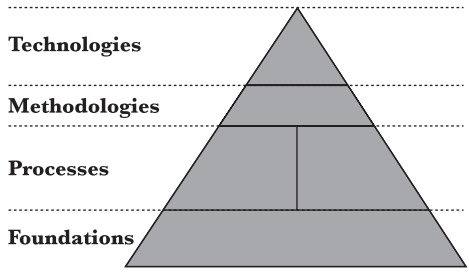
Part One

Facilitating Collaborative Work

CHAPTER ONE

WHY iLEARNING?



LEARNING OBJECTIVES

After reading this chapter you will be able to do the following:

- *Discuss why* iLearning is needed for the next level of innovation.
- *Discuss what* instructional systems design shares with iLearning.
- *Discuss how* to gain a systemic viewpoint on organizational performance problems.

EXPERT ADVICE

After reading this section you will be able to discuss why iLearning is needed for the next level of innovation.

Dear Mark,

I'm sold on the positive effects of knowledge management techniques—how they can save time and money for an organization. However, putting in a big effort to save later is usually not done by businesses that live and die on a quarterly financial statement. Is there a more compelling reason to better manage our knowledge other than it makes us more efficient in the long run?

Signed, "So What's the Big Idea?"

Dear "So What's the Big Idea?"

As human beings we admire the creations of individuals—Shakespeare, Michelangelo, and many others throughout history. However, some of our greatest accomplishments, especially engineering achievements, are the result of collective work—the focused brainpower of a group of humans. These collaborative achievements include the building of the Titanic, the manufacture of automobiles, and the development of the space shuttle. In engineering achievements at this level, no one person has all the knowledge to complete all aspects of the work.

However, we are hitting a wall in terms of the complexity of the work that we can intellectually share. This is evidenced in failures such as the sinking of the Titanic, automobile recalls, and technical failures with the space shuttle. To go beyond this wall, we need to model and manage the knowledge that we collectively create and share. Only then will we be able to go to the next level and solve problems such as curing cancer and deep space travel.

Remember, this wall also has implications for today's businesses here on earth that supply products and services to the marketplace. For them, it means that to offer more complex products and services, they too will have to model and manage the knowledge that their employees collectively create and share.[1]

iLearning: An Example

What is it that managers want for their organizations? Of course they want results. But how do you go about getting those results? You have everyone working and learning together in a seamless

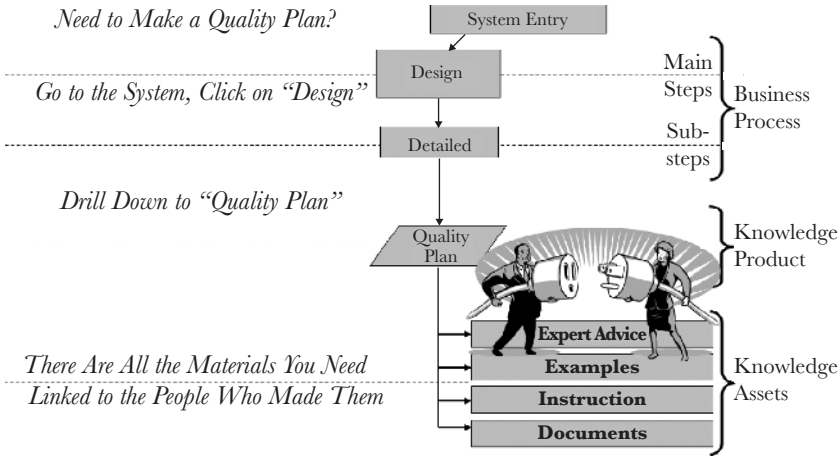
fashion. No "cowboys" working their own agendas. No reinventing the wheel. No enduring long periods of indecision while people get "up to speed." No reworking. And most important, your organization has the ability to think "larger" than one person—it has gotten beyond the Einstein model, being as smart as its smartest individual. That is, your organization has collaborative intelligence—without having *groupthink*. And because it has this intelligence, it is able to take on complex tasks that are larger than anything a single person can wrap his or her mind around. This is the essence of collaborative work.

In addition, people must be able to learn as they work if they are to foster innovation. Innovative learning begins with all team members having access to the same knowledge for the current *best way* of solving a problem. Organizations provide access to this knowledge through documents, instruction, examples, and expert advice—making the current best way of solving a problem known to all members of the team. Knowing what they know, the team members are now prepared to look at innovative ways to solve the current problem. This is where the best thinking of the past meets the best thinking of the present to create the best solutions for tomorrow. This is the essence of innovative learning—the learning that is needed to bring the next generation of complex products and services to the planet.

How would such an organization work? Consider the McBoe Company. It's a mythical outfit, the premier manufacturer of paper airplanes for the home enthusiast, but it experiences the same achievements and problems that real-life companies do. I will use McBoe throughout this book to show how the principles outlined in the Concept section of each of the following chapters can be applied in an organization.

Figure 1.1 outlines the story of how an iLearning organization might do some work. Let's begin with a McBoe engineer, a quality specialist, who needs to make a *quality plan* for a new paper airplane. The engineer goes to the company intranet site (perhaps from a cell phone) and accesses the McBoe manufacturing support system. Next the engineer clicks on the area of *Design*, then clicks on the area of *Detailed [Design]*, and then drills down to the area of *Quality Plan*. There the engineer finds all the materials that he or she will need to develop a quality plan. There is a document

FIGURE 1.1. JUST-IN-TIME DEVELOPMENT OF A QUALITY PLAN.

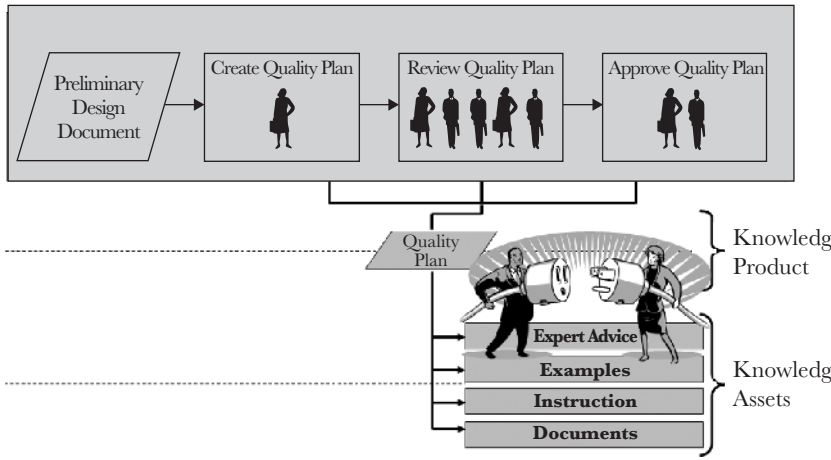


describing the performance objectives that need to be addressed in the quality plan—and how to go about addressing them. There is some instruction about the general principles behind a quality plan. The instruction also addresses the *why* issue—that is, why the project needs a quality plan. There are also some examples of successful quality plans, illustrating how others have applied the general principles of developing a quality plan to a specific project. Finally, there is some expert advice that provides direction on when and where to use one approach over another when developing a quality plan.

And that's not all the McBoe engineer finds at the Quality Plan area in the support system. He or she also finds links to the people responsible for the content—the authors of the documents, instruction, examples, and expert advice. The engineer can contact these authors directly to learn about the subtleties of the content and its application to specific projects.

In short, with these assets—the materials and the opportunity for an exchange with the people who authored them—the engineer can learn what is needed to get the job done. With adequate materials and the help of others, the engineer learns only what is needed, at the time it is needed (*just in time*) to create the quality plan for a new paper airplane.

Figure 1.2. Example of iLearning.



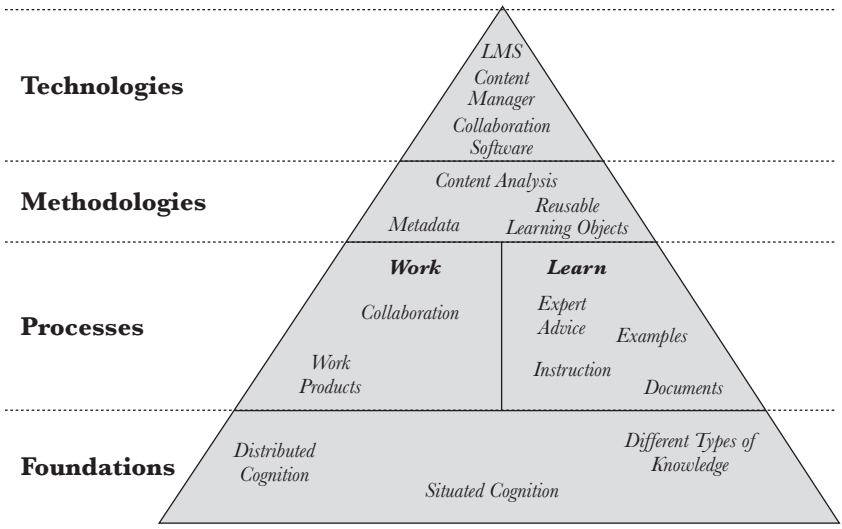
And as Figure 1.2 shows, creating a quality plan is just the first step toward completing that plan in a collaborative work environment. The next step is a review step, and finally there is an approval step. Note also that all the assets available to the engineer to create the quality plan—the materials and the opportunity for an exchange with the people who created them—are available to the other people involved in the review and approval steps. They, along with the engineer who created the quality plan, are engaging in the act of iLearning as they work together in a collaborative work environment. This collaborative team has access to the best way to create a quality plan that the company knows. If a new way is needed to create a quality plan, this team can build on the existing knowledge, in a just-in-time process, to create a plan that is truly innovative.

That's a great ending for this introductory story. If your organization is already at this high level of iLearning, do yourself a favor and skip the rest of this book. Celebrate your accomplishment and reward yourself by reading an exciting novel instead! However, if your organization is not at this high level of iLearning, then continue to read about how you can get your organization to work like the McBoe Company. But be forewarned. This is not a flavor-of-the-month or a quick-fix book. It is for those who are

willing to work to gain real improvements in individual, team, and organizational learning—and the performance it brings.

This example of the McBoe Company's experience illustrates what we all want to achieve in our organizations. However, what we have seen so far is simply the technology that serves up the information and connects the people. Technology-based solutions leave us wondering how the information gets into the system—and more important, how it is updated and maintained. It's quickly apparent that the technology is simply the tip of the iceberg, a particularly visible but small part of the much larger iLearning organization. Moreover, technology is not the essence of iLearning but a facilitator of it; technology is a means of connecting workers and providing information. As Figure 1.3 shows, this book supplies readers with the actual foundations, processes, and methodologies that construct the iLearning work and learning environment, as well as the information about the technologies (learning management system [LMS], content manager, and collaboration software) needed to support that environment. Furthermore, this book describes (in Part Three) how to conduct the organizational interventions that enable an iLearning organization.

FIGURE 1.3. LAYERS OF THE iLEARNING PYRAMID.



Building on the Familiar

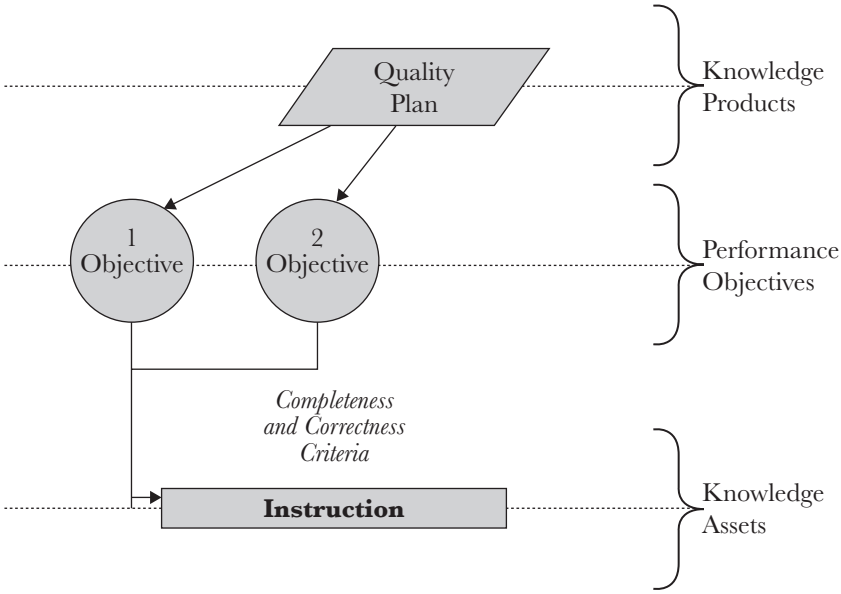
Like all good approaches for solving a complex problem, this book builds on a methodology that has provided proven results for previous problem solving. That methodology is *instructional systems design* (ISD), and it has been successfully used to solve training and performance problems for decades in organizations. (See my article for a detailed and referenced discussion of moving from ISD interventions to managing the knowledge in organizations.[2])

The major phases of ISD are typically identified as analysis, design, development, implementation, and evaluation. The design phase uses the information from the analysis phase to formulate a plan for presenting instruction to learners. Instruction involves organizing and providing sets of information and activities that guide, support, and augment students' internal mental processes. Learning has occurred when students have incorporated new information that enables them to master new knowledge and skills. This view of learning as a change in internal mental processes that results in improved performance is a cornerstone for modern applications of ISD intended to solve organizational performance problems.

Managers using an ISD approach to solve a performance problem in an organization begin by noting the difference between the current state of performance and the desired state of performance. For example, an organization might determine that the current state of human performance in creating quality plans is far below the desired state for the organization (see Figure 1.4). In other words, the organization has found that its quality plans are not very useful for doing what they are supposed to do—ensuring high-quality production. There is a big gap between how good the quality plans are currently and how good they need to be to guide meaningful testing of products before they are delivered to customers.

As Figure 1.4 shows, a quality plan is a *knowledge product*, or *artifact*. That is, it embodies conclusions, judgments, and decisions about what goes into a particular quality plan for a specific product. Also, every quality plan has a set of criteria, or *performance objectives*, that need to be met by the plan's human developers for its successful completion. These performance objectives are sometimes implicit,

Figure 1.4. Identifying Instructional Content.



that is, in the eye of the beholder. Even when they cannot easily articulate performance objectives, people indicate that they recognize the existence of such objectives when they use such phrases as, "I know a good quality plan when I see one," or, "Shouldn't a quality plan have a . . . ?" Performance objectives spell out what needs to be done and how well it should be done for a good quality plan.

One way to go about identifying performance objectives for a quality plan is to conduct a *content analysis*. This analysis starts off with the question, What knowledge does a person need to know to create a quality plan? The answer involves, first, the identification of the main broad areas of knowledge needed. One of these areas needs to contain the criteria for measuring product performance, called *completeness* and *correctness* criteria. Once the main areas are identified, they are broken down by topic. For the completeness and correctness criteria, topics include *product documentation, product performance*, and *product life expectancy*. Next, each topic is rewritten as a performance objective. In the McBoe Company example the topic *product documentation* might be rewritten as this

performance objective: "State the level of performance, criterion, and conditions for the paper airplane customer documentation." (For a complete description of the steps for conducting a content analysis, see Rothwell and Kazanas.[3])

Figure 1.4 illustrates that in this example two product documentation performance objectives have been identified from the completeness and correctness criteria identified for creating a quality plan. Performance objectives make a precise statement of what a learner should *do* in order to accomplish the stated performance. Each one contains a *performance component,* a *criterion component*, and a *condition component.* The performance component describes how proficiency will be demonstrated. Continuing our McBoe example, this component is the entire statement of the objective: "State the level of performance, criterion, and conditions for the airplane customer documentation." The criterion component in this example is implied by the word *state*—meaning that the "level of performance, criterion, and conditions" must be clearly defined to ensure a good quality plan. The condition component describes what conditions must exist when proficiency is demonstrated. This example has implied conditions in that no special conditions are needed in the quality specialist's environment for stating the performance, criterion, and conditions for airplane customer documentation. An explicit condition that could be required for this objective is "written with access to a simplified English dictionary." That is, the performance expected of the quality specialist would be required only if the he or she had access to a simplified English dictionary. Here is the product documentation performance objective ultimately created, reviewed, and approved by the quality plan team:

> A purchased paper airplane can be assembled, with instructions in American English or Spanish, with no mistakes in 15 minutes by an individual with a fourth-grade reading level.

Figure 1.4 also illustrates that in an ISD approach, instruction is developed for learners to achieve the identified performance objectives. As discussed earlier, instruction is one of many knowledge assets that can be used by learners to achieve performance objectives.

Finally, be aware that an organizational intervention delivered by ISD is typically a piecemeal approach to managing the knowledge of an organization. ISD begins by discovering a problem in an organization, then locating the work that needs to be improved, determining the knowledge needed to do the work, and finally designing instruction to teach that knowledge—all to solve a specific problem. Although ISD is good for solving the latest crisis discovered, it typically doesn't prevent the next crisis.

For instance, in the quality plan example of Figure 1.1, once workers are trained in making better quality plans, then the organization will have the benefit of better quality plans. However, making better quality plans will not prevent another performance gap from rearing its ugly head in another part of the organization. For example, suppose that after the various quality plans were improved, no overall improvement in product quality occurred. After some floundering it was discovered that there was another performance gap, this time in developing the *testing reports*. Only after the ISD process of analysis is invoked again will it be discovered that this new gap is similar to the gap discovered earlier in the knowledge of workers completing the quality plan. Once this similarity is noted, then a determination can be made of how much instruction, if any, can be used for both quality plans and testing reports. At that time, performance objectives similar to the ones previously written for workers completing quality plans can be written for workers completing testing reports. However, it is not until the lack of improvement is found that it becomes apparent that the two performance problems are related, that lack of knowledge for creating quality plans is related to lack of knowledge for developing testing reports. Creating instruction for the quality plans but not the testing reports did not lead to improved organizational performance.

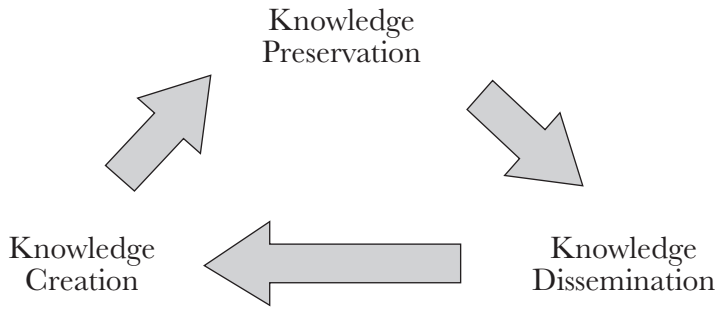
This latter example shows that even though ISD is effective for solving acute and specific organizational problems with instructional applications, it is not very effective for identifying the systemic relationships between organizational performance problems. It is this lack of a systems view that keeps instructional designers on a never-ending treadmill of responding to one performance crisis after another. They are able to keep the enterprise afloat but don't have the time, the energy, and most important,

the big-picture perspective to make the necessary systemic improvements for improving organizational performance. What is needed is a systemic viewpoint from which to analyze, design, and implement improvements for organizational performance problems.

The Life Cycle of Knowledge

Figure 1.5 shows the life cycle of knowledge in organizations. It is the starting point for building this systemic viewpoint from which to analyze, design, and implement improvements for organizational performance problems. The first phase is the creation of new knowledge. This takes place when an organization's members solve a new, unique problem, which may be either a single problem or a problem that is a small part of a larger problem, such as a problem generated by an ongoing project. The second phase is the preservation of this newly created knowledge. This phase feeds the third phase, the dissemination and application of this new knowledge. Dissemination and application involves sharing this new knowledge with the other members of the organization. It also involves sharing the solutions with the stakeholders affected by the problems that were solved. Disseminated knowledge then becomes an input for solving new problems in the next knowledge creation phase. An organization's ability to solve problems increases with the use of this disseminated knowledge. In this way, each knowledge life cycle phase provides input for the next phrase—creating an ongoing cycle. Because this cycle continues to build upon itself, it becomes a knowledge spiral in

Figure 1.5. Life Cycle of Knowledge in Organizations.



the organization, as described by Nonaka and Takeuchi in their 1995 book, *The Knowledge-Creating Company.*[4] However, for organizations to build on what they know, they must know how their knowledge is organized, how to learn from that knowledge, and how to add this learning to what they already know. This book, *iLearning*, is written to be a road map with which organizations can achieve this paradigm of innovative learning.[5]

Notes

1. Each "expert advice" section is derived from my radio show, *The Knowledge Worker,* produced at the KANW public radio station in Albuquerque, New Mexico. Names and details have been changed to improve the value of these radio segments as examples.
2. M. Salisbury, "From Instructional Systems Design to Managing the Life Cycle of Knowledge in Organizations," *Performance Improvement Quarterly, 13*(3), February 2008, 202–219.
3. W. Rothwell and H. Kanzanas, *Mastering the Instructional Design Process* (San Francisco: Pfeiffer, 2004).
4. I. Nonaka and H. Takeuchi, *The Knowledge-Creating Company* (New York: Oxford University Press, 1995).
5. A quick and referenced discussion of the concepts presented in this book can be found in my article, M. Salisbury, "Creating an Innovative Learning Organization," *International Journal on E-Learning, 8*(4), Sept. 2009 (forthcoming).