WHY THIS BOOK, THIS TIME

The theme for this book came to me while I was doing my job — designing instruction. Of course I was multi-tasking. I was waiting for a subject matter expert to call me back about a question I had on an instructor-led course that I was updating and repurposing for the Web. So I read the latest release notes for the 8.1.1 version of another product that had been assigned to me. Its release had been pushed forward two more weeks, and I was hoping the release notes would help me to install this version on my computer. I could then design some hands-on exercises that would actually work. If I couldn’t figure out what was happening from the release notes, I would have to call either the IT department or the actual developers. The developers were generally heavily into testing the final product at this stage, and I would have to leave messages on their voice mail.

It was 4:00 p.m. eastern time and I had three hours to kill before delivering the pilot of a blended course describing the new features of an invoice designer program that I had completed. The pilot would be delivered via teleconference to the Hong Kong sales office. I had already checked that the presentation material was on the internal server and available for the participants to download. The evaluations were also prepared and posted on a website to which I would refer when the pilot ended around 10:00 p.m. The phone rang and my boss, who is in Denver where it is two hours earlier, called to remind me that the biweekly instructional design meeting was about to start and I was the designated note taker.

Was this a typical slice of the work for an instructional designer in the real world of business and industry? Positively! Before this moment out of my
typical day were the endless product and integration meetings that I attended either in person or via teleconferencing. Also, there had been an impromptu discussion with the document writers who are assigned to the same products for which I am designing the training. Things were a little behind because the day before I spent several hours going over the merits of the latest LMS and LCMS products that the company was interested in purchasing and wanted my feedback on its various merits versus its costs.

This was my tenth year in the instructional design world and I had worked for large and small companies, for contractors, for the government, educational institutions, business and industry. I had designed a computer-based course that provided needed information to Navy personnel whose ratings and jobs had been combined. I provided the architecture and the programming for a simulation of the newest air traffic control equipment. I spent hours studying the habits of airport baggage screeners in order to develop a “Decision Making with Machines” course. I also invested months of time for courses that were never even delivered because they were either superceded or because other means were found for the company to meet its goal. I put automated systems in place to collect data, assessment information, and to compare test results with actual job performance. So I knew that multi-tasking, long hours, endless meetings, constant learning of new things, frustration with products that needed fixes, and waiting for phone calls were pretty typical of an instructional designer.

After all these roles and responsibilities were met, I could return to the job for which my academic courses had prepared me, the challenge and fun of devising instructional strategies that would more efficiently and effectively present needed learning to course participants. I thought that someone has to capture these other parts of slices of time that instructional designers really have. Thus this book that would present real cases, problems, and advice for instructional designers in the real world was born.

THE PROCESS IN THE REAL WORLD

First I should make the reader aware of my general thoughts and biases on how instructional design takes place in the real world. How do I really design instruction? Well, I just get started. There usually isn’t much time for thinking or planning. Some things you just have to learn while doing the design. Sure I start with the ADDIE process (Analyze, Design, Develop, Implement, Evaluate). In the first phase I set forth the types of learners for whom the instruction is being designed, the conditions under which it is presented,
and the content and skill levels of the proposed outcomes of the instruction. I break the course content down into learning types, verbal information, intellectual skills, cognitive strategies, motor skills, and attitude. Then I send an outline of the course and the learning types to the potential audience and the Subject Matter Experts (SMEs). These people generally are already overworked. Also, administratively, there is no place on their timesheet where they can legitimately report the work they are doing on the analysis. So it is important that this process is streamlined. As it is I might be lucky to receive a 10 to 25% feedback.

While waiting for the learner feedback, I analyze the performance goals and the learning required to accomplish those goals by listing the specific skills needed and then differentiating them by learning type. This forms the basis for the learning analysis report and this is where cognitive strategies can be first mapped into the process. It is also common in my learning reports for objectives and enabling objectives to be written for each skill and for a testing or evaluation plan for each skill assessment to be included. The cognitive strategies are then incorporated at this point so that the objectives and the testing plan both reflect appropriate strategies.

The next step, after incorporating the feedback from the field, should be to produce the design plan. This plan can easily be used to produce storyboards, scripts, or the actual prototypes of the electronic instruction. But in the real world, there is rarely time for this step. Storyboards and scripts are constantly being rewritten as the product versions are completed. So it’s jump in and start producing, and then test and try out. Once you can see what it is and what it does — then refine, tweak, and pilot.

Theory helps because it narrows the paths that you take to the result. Learning theory sets boundaries — some to be broken and re-evaluated. Sometimes you find a new path and that is exciting. For me, the design process has a certain amount of feel. It’s feeling but it’s definitely not groping in the dark. That is, you know what you’re feeling because you are standing on the shoulders of the others in your field and that is how you make the needed quick judgments and design decisions. In the real world, that’s how it’s done.

Now that I have encapsulated the design process that I use, it’s time to see how others have also adapted the traditional instructional design process for their own use and for adaptation to other systems. That is, how must ID be changed or how must it adapt to work within other systems?

The environments and systems that affect the ADDIE process and to which it must be adapted include corporations, industry, consulting organizations, health care facilities, church and charitable groups, the military, the gov-
ernment, educational institutions, and others. Its application must be filtered and altered by the environments and the systems where the learning or training takes place.

Most chapters in this book include a case study showing how the application of ID strategies, learning theories, systems theory, management theories and practices, and communication tools and practices are adapted and applied in various environments. Many chapters also contain lessons learned, tool tips, and suggestions for the future.

The chapters in this book are arranged so that they loosely follow the ADDIE process. That is, first the analysis phase is presented. Then, design, development, and implementation are grouped together because that is the real way they are done. Evaluation follows. The final section covers applying new ideas and technologies, and integrating instructional design projects into two systems, a university system and a military system.

ANALYSIS

The first chapter, “Concern Matrix: Analyzing Learners’ Needs,” by Dr. James A. Pershing and Hee Kap Lee, addresses the traditional learner analysis stage of the ADDIE system. Their approach to analysis emphasizes putting the learner first. Pershing and Lee are very much aware of the fact that in the real world, there are individual needs and organizational needs and that these needs can be either compatible or incompatible. They also point out the importance of differentiating between “felt” needs and “real” needs. Merely identifying the gap between present and desired performance is not enough. If the learners’ felt needs are not met, the training will probably not stick. Learners will not accept that which does not fit their values and past experiences. Many Web-based courses suffer from a thorough learner analysis and are seldom used because the social benefits of classroom and group learning are not present.

Chapter II, “Responding to the Learner: Instructional Design of Custom-Built E-Learning,” expands upon the learner needs theme presented by Drs. Pershing and Lee. Neil Carrick, an e-learning consultant in Dublin, Ireland, presents a case study that exemplifies the complexities of learner and organizational needs and how they can both be met through the instructional design process. Dr. Carrick’s challenge was to produce an instructional solution for both expert and novice workers using non-standard information in a dynamic learning environment. The product also needed to be easily updated by the users themselves. His account of how that solution was designed and imple-
mented shows exactly how an instructional designer must “represent the learner” during this phase. This case study also describes and gives the rationale for the environmental analyses. Frequently environmental analysis is skipped or forgotten because it is assumed that the learning will take place in some standard environment, i.e., the classroom or the worker’s desk. But Dr. Carrick’s “classroom” was a manufacturing clean room where technicians wore full body suits including headgear that restricted mobility, hearing, and vision.

**DESIGN, DEVELOPMENT, AND IMPLEMENTATION**

The case study written by Elizabeth Hanlis of the TELUS Centre for Professional Development in Edmonton, Alberta, Canada, is the substance of Chapter III. Her chapter, “Application of an Instructional Design Model for Industry Training: From Theory to Practice,” examines, considers, and reflects on the “problems encountered when attempting to apply an instructional design model in the development of two different courses for industry training.” Through her eyes, specific issues are addressed including “tight budgets, limited cooperation from subject matter experts, high expectations of clients, major changes to finalized designs,” and more. Ms. Hanlis talks about her experiences while designing first a course for a large global health care company and then for a smaller international chemical company. She covers project team roles, needs analysis conducted by managers, designing without a budget, working within a team, and satisfying client desires while still living and working within the available resources. In her summary, Ms. Hanlis provides a great list of “dos and don’ts” from which all instructional designers, new or experienced, will profit.

Jillian Rickertt in Sydney, Australia, expands the view of the design-develop-implement process with a cross-cultural case study in Chapter IV. In “Cultural Wisdom and Hindsight: Instructional Design and Delivery on the Run,” Ms. Rickertt takes the reader on a roller coaster ride that dramatizes an instructional designer’s need to be quick thinking and flexible throughout the ADDIE process. Although promised preparation time and resources before leaving for India to put together a customized course, the author finds that she must use her entire toolkit of instructional design theories and strategies, designing and developing nightly during a two-week course. She also must find new ways of communicating and listening in order to meet her company’s goals while she is miles away from her home office. At the end of her saga,
Ms. Rickertt provides a list of lessons learned and suggestions for handling similar situations in the future. This chapter should be required reading for all instructional design students and novices.

A short case study follows. John Lew Cox and Terry R. Armstrong have taught business courses for many years in a traditional university setting. However, the environment suddenly changed and they found that delivering traditional management courses in a rural Finnish setting required instructional redesign. This case study describes that redesign, what happened during delivery, and provides advice to others who find themselves in similar situations.

In Chapter VI, “Applying Contextual Design to Educational Software Development,” Mark Notess presents and justifies the need for a different instructional design methodology for those times when context and not content is the goal of the instruction. Contextual design, Mark argues, is suitable when delivery technology and the instruction must be designed simultaneously. “Contextual design,” according to Notess, “emphasizes the need to base design decisions on a shared understanding of how real people do real work in real contexts.” Much knowledge, he continues, “is embedded in the environment, including tools and processes.” Readers can easily follow the step-by-step description of this process and its application to a course where music students need to both listen to and analyze their assignments. Professor Notess’s approach is comparable to the user-centered approaches to design advocated by human factors gurus Donald Norman and Jacob Nielson.

EVALUATION

There are three chapters devoted to the evaluation phase of the ADDIE process. Evaluation is that part of the process that in the real world is most likely glossed over or in some cases actually skipped. But each of these chapters demonstrates why the evaluation phase remains an equal and powerful component in the instructional design process.

The case study in Chapter VIII resembles some of the more traditional evaluations of instructional design, such as one might find in academic research studies. A group from the Belgium Center for Instructional Psychology and Technology, Geraldine Clarebout, Jan Elen, Joost Lowyck, Jef Van den Ende, and Erwin Van den Enden, evaluated a computer-based, expert system training program called KABISA. This program was designed to help medical students develop their diagnostic reasoning skills. The evaluation used two approaches to answer its questions. To find out if students actually used the embedded help functions and which path the students used in order to reach
their diagnoses, log files were examined and evaluators used think-aloud protocols. Experts were used to score the errors, deviations from criterion paths, and the seriousness of the students’ diagnoses. The result of this study provided evidence that more attention should have been given during the analysis phase of this “expert system.” They found, for example, that the difficulty level of the program was not adaptable to the students and that the feedback did not encourage them to adopt problem-solving processes.

The next chapter contrasts with the previous classical academic study from Belgium. “Guerilla Evaluation: Adapting to the Terrain and Situation,” by Tad Waddington, Bruce Aaron, and Rachael Sheldrick, provides insight into the evaluation process within the unique world of training. The perceptiveness of this team provides practical advice for achieving effective evaluation within corporate systems where results are measured both by performance and return on investment (ROI). Their experiences have led to a set of tactics that are applicable to many situations and environments. They explain the value of each of those tactics and how they arrived at their “V-model” that bridges “local business context, best practices in evaluation, and the shift in emphasis from traditional training activity to performance improvement.” Communication, timing, and information sharing are key to survival in an atmosphere where resources are scarce, budgets limited, and the stakeholders make decisions based on the data collected and reported. Dr. Waddington, Dr. Aaron, and Ms. Sheldrick present cases from their experiences to illustrate their four key strategies: leveraging statistics, leveraging available data, contracting for needed skills, and using technology to save time and money.

The final chapter in this evaluation section proposes various standards to be used for evaluating instruction. Noel Estabrook and Peter Arashiro from Michigan Virtual University have developed comprehensive standards that can be applied to online instruction in order to answer the important questions of what, if anything, was learned and how well it was learned. Their standards are based on their variety of experiences with educational, manufacturing, and government systems, and their goal is to “help identify, develop, and apply sound and appropriate instructional design standards” in order to “produce better courses” that are efficient and appealing. The result is over 100 e-learning standards in the areas of technology, usability, accessibility, and design. Drs. Estabrook and Arashiro remind us that instruction is both a science and an art, and emphasize the former. Additionally the chapter provides a case study in applying these standards to the development of an online course. Ultimately, they show how the standards can also be used in making decisions about building, fixing, using, keeping, and/or purchasing courses. This infor-
New Methodologies and System Integration

The final section of the book deals with new ideas and methodologies and system integration. The previous chapters have poignantly illustrated the need for instructional designers to be analytical, flexible, and creative within the ADDIE process. These last chapters provide additional resources, strategies, and lessons for the real world.

Reusable Learning Objects (RLOs) and Reusable Information Objects (RIOs) have the potential to update and enhance the ADDIE work process by using technology to flatten out “knowledge silos.” Pam T. Northrup, Karen L. Rasmussen, and David B. Dawson address this issue in their chapter, “Designing and Reusing Learning Objects to Streamline WBI Development.” Their project applies RLOs and RIOs to the design of an online teachers’ professional development program for a local school district that could also be reused in other districts throughout their state. After investigating different models, they found that their program will allow learners to “customize their own knowledge paths by selecting RIOs and RLOs that most closely align to their immediate instructional needs.” They explain how the RIO components of content, practice, and assessment are used, assigned to a cognitive level, and tagged. The RIOs can then be combined along with Overviews and Summaries to form RLOs. Their team included designers and subject matter experts who worked together to enter, review, revise, and approve the RIOs that became the basis for an educator’s professional development Web-based system customizable for schools and school districts within the State of Florida.

Systems integration is addressed in the final two chapters.

The implications of integrating Internet-delivered courses into university systems is addressed by Vassilios Dagdilelis, who teaches at the University of Macedonia, Thessaloniki, in Greece. Dr. Dagdilelis speaks about the wide range of Information and Communications Technologies (ICTs) that must be integrated into university systems and of the problems thus far encountered. He describes the university ecosystem that is characterized by a history of rich learning environments, the necessity to conduct research, and the expectations of holding and creating new knowledge. He also recognizes the larger systems or tertiary institutions within which each university system is functioning. These tertiary institutions, although existing in different nations and states,
tend to have homogeneous reactions. Globalization, instant communications, and academic drift ensure that as large, prestigious universities adopt certain aspects of ICTs, the less well-known institutions will adopt the same strategies without “necessarily passing through the intermediary trial stages.” For this and other reasons, Dr. Dagdilelis believes that the ADDIE methodology needs some adjustments. He believes that ADDIE was originally intended for use when the audience was known and analyzable, and the interaction of the instruction with the learner was visible. He advocates the expansion of ADDIE so both of these constructs, the audience of the learning and the interaction of the instruction, can be approached by instructional designers in ways that are compatible with the new reality of the system.

Instructional design has many of its roots in the military, and it is fitting that this last chapter speaks to another type of integration, this one within the military training system. Mary F. Bratton-Jeffery, of the Naval Education and Training Command, and Arthur B. Jeffery, from the University of South Alabama, propose integrating business models with military instructional design and training. The business model that they propose for use with ADDIE is the Value Chain model. The result is a technique they call Quality Function Deployment (QFD). Stakeholder requirements and instructional imperatives or needs are identified and strengths of their relationships assessed. After this, some tradeoffs might have to be made or alternative designs proposed. A value analysis is completed and the no/go decision is made. The same QFD process can then be iterated using the instructional imperatives with instructional strategies and/or with instructional tools. They believe that combining the best practices of both worlds will improve the training because the stakeholders’ needs and requirements drive the product. Again, they are not advocating losing the ADDIE system, but expanding it.

There is a tools section in the appendix. These are some of the tools that I have designed and used in my 10-plus years of designing instruction. They may prove helpful to students and new designers.

**CONCLUSION**

The works presented in this book are not comprehensive of instructional design as practiced in the real world, but are, I believe, representative. Some chapters that I reviewed were considered but could not be included because businesses and organizations have exclusive rights and consider the products of their designers to be proprietary. This is understandable but regrettable since it is my belief that information improves as it is shared. A friend and
fellow instructional designer, who I met while editing this book, has developed her own theory about designing training. Luisa Cardenas, who works for a national non-profit organization, calls it the Penguin Theory:

*How much about penguins would you like to learn?* the designer asked. *Excuse me?* was the reply. *There are volumes written about penguins. I need some parameters.*


*Enough to know how to do my job,* was the answer. *Ah, now we’re getting somewhere!* concluded the designer.

Hopefully the chapters in this book will provide the readers with what they need to do their jobs.