# Chapter 1

# Using a Problem-Based Approach to Designing e-Learning



*Some argue that a science of design is possible and represents an important goal. Cross, reporting on a number of studies in design, argues that design is quite different from science. While scientists focus on the problem, on discovering the rule that is operating, designers focus on the solution, on achieving the desired result.*

Rowland, 1993, p. 81

## In This Chapter

This chapter introduces our general approach to design, a problem-based approach. In doing so, this chapter explores some of the myths surrounding e-learning and the role and nature of design in the process of addressing real-world challenges with e-learning. Specifically, this chapter considers the following questions:

- Why won't simple solutions solve fundamental design problems with e-courses and e-curricula?
- What is the *design* of e-learning?
- What is the problem-solving approach to design described in this book?

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In early 2001, the executives at a large corporation decided to move its highly regarded management training online. Even though the training department had no

experience with e-learning, executives hoped to duplicate the success that the corporation found in the classroom online, while significantly slashing training delivery costs.

Without a choice, the training department took up the challenge of transferring the curriculum. Adopting the concept of *blended learning,* in which different courses in a curriculum are delivered by different media (thus *blending* the delivery method), instructional designers moved some of the material into self-paced web-based training units (called *asynchronous learning,* because the instructor and learner are separated by both time and geography) and the rest into a *live virtual classroom* (a classroom session conducted online, with an audio connection, PowerPoint® slides, and the ability to interact with the instructor, called *synchronous learning* because learners and the instructor are both online at the same time).

Because the management training curriculum had been taught extensively for years, the instructional designers knew that they had effective content that was properly tailored to the needs of the intended learners. So the designers focused their efforts on converting the materials. Content that required interaction with an instructor was placed in the live virtual classroom. Content that stood alone was placed in a web-based training format. Once designers determined that material would be presented online, designers followed procedures for converting the material that had been suggested in basic books on designing e-learning. In total, course designers converted five days of classroom training.

Because they felt that the content was well-tested, the designers did not conduct early pilot tests with prospective learners of the first units of the program that they finished developing to make sure that their approach would be successful. They conducted the pilot test only after the entire course had been converted. Unfortunately, the course received mixed reviews from participants in that pilot. Management looked at the comments, specifically focusing on the issue that the logistics of the blended course were confusing to learners and administrators. Concerned that the blended curriculum would fail, management terminated the project rather than see it through to completion.

This conversion is like so many early efforts by organizations to move content online: full of high hopes, only to be dashed by the realities of production and implementation. In fact, studies suggest that 62 percent of learning technology initiatives fail to meet expectations (Van Buren & Sloman, 2003). In this case, like so many others, management entered the project with a realistic business goal—reducing training expenses. Course designers entered the project with extensive experience with

the content and the design process. Learners entered the course with every interest in learning. But the course failed because of a simple fact: designing e-learning is different than designing classroom and workbook-based learning.

Although helpful, previous experience with the design process itself does not guarantee that the designers reach a successful end. That requires consideration of a number of issues that apparently were not addressed by the sources consulted by the designers of this failed online curriculum.

e-Learning is easy to get started with, but succeeding is another story. And the statistics bear this out. Adoption rates for e-learning are much slower than originally forecast. For example, although one prediction made in the year 2000 suggested that 53 percent of all corporate learning would be online by 2003, actual adoption rates suggest that, by 2005, e-learning represents at most 30 percent of all corporate learning (Sugrue, 2004). Although some proponents of e-learning have claimed that it offers a superior learning experience, satisfaction levels are disappointing. In a survey conducted by DDI in 2002 (reported by Van Buren & Sloman, 2003), corporations in several countries were asked to rate the effectiveness of e-learning in their organizations. On a scale of 1 to 10 (with 10 being high), the average rating of effectiveness was 3.9. And a number of people just think most e-courses don't work. For example, one major food manufacturer had to customize 75 percent of the off-the-shelf e-courses it purchased because the content didn't work with its staff. So much for the plug-and-play value of e-learning (Van Buren & Sloman, 2003).

Lest you believe that the case for e-learning is hopeless because e-learning has not been adopted at predicted rates and is not generating exceptional levels of satisfaction, consider these other signs. For the past five years, training directors have repeatedly reported that e-learning is at least moderately successful in meeting their needs (Carliner, Groshens, Chapman, & Gery, 2004). Barron (2002) reports that e-learning has shown success in contexts such as certification and training on information technology.

In other words, e-learning is a relatively new approach to instruction, and instructional designers are just starting to find ways to make it work in their organizations. Although it has not achieved the hype predicted for it during the e-learning-is-the-next-killer-app years of the late 1990s and early 2000s, it is also not a dismal failure. It is, like most instructional design challenges, a complex challenge that involves identifying and addressing a variety of issues. e-Learning succeeds when designers understand the educational, economic, and technical challenges they face and the ways to best use the computer to address these challenges.

## Why the Simple Solutions Won't Solve Fundamental Design Problems with e-Curricula and e-Courses

Addressing this complexity requires an equally complex approach to design. In fact, the more complexity that designers encounter, the larger and more varied the number of solutions they bring to a situation. This body of solutions is called a *portfolio* of techniques and represents a "bag of tricks" that instructional designers can call on when faced with an e-learning problem.

### The Solutions to Effective Teaching Online

Unfortunately, that's not the message that the industry press offers us. In an economy and industry that emphasizes "next big thing," "experts" offer easy and all-encompassing solutions to complex problems of learning and instructional design. These solutions have served as one of the biggest impediments to instructional designers developing a rich portfolio for designing e-learning. Before we can explore the development of such a portfolio, we have to consider the easy and all-encompassing design solutions for e-learning that have been offered and why they are neither easy nor all-encompassing.

For starters, consider these claims:

- e-learning is more effective than classroom learning.
- Games are the only way to teach online because the today's youngsters seem to be excited by games (Prensky, 2002).
- Simulations are the best way to teach online and all learning should be interactive and engaging (Aldrich, 2003).
- Enterprise learning is the answer because it's much cheaper and more efficient to manage all learning from a central source (Gold, 2003).
- e-Learning must be personalized because different people have different learning styles and computers can tailor the learning experience to individual needs.
- Learning comes in mix-and-match pieces that can be recombined at the moment of need to create a course that addresses a learner's unique content needs (Longmire, 2004).
- Finally, some people believe that we just haven't measured enough to prove that e-learning is effective.

## The Problems with the Solutions

But think about this practically. Are the strategies that make a great algebra class the same ones that make a great physical education class? Civics? Cooking? Private investigator licensing? These subjects share nothing in common, so why should they be forced to share a pedagogy in common?

Perhaps, then, e-learning is not a noun to describe the learning experience, but an adjective that merely identifies the medium of instruction. The nouns are "mathematics," "manufacturing training," "new hire orientation," and "rocks for jocks" (that is, geology for nonscientists). The courses each have unique material, unique sets of learners, unique development and implementation budgets, and unique development schedules and are offered by different types of learning institutions—some offering courses for academic credit, some offering them to maintain an existing job, some just for fun.

For designers to take their e-learning to the next level, they have to move past these "I've got the universal solution" approaches because they simply aren't universal. Consider the responses to each of the universal solutions presented in the previous section:

- The effectiveness of e-learning compared to the classroom: The research suggests that e-learning is merely *as effective* as classroom-based learning—no more, no less. These comparison studies also assume that the material in both formats has been professionally designed (Russell, ongoing).
- The limitations of game-based learning: Although youngsters do enjoy their computer games, most of them recognize that learning and computer games are not the same activity and have different expectations for the two.
- The limitations of simulation learning: Simulations are useful for teaching many types of content (Sugrue, 2004), but not all content. For example, one need not simulate the experience of swimming. It can be taught by letting learners actually swim (an off-line experience).
- The limitations of enterprise learning: Although enterprise-wide learning is a great strategy, there are few courses that both the receptionist and the CEO need to be enrolled in. Furthermore, because many organizations like to empower their operating units, resulting differences in operations may result in differences in training that render enterprise training inappropriate.
- The limitations of learning styles: Although learning styles are a popular theory, few studies show that learning styles really contribute to actual

learning achievement (Sugrue, 2004). So addressing them in the design of courses is a time-consuming effort that pays few dividends. Even if learning styles were proven to be effective, the difference between effectively presenting content for verbal and visual learning styles involves more than presenting visuals first or second, which is the dominant approach to such design. Rather, developing courses to reach different styles requires that the courses be re-developed completely for each learning style. A course for visual learners would rely almost exclusively on pictures and other visuals, while a course for verbal learners would rely almost exclusively on text.

- The limitations of reusable learning content: Although some learning materials can indeed be reused, the use of reusable learning content—called *reusable learning objects*—in most corporate environments—especially those in organizations with fewer than 50,000 workers—has not worked. As one director of a major consulting firm that decided to implement learning objects admitted, "It was a disaster." Even in private, most learning objects experts admit that much of the concept does not yet work in practice, saying that efforts to design learning objects focus more on standards for using them with particular types of software than the instructors who will actually need to use them.
- The need for more measurement: Although some people claim that e-learning produces a high return on investment, empirical studies conclude that e-learning has failed to generate the productivity gains it has promised. In fact, one of the fundamental justifications for computerizing learning has been the promise of increased productivity of educators. Computers have led to such productivity gains in other fields. For example, by letting customers order products online, companies have achieved significant reductions in inventory costs and improvements in delivery times. e-Learning has not delivered such benefits. For example, some proprietary studies say that the only savings that have been realized from e-learning have been travel-related. In addition, many instructors who teach online courses find that they take more work than their classroom equivalents (National Education Association, 2000).

In other words, rather than looking for a single silver bullet to effective e-learning, instructional designers might look inward—at the specific performance problem or content to be presented—for suggestions on ways to effectively teach online.

## The Right Way?

When looking at these specific design challenges, another approach that's prevalent within the world of instructional design is to look for the "right way" to do things. The "right way" often refers to research-based solutions to challenges. When addressing problems like these, designers consider what might be more effective: teaching a lower-level psychomotor skill with visuals alone or teaching one with visuals and sound.

The answers make a number of assumptions:

- That indeed a researcher has conducted research on this specific problem. Despite the claims of many authors and speakers (for instance, Wallace [2004] claims that training and the related field of human performance technology are "research-based disciplines"), in many instances, there is no research.
- In those situations for which research has been performed, the research also needs to be relevant to the case at hand. In some cases, the research was performed with a group of learners who share nothing in common with yours. For example, most of the science of multimedia is based on research with U.S.-based college students. Most of these students are in their late teens and early twenties and have not held full-time professional employment (Clark & Mayer, 2002). Most trainers work in environments that employ people who are considerably older and who have held professional employment for an extended period of time. Both the physical capabilities and learning strategies employed by the research group and the group of actual learners substantially differ. In the research groups mentioned earlier, most of the participants speak and write English as their first language, but much training goes to people who use English as a second or third language. A substantial body of research suggests that second-language learners have different strategies than first-language learners.
- In addition to differences among learners, many of these studies controlled the learning situation so extensively that the content under study substantially differs in reality from the problem about which the designer has an interest. For example, some studies suggest that off-topic learning games distract interest. But the studies only looked at brief learning segments (less than 4 minutes). In most actual learning programs, these activities often exceed 15 or 30 minutes. Therefore, the studies may not provide complete insights into the situation (Thalheimer, 2004).

- But perhaps the most significant omission of this "scientific" research is that hardly any of it states the practical considerations facing the designers of the learning experiences. Most corporate instructional designers have limited budgets with which to develop their courses, but few studies state either the budgets or development schedules used to create the courses that were covered in the study. Most academic instructors have even less design and development time than their corporate counterparts. For example, university instructors are advised to allot just one hour of preparation for each hour of classroom instruction. Admittedly, this metric assumes that the instructor is already conversant in the subject matter. Instructors are supposed to spend their time, instead, on their academic research. So although a learning strategy suggested by the research might seem appropriate to a given situation, the designer might not have the actual resources to implement it and thus must choose a different alternative. In many instances, the alternative seems less than optimal at the time the decision was made but, in the end, may prove just as effective educationally as the original strategy.

Similarly, many instructional designers turn to e-learning not because it is the best choice for a given situation, but because it is a requirement of the assignment. So e-learning will be chosen regardless of its likely effectiveness. The instructional designer doesn't choose the medium in an instance like this; the instructional designer chooses strategies that make the medium work to its best advantage.

## The *Design* of e-Learning

On the one hand, we've probably offended a lot of people by now by sacrificing their sacred cow. But the truth is, if these solutions were so effective, they would be working now and e-learning would be in a different state than it is.

But we think that the problem with e-learning ultimately arises from the definition of design.

Most books on designing e-learning define what learning means to the author. But the authors aren't really writing about learning. They're writing about the design process, and few explain their beliefs about design. Those beliefs about design guide the discussion of designing e-learning. So we believe that, to understand the approach in this book, we must explain how we view design.

## What Is Design?

We see design as:

> A disciplined inquiry engaged in for the purpose of creating some new thing of practical utility. It involves exploring an ill-defined situation, finding as well as solving a problem(s), and specifying ways to effect change. Design is carried out in numerous fields and will vary depending on the designer and on the type of thing that is designed. Designing requires a balance of reason and intuition, an impetus to act, and an ability to reflect on actions taken [Rowland, 1993, p. 80].

In other words, we see design as a problem-solving discipline. Problem solving implies two things: first, that an effort must be made to define the problem and, second, that the solution is intended to address the problem identified. The more thoroughly the problem is identified, the more likely that the solution will address it.

## What Are the Basic Beliefs About Design?

Underlying this definition are the following beliefs:

- No two problems are the same. That is, each time someone designs a course, he or she faces a unique set of circumstances. Admittedly, sometimes many characteristics will be the same (similar learners, similar organizations). But, if nothing else, the point in time at which the training is designed is always different.
- One of the key purposes of defining the problem is identifying the constraints underlying the situation. Many of these constraints limit the solutions designers can consider. Although some courses are presented online because that seems to make the most sense for the particular learning material, many more courses are presented online because a sponsor or some other stakeholder required it. Designers did not consider classroom learning because it was not an available option.
- Rarely does a single, perfect solution exist to a given problem. Rather, several possible solutions exist, and one of the jobs of the designer is making a tradeoff among educational, economic, and technical issues to devise a solution that is likely to address the learning objectives and the needs of the sponsors and the learners, within the schedule, budget, and technology constraints imposed on the project.

## The Limitations of a Scientific Approach to Design

Reaching a solution is part science, part instinct, part art. In studies of designers, most exhibit a strong idealism (Carliner, 1995). They want their courses (or whatever they're designing) to have a positive impact on the people who use them. They want their work to be the most effective that it can be.

But many designers are also realists, and the best enter design projects with a strong awareness of practical limitations. This is where instinct comes in; a good designer has an instinct for what will work in a given situation and what can be done with a given schedule, budget, and technology infrastructure. That instinct is honed with experience. The stronger the base of experience, the more situations that the designer can draw on for inspiration (Christensen & Osguthorpe, 2004). That's why new designers rely so strongly on research. Because they lack experience, research allows them to substitute the experience of others to help guide their instincts (Christensen & Osguthorpe, 2004; Clark, 2003).

When using studies that are performed with similar students and in similar situations, the studies can provide a greater sense of comfort that a given solution (or partial solution) is likely to be effective. What new designers have to realize, however, is that the more different the situation that they face is from the one described in the research study, the less they can rely on that study to predict the likelihood of their own success. Experimental studies, which are the ones most often cited to suggest the effectiveness of certain approaches, are intended to demonstrate a predictable relationship. But the situation cannot be predicted with the same level of confidence if the characteristics that are key to those relationships differ.

Advocates of the scientific approach also note that following the instructional systems design process results in more effective instruction (Clark & Mayer, 2002). Unfortunately, little evidence supports that claim. Although scores of instructional design models exist, only one has been actually been tested in practice, according to Gustafson and Branch (2002), who have tracked and documented all of the instructional design models for the past several decades.

Rather than *de*scribe actual instructional design practice as observed in organizations, these models *pre*scribe how instructional designers should approach the design task. The steps listed in these formal processes say more about the things that instructional designers value about instructional design than they do about the tasks that instructional designers actually perform. For example, a typical instructional design process like Dick, Carey, and Carey's (2000) has five steps for needs assessment and related activities and only one step each for instructional design and de-

velopment. This would suggest that the bulk of instructional designers' time is spent on assessment. Empirical evidence suggests otherwise. Surveys of instructional design practice conducted through the years suggest that few instructional designers perform more than a cursory needs assessment (Guerra, 2003; Wedman & Tessmer, 1993; Zemke & Lee, 1987, to name a few). Research also suggests that only a limited amount of evaluation actually occurs (Van Buren & Erskine, 2002, reported in Arthur, Bennett, Edens, & Bell, 2003). Instead, the bulk of instructional designers' efforts are spent on instructional design and development. Perhaps the reason that most models describe needs assessment in such detail is that they represent the process as their authors would like for it to be performed. Many of the same studies also suggest that instructional designers believe that they should be spending more time on needs assessment.

In other words, the scientific approach suggests that instructional design is a methodological process that makes extensive use of analysis and evaluation and that relies on research-based solutions when, in fact, instructional design is more of a design and development process that relies on a limited amount of analysis and that improvises solutions that balance educational, economic, and technical challenges.

## Limitations of the Philosophical Approach to Design

Because much of the scientific basis for instructional design falls apart under close scrutiny, some designers choose to take a totally intuitive approach. They often base design decisions on their philosophy of learning. Two well-known philosophies of learning are

1. *Behaviorism,* which states that learning is a change in behavior and that the only behaviors that matter are those that can be observed and measured. The behaviorist approach is evident in much corporate technical training and technical colleges because it focuses on teaching observable and measurable skills. Much of the instruction is focused on helping learners build the capacity to perform these skills (behaviors) without unnecessary assistance
2. *Constructivism,* which states that learning "is an active process in which learners construct new ideas or concepts based on their current [and] past knowledge" (Bruner, 2002). The constructivist approach is evident in many academic courses and management education programs because it focuses on the acquisition of concepts and their situational application. In the constructivist approach, much instruction is focused on helping learners develop their critical thinking skills.

Because these designers are primarily guided by philosophy, much as Cubist, Impressionist, and De Stijl artists (among others) were guided by philosophy, we classify this approach to design as the *philosophical* approach.

One of the issues with the philosophical approach is that its practitioners promote it almost religiously, even when the philosophy is clearly limited.

Because many behaviorist designers insist on following rules, they dogmatically follow rigid templates to designing courses, whether or not these make sense or apply all that well. For example, an instructional designer for a computer installation course insisted on including interaction every three screens in a web-based training program because he had read that guideline in a textbook on instructional design. He insisted on retaining that guideline, even when someone pointed out that the guideline was developed for computer-based training in the 1980s, before graphical user interfaces were available and before simulations, graphics, and pop-up windows could make a course interactive without asking questions, thus outdating this guideline.

This inappropriate application would not be lost on a constructivist designer, who focuses primarily on thinking skills. Such designers often fall into the trap of designing courses that promote thinking, but fail to determine what they really want learners to think about. Consider, for example, the academic e-course in which the instructor led a lively discussion online about computer security with students. The instructor was proud because he had helped learners discover the principles of the topic. Unfortunately, after the lesson, learners wondered why they had spent an entire virtual session on computer security when the topic of their course was research methods.

In some instances, advocates of instructional philosophies like behaviorism and constructivism are not aware of their names, much less the epistemological foundations of these philosophies (*epistemological* refers to the belief system underlying the philosophy, including fundamental beliefs about what knowledge is).

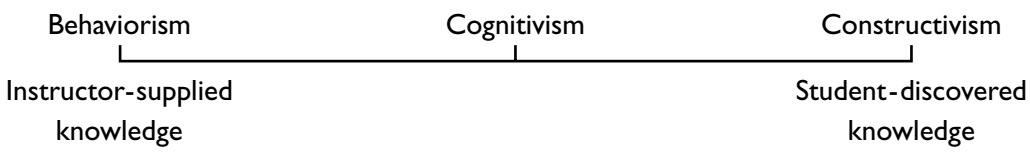
In our experience, neither of these philosophies is inherently better than the other. Both are only effective when they are judiciously applied. For example, a behaviorist approach can be useful in teaching installation skills because there really is a preferred way of performing this task. Designers would not want learners "discovering" the procedure through trial and error. Although some learners might discover the correct procedure, others would not or would discover a procedure that is only partially correct. The time needed to discover such a procedure would also be much longer than if designers merely told it to learners.

Similarly, a constructivist approach is effective for teaching learners about the application of principles and policies. For example, although an organization may have a clear policy on approving time off for workers, the challenge to managers is in the application. In some departments, such as a product development or corporate communication department, nearly all of the staff can take off on a holiday without jeopardizing the company. In other departments, some staff must always be working to avoid jeopardizing the company, such as the security and help desk departments. Constructivist learning helps sensitize managers to these differences.

Furthermore, although behaviorism and constructivism are the best-known learning philosophies, others exist, such as humanism and liberal education, to name a few. (We discuss these further in the next chapter.)

In addition, most experienced instructional designers see the philosophies as laid out on a continuum and, within a given course, may choose learning activities that exhibit qualities of both philosophies, because the activities seem appropriate to the content being taught at the moment. Figure 1.1 shows a simple continuum of some of these philosophies. The next chapter explores them in detail.

**Figure 1.1. Continuum of Educational Philosophies**




## The Problem-Solving Approach to Design

Although the philosophies are often presented as distinct from one another, many courses actually reflect several philosophies. The reason that many experienced instructional designers can integrate several philosophies into a single course is that most instructional designers are guided more by practical considerations than by philosophical ones. Enriched by many instructional design projects, these designers see each project in its own light, and use the philosophies as a means of illuminating one part of that project. Instead of a philosophy governing their entire approach to a course, these designers rely on something else. From their portfolios of instructional design techniques that they have used on previous projects, these instructional

designers choose a design technique that has successfully worked on a similar project and either apply it as is or adapt it to address the needs of the situation.

Such instructional designers first define the problem they've been assigned to address, then suggest a solution. Research suggests that most instructional designers perform minimal needs assessments (Rossett and Czech, 1996). In fact, they rarely approach design as a linear process. Instead, these designers perform several design tasks at once, especially when designing e-learning programs.

Some approach design as an iterative process, in which designers first perform simple background research on the instructional problem, the learning context, and the intended learners, then quickly develop a prototype of the e-course. Then designers show the sample designs to representative learners and obtain their feedback. As a result of the feedback, designers deepen their understanding of the learners and the learning situation and revise the prototype course (Stone & Villachica, 2004). Designers repeat this process until the design is acceptable to the intended learners. This iterative approach combines the needs assessment and design phases. This is one example of the pragmatic, problem-solving approach to design.

The problem-solving approach is an informed one. For each project, instructional designers must research the background of the learning content, learning context, and intended learners before suggesting a solution. But problem-solving designers do so in an abbreviated way that takes advantage of the instinct developed with experience. For example, a designer performing her fourteenth project for the same company is not as likely to conduct a full audience analysis as is one working on her second. She already knows a lot about these learners and can quickly find the information she does not have.

Furthermore, although the problem-solving approach has a less dogged adherence to the research, it does not ignore it. It accepts research for what it is—a source of ideas that also provides insights to the likely success of an idea. But the problem-solving designer also recognizes that the only way to assure success of a given approach is to test it with the intended learners of the actual course.

## The Problem-Solving Approach to Design Described in This Book

If design is a problem-solving discipline, then the best way to learn about design is by exploring the problems that arise during the design process, not by exploring the process itself (Dabbagh, Jonassen, Yueh, & Samouilova, 2000).

By exploring design problems, instructional designers can first consider how they might solve a problem, then explore that choice again under a microscope of sorts. They can consider the learning content, learning context, intended learners, and constraints that affected that decision. They can consider the principles that guided them in making that decision, and how those principles might or might not work in similar situations—and dissimilar ones. Then designers can consider how they would actually handle dissimilar situations, thus broadening their design experience.

This book prepares such designers. Our problem-solving approach assumes that you already have been exposed to the instructional design process in general and have considered it in the context of e-learning. Although you may have each worked with different formal instructional design models, they are all essentially the same and cover the same types of issues (Gustafson & Branch, 2002).

In this book we do not assume that you have much experience with some of the more fundamental philosophies and theories that guide decision making in instructional design, especially for e-learning. So Chapter 2 begins with an overview of some guiding concepts in learning.

## Learn More About It

Clark, R.C., & Mayer, R.E. (2002). *e-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning.* San Francisco: Pfeiffer.

For a different perspective, consider this book. It presents a scientific approach to design, citing the studies and suggesting how the findings apply to the design of e-learning. Although some of the research transfers, we believe that several of the claims are broader than the research actually suggests.

Gagne, R.M., Briggs, R.L., & Wager, W.W.W. (1992). *Principles of instructional design.* San Diego, CA: Harcourt Brace College Division.

Gagne and company have written what many consider to be a classic in instructional design. This book delivers just what the name promises—the principles of instructional design—and that includes an explanation of the process for learning, a taxonomy of the domains of learning, and processes for designing instruction.

Prensky, M. (2002). *Digital game-based learning.* New York: McGraw-Hill.

For a different perspective, consider this book. It explains why a game-like approach to learning is essential in the digital era. Although we like games, we think that the book applies the concept too broadly.

Reigeluth, C. (Ed). (1999). *Instructional-design theories and models: A new paradigm of instructional theory.* Mahwah, NJ: Lawrence Erlbaum Assoc.

This book is for advanced practitioners who want to explore a wide range of instructional theories and models. The book provides a discussion of the similarities and differences among the theories that range from multiple intelligences to open learning environments.

Shank, R.C. (2001). *Designing world-class e-learning: How IBM, GE, Harvard Business School, and Columbia University are succeeding at e-learning.* New York: McGraw-Hill.

This book presents an idealized version of e-learning and has played a significant role in shaping ideas in corporations and universities about what makes effective e-learning.

## Website of Interest

www.nosignificantdifference.org

Compiled by Thomas Russell, this site explores most of the research on distance and e-learning spanning the past eighty years and concludes that the medium of instruction makes no significant difference (hence, the name) in the quality of instruction when instructional design is equally good in both media.