilities. We also recommend Thomas Toth’s book, Technology
for Trainers: A Primer for the Age of E-Learning (2003), and E-Learning Tools and Technologies (2003) by William and Katherine Horton. These books provide tactical development tips for e-learning solutions. We do not include a glossary of e-learning terms in this book because there is a very good one available on the International ASTD website (www.astd.org) that is continually updated.

We’ve all experienced working on projects for long hours, with budget overruns, missed deadlines, and unnecessary rework. We, too, have experienced the frustration associated with all of these situations. Our goal is to provide you with a handbook that helps you reduce cycle time for completing projects, makes your job easier, and conveys the lessons that will reduce your learning curve.

STRUCTURE OF THE BOOK

The book is organized in four parts:

1. Multimedia Needs Assessment and Analysis
2. Multimedia Instructional Design
3. Multimedia Development and Implementation
4. Multimedia Evaluation

Overall, it is structured as a step/action handbook that presents activities and the associated steps required for completing a successful project. We present tools to assist in organizing the information obtained from each activity. Appendix A is a step/action table (now automated on the CD as a Project Management Tool) that lists the steps to follow in each phase of the instructional design process. Project teams can follow the steps as listed or adapt them for their specific needs. The automated version allows you to track your progress through a project.

Each of the chapters is short. We wanted to provide you with critical information without too much extraneous information to get in the way of the way we want the book to be used—as an instructional design process manual.

The graphic that follows this paragraph appears (in varying form) at the beginning of each of the four parts of the book to identify the phase of the instructional design process to be discussed in that part. Note the circular configuration, to demonstrate the circular rather than linear nature of the process. Each phase of the ID process flows through to the next, and the last reflects back on the first. This is the concept of “congruence.”
In Part One we follow Dick and Carey’s model (1990) of separating the analysis phase of instructional design into two parts: needs assessment and front-end analysis. Needs assessment focuses on determining the current state and the desired state and the type of business issue the need arises from. Front-end analysis then determines how to close that gap with a results-driven solution. We address ten types of front-end analysis:

1. **Audience analysis**: determining who the target population is for the solution and their demographic as well as learning needs
2. **Technology analysis**: determining the type of technology available and technological considerations and constraints for delivery of the solution
3. **Situation analysis**: determining the environmental considerations in delivering the solution
4. **Task analysis**: determining the physical and mental requirements for getting the job done
5. **Critical incident analysis**: determining which tasks require that training or information be provided to the target audience
6. **Objective analysis**: determining the performance and instructional objectives for the solution and making the distinction between the types of objectives as