Multimedia-Based Instructional Design

Computer-Based Training, Web-Based Training, Distance Broadcast Training

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Preface

Why the increasing emphasis on multimedia? What is the need for technology-based solutions for training delivery and solving business issues?

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. But still the paradigm of the physical classroom is a major delivery method.

Technology-based solutions must be viewed as helping to achieve corporate goals and objectives. John Noonan (1993) 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.

Andersen Consulting conducted a study of training needs in the airline industry and produced a report in 1994 on the direction that industry must take. The findings expressed in the report apply just as well to many industries other than airlines. One of the report's major findings was the need to increase the use of technology to leverage training and support workforce performance.

WHO SHOULD BUY THIS BOOK?

Multimedia-Based Instructional Design is intended for course developers (instructional designers, authors, project managers) who are beginning their first multimedia project, as well as experienced designers of large projects in which a consistent methodology can be followed by all team members. It is well suited for use by project teams where there is a mixture of experienced and new developers. It imparts a consistent 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 departments, multimedia consulting companies should also find the tools valuable and the tips for managing customer expectations enlightening.

WHY BUY 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 this multiple need.

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. 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.

**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 instruction is to affect human performance through learning or performance support. If multimedia development groups move into the human-performance area, they open new horizons of opportunities to work within an organization and become 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.

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, which 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 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 first reflects back on the first. This is the concept of "congruence."

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 nine types of front-end analysis:

- Audience: determining who the target population is for the solution, and their demographic as well as learning needs
- Technology analysis: determining the type of technology available and technological considerations and constraints for delivery of the solution
- Situation analysis: determining the environmental considerations in delivering the solution
- Task analysis: determining the physical and mental requirements for getting the job done
- Critical incident analysis: determining which tasks require that training or information be provided to the target audience
- Objective analysis: determining the performance and instructional objectives for the solution and making the distinction between the types of objectives as well as when and where to use them; also their impact on the content as well as delivery media
- Media analysis: selecting the most appropriate delivery medium (or media) for a solution
- Extant data analysis: determining what materials are available and which need to be developed—basically, making a "build-or-buy" decision
- Cost analysis: determining the up-front benefit the solution has in comparison to the cost of the solution

We also include a rapid analysis model (RAM) in Chapter Thirteen. We developed this model for experienced course developers who intuitively understand the step-by-step process involved in gathering data through needs assessment and the nine types of front-end analysis.

In Part Two, "Multimedia Instructional Design," we have provided the activities and steps required to produce a Course Design Specification (CDS) document. We include many tips on project management for course developers to fully understand the complexities involved in multimedia projects. Such information should guide them in selecting media. For example, if assessment and analysis result in a web-based solution, the project team should know what's involved so they can determine if the solution is realistic for their business and can assemble the required resources before the project starts. The complexities might, though, result in choosing another solution.

Part Three is on multimedia development and implementation. Here there is divergence of methodology depending on the media. Therefore, we begin with a chapter on common elements of development and implementation and then explain the particular aspects for computer-based, web-based, distance broadcast, and performance support solutions.

Course developers are expected to acquire increasingly broad skill sets and are becoming the authors of what they design. Even if the authoring and designing are performed by different groups, designers should know the complexities involved in the solution they
propose in order to determine if the solution is feasible. Designers should also be able to carefully consider the issues related to implementing a solution.

Part Four is on multimedia evaluation. We discuss evaluation from two aspects: designing, developing, and delivering tests; and test validity and reliability. We present the steps for constructing various types of objective tests and explain the strengths and weaknesses of each type.

Throughout, we have included sections on applicable learning and instructional design theory as a basis of “why we do what we do.” People outside of the human performance arena often don’t see the need for particular aspects of development. They don’t understand the basic human characteristics surrounding learning that require us to include certain components. We have laid out the theory to help you explain why to them.

We also provide sections in most chapters on our personal experiences, to help you avoid the pitfalls we have experienced and replicate the successes we’ve had.

In total, we present a replicable model, adaptable to any delivery medium, diverging only in the development phase of multimedia projects. THE CD-ROM The CD-ROM that accompanies this book contains tools we developed, which are meant to be modified to meet your particular project requirements. Here are the directories and documents included:

- Step/action list: this is a complete checklist of all activities and steps in the multimedia instructional design process as laid out in this book. The checklist is also found in Appendix A.
- Tools templates: the tools directory contains checklists and templates for each phase of the ID process. These tools and templates can be copied and used as-is or customized to meet your needs and used for multiple projects. The directory is divided into sections for assessment and analysis tools, design tools, development and implementation tools, and evaluation tools. A hard copy of each tool is also included in the appendices (look for the CD-ROM icon: ), so you can browse through and determine whether and how each one applies to your project.
- A demo of LearnLinc, which explains how the web-based delivery software works.
- A demo of WorldTutor, which explains the workings of the system of template shells and models.

**HARDWARE AND SOFTWARE REQUIREMENTS**

The tools found on the CD-ROM require you to have access to a PC running Microsoft Word. The LearnLinc and WorldTutor demos require you to have a PC with the following configuration:

- Operating system: Microsoft Windows 95 or Windows NT 3.51 or later
- Microprocessor: 486 PC or higher (Pentium preferred)
- Memory: 8MB RAM minimum for Windows 95 and NT
- Hard disk space: 8MB minimum
- Disk drive: 2X CD-ROM or faster
- Audio adapter: Real Audio