

Employee Training and Development

Chapter 3

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Chapter Three

Needs Assessment

Objectives

After reading this chapter, you should be able to

1. Discuss the role of organization analysis, person analysis, and task analysis in needs assessment.
2. Identify different methods used in needs assessment and identify the advantages and disadvantages of each method.
3. Discuss the concerns of upper-level and midlevel managers and trainers in needs assessment.

4. Explain how person characteristics, input, output, consequences, and feedback influence performance and learning.
5. Create conditions to ensure that employees are receptive to training.
6. Discuss the steps involved in conducting a task analysis.
7. Analyze task analysis data to determine the tasks in which people need to be trained.
8. Explain competency models and the process used to develop them.

Determining Training Needs at Union Pacific Railroad

Union Pacific Railroad is the largest railroad in North America, operating in the western two-thirds of the United States. The railroad serves 23 states, linking every major West Coast and Gulf Coast port, and provides service to the east through its four major gateways in Chicago, St. Louis, Memphis, and New Orleans. Additionally, Union Pacific operates key north/south corridors and connects with the Canadian and Mexican rail systems, and it is the only railroad to serve all six gateways to Mexico. The railroad transports a large number of products including chemicals, coal, food and food products, forest products, grain and grain products, metals and minerals, and automobiles and parts. For 2003, Union Pacific ranked first among railroads in *Fortune* magazine's published list of "America's Most Admired Companies."

But Union Pacific Railroad was not always one of America's most admired companies. The timeliness and accuracy of shipments to customers was less than 70 percent. Union Pacific installed computers and satellites on the railroad engines, giving conductors better ability to communicate and locate railcars that needed to be delivered. A consultant was hired to provide training for the new system. To better understand the training that conductors needed in order to use the computers and satellites to increase the accuracy of deliveries, the consultant conducted a needs analysis. During meetings with conductors, the consultant found out that the conductors disliked management and

did not understand the business aspects of a successful railroad. The consultant informed Union Pacific that given the conductors' frustration with management and lack of business knowledge, training would be a waste of time. Although the consultant could train the conductors to use the computers and satellites, the consultant believed that the conductors would be unwilling to learn and would be unmotivated to use the system effectively. The top management of Union Pacific agreed with the consultant's recommendations and asked the consultant to conduct a more in-depth analysis of the reasons for the conductors' feelings. What the consultant found was a lack of trust and poor communication between the conductors and management. To address these issues, the consultant produced a country music video that was distributed to all of Union Pacific's employees. One of the singers in the video was dressed as a conductor and sang about the conductors' frustrations. Another singer was dressed as a manager and sang from the manager's point of view. The music video helped improve employee morale and eliminate distrust between management and the conductors. The music video made it possible for Union Pacific to develop training courses that improved the company's delivery accuracy (which is now about 90 percent).

The needs assessment helped identify a larger organizational issue that needed to be addressed before skills training could be successful. Both the conductors and management had to understand each other's roles and how those roles affected the company's ability to deliver to customers.

Source: D. Goldwasser, "First Things First." *Training* (January 2001): 88.

INTRODUCTION

As discussed in Chapter 1, effective training practices involve the use of a training design process. The design process begins with a needs assessment. Subsequent steps in the process include ensuring that employees have the motivation and basic skills necessary to learn, creating a positive learning environment, making sure that trainees use learned skills on the job, choosing the training method, and evaluating whether training achieved the desired outcomes. As the Union Pacific Railroad example highlights, before you choose a training method, it is important to determine what type of training is necessary and whether trainees are willing to learn. **Needs assessment** refers to the process used to determine whether training is necessary.

Needs assessment typically involves organizational analysis, person analysis, and task analysis.¹ An organizational analysis considers the context in which training will occur. That is, **organizational analysis** involves determining the appropriateness of training, given the company's business strategy, its resources available for training, and support by managers and peers for training activities. You are already familiar with one aspect of organizational analysis. Chapter 2 discussed the role of the company's business strategy in determining the frequency and type of training.

Person analysis helps to identify who needs training. **Person analysis** involves (1) determining whether performance deficiencies result from a lack of knowledge, skill, or ability (a training issue) or from a motivational or work-design problem, (2) identifying who needs training, and (3) determining employees' readiness for training. **Task analysis** identifies the important tasks and knowledge, skill, and behaviors that need to be emphasized in training for employees to complete their tasks.

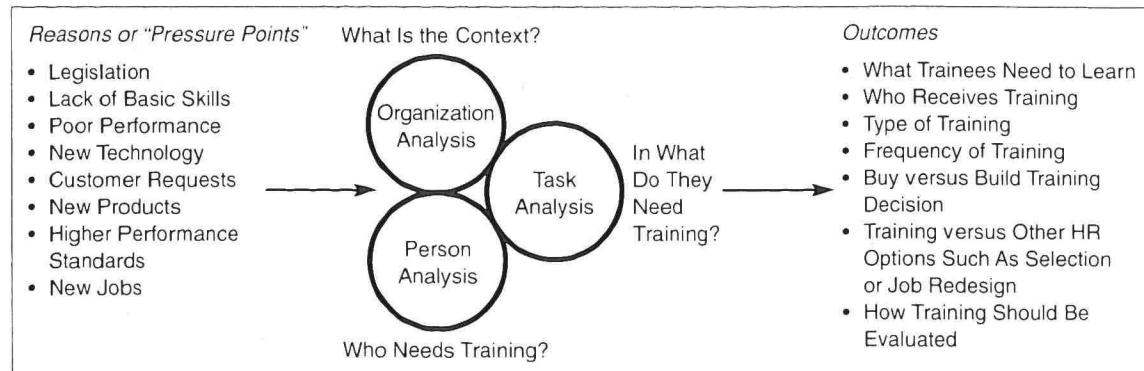
WHY IS NEEDS ASSESSMENT NECESSARY?

Needs assessment is the first step in the instructional design process, and if it is not properly conducted any one or more of the following situations could occur:

- Training may be incorrectly used as a solution to a performance problem (when the solution should deal with employee motivation, job design, or a better communication of performance expectations).
- Training programs may have the wrong content, objectives, or methods.
- Trainees may be sent to training programs for which they do not have the basic skills, prerequisite skills, or confidence needed to learn.
- Training will not deliver the expected learning, behavior change, or financial results that the company expects.
- Money will be spent on training programs that are unnecessary because they are unrelated to the company's business strategy.

Figure 3.1 shows the three types of analysis involved in needs assessment and the causes and outcomes resulting from needs assessment. There are many different "pressure points" that suggest that training is necessary. These pressure points include performance problems, new technology, internal or external customer requests for training, job redesign, new legislation, changes in customer preferences, new products, or employees' lack of basic skills. Note that these pressure points do not guarantee that training is the correct solution. As was shown in the chapter opening vignette, a needs assessment conducted at Union Pacific Railroad found that there were organizational issues (lack of understanding of business operations, distrust between the conductors and management) that needed to be dealt with before training occurred. Otherwise, conductors' unwillingness and lack of motivation to use training would have reduced its contribution to helping Union Pacific increase delivery accuracy. Also consider, for example, a delivery truck driver whose job is to deliver anesthetic gases to medical facilities. The driver mistakenly hooks up the supply line of a mild anesthetic to the supply line of a hospital's oxygen system, contaminating the hospital's oxygen supply. Why did the driver make this mistake, which is clearly a performance problem? The driver may have made this mistake because of a lack of knowledge about the appropriate line hookup for the anesthetic, because of anger over a requested salary increase that the

FIGURE 3.1 Causes and outcomes of needs assessment



driver's manager recently denied, or because of mislabeled valves for connecting the gas supply. Only the lack of knowledge can be addressed by training. The other pressure points require addressing issues related to the consequence of good performance (pay system) or the design of the work environment.

What outcomes result from a needs assessment? Needs assessment provides important input into most of the remaining steps in the training design. As shown in Figure 3.1, the needs assessment process results in information related to who needs training and what trainees need to learn, including the tasks in which they need to be trained plus knowledge, skill, behavior, or other job requirements. Needs assessment helps to determine whether the company will purchase training from a vendor or consultant or else develop training using internal resources. Determining exactly what trainees need to learn is critical for the next step in the instructional design process: identifying learning outcomes and objectives. Chapter 4 explores identifying learning outcomes and learning objectives and creating a training environment so that learning occurs. Needs assessment also provides information regarding the outcomes that should be collected to evaluate training effectiveness. Training evaluation is discussed in Chapter 6.

WHO SHOULD PARTICIPATE IN NEEDS ASSESSMENT?

Since the goal of needs assessment is to determine whether a training need exists, who it exists for, and what tasks need to be trained, it is important to include managers, trainers, and employees in the needs assessment process. Traditionally, only trainers were concerned with the needs assessment process. But, as Chapter 2 showed, as training increasingly becomes used to help the company achieve its strategic goals, both upper- and top-level managers are involved in the needs assessment process.

Table 3.1 shows the questions that upper-level managers, mid-level managers, and trainers are interested in answering for organization analysis, person analysis, and task analysis. Upper-level managers include directors, chief executive officers (CEOs), and vice presidents. Upper-level managers view the needs assessment process from the broader company perspective. They do not focus on specific jobs. Upper-level managers are involved in the needs assessment process to identify the role of training in relation to other human resource practices in the company (e.g., selection, compensation). That is, upper-level managers help to determine if training is related to the company's business strategy—and, if so, what type of training. Upper-level managers are also involved in identifying what business functions or units need training (person analysis) and in determining if the company has the knowledge, skills, and abilities in the work force that are necessary to meet its strategy and be competitive in the marketplace. Mid-level managers are more concerned with how training may affect the attainment of financial goals for the units they supervise. As a result, for midlevel managers organizational analysis focuses on identifying (1) how much of their budgets they want to devote to training, (2) the types of employees who should receive training (e.g., engineers, or core employees who are directly involved in producing goods or providing services), and (3) for what jobs training can make a difference in terms of improving products or customer service.

As discussed in Chapter 2, trainers (including training managers and instructional designers) need to consider if training is aligned with the business strategy. However, trainers are primarily interested in needs assessment to provide them with information that they need to

TABLE 3.1 Key Concerns of Upper-Level and Mid-Level Managers and Trainers in Needs Assessment

	<i>Upper-Level Managers</i>	<i>Mid-Level Managers</i>	<i>Trainers</i>
Organizational Analysis	Is training important to achieve our business objectives? How does training support our business strategy?	Do I want to spend money on training? How much?	Do I have the budget to buy training services? Will managers support training?
Person Analysis	What functions or business units need training?	Who should be trained? Managers? Professionals? Core employees?	How will I identify which employees need training?
Task Analysis	Does the company have the people with the knowledge, skills, and ability needed to compete in the marketplace?	For what jobs can training make the biggest difference in product quality or customer service?	What tasks should be trained? What knowledge, skills, ability, or other characteristics are necessary?

administer, develop, and support training programs. This includes determining if training should be purchased or developed in-house, identifying the tasks that need to be trained, and determining top-level and mid-level managers' interest and support for training.

Upper-level managers are usually involved to determine if training meets the company's strategy and then to provide appropriate financial resources. Upper-level managers are not usually involved in identifying which employees need training; the tasks for which training is needed; and the knowledge, skills, abilities, and other characteristics needed to complete those tasks. This is the role of subject-matter experts (SMEs). **Subject-matter experts (SMEs)** are employees, academics, managers, technical experts, trainers, and even customers or suppliers who are knowledgeable in regard to (1) training issues including tasks to be performed; (2) knowledge, skills, and abilities required for successful task performance; (3) necessary equipment; and (4) conditions under which the tasks have to be performed. A key issue with SMEs is making sure they are knowledgeable about the content that training must cover as well as realistic enough to be able to prioritize what content is critical to cover in the time allotted for the subject in the training curriculum. SMEs must also have information that is relevant to the company's business and have an understanding of the company language, tools, and products. There is no rule regarding how many types of employees should be represented in the group conducting the needs assessment. Still, it is important to get a sample of job incumbents involved in the process because they tend to be most knowledgeable about the job and can be a great hindrance to the training process if they do not feel they have had input into the needs assessment. **Job incumbents** are employees who are currently performing the job.

For example, Netg, an Illinois company that develops courseware for training information technology skills, uses academics or trainers who are familiar with course content.² To develop the courseware, Netg's development team includes a project manager; one or more SMEs; a curriculum planner who determines what the course will cover; an instructional designer who makes sure the course development covers all aspects of the instructional system design model; and writers, programmers, and graphic artists to build the simulations

included in the course. The SME leads a group training session to determine what the subject matter is for the course, the different elements the course needs to cover, and the goals for the course. The instructional designer meets with the SMEs to review the learning objectives. To keep the SMEs on track, Netg asks them to consider not only the value of the information that is being communicated to the trainee but also what trainees need to know at the end of the course.

METHODS USED IN NEEDS ASSESSMENT

Several methods are used to conduct needs assessment, including observing employees performing the job, reading technical manuals and other documentation, interviewing SMEs, conducting focus groups with SMEs, and asking SMEs to complete questionnaires designed to identify tasks and knowledge, skills, abilities, and other characteristics required for a job. Table 3.2 presents advantages and disadvantages of each method. Texas Instruments was trying to determine how to train engineering experts to become trainers for new engineers.³ All of the engineers had technical expertise. The problem was that their level of instructional expertise varied. Some had no experience teaching, whereas others taught courses at local colleges. When new engineers became inexperienced instructors, both the trainees and the instructors were frustrated. In assessing the engineers' training needs, training and development specialists used all five methods shown in Table 3.2. They collected information that was useful for organization and task analysis. Training course listings and mission statements were used to identify the engineering department mission, and current and previous course offerings were used to develop engineers. Competency studies and project checklists were used to identify relevant tasks. Classroom observation of new and experienced instructors was used to identify strengths and weaknesses of instructors' presentations (person analysis). Both instructors and noninstructors were interviewed to validate the information gathered through the written documentation and surveys. Boeing uses a process borrowed from the field of artificial intelligence. Experts are observed and interviewed to identify their thinking processes for solving problems, dealing with uncertainty, and minimizing risks. The expert practices that are uncovered are then included in the training curriculum.⁴

For newly created jobs, trainers often do not have job incumbents to rely on for this information. Rather, technical diagrams, simulations, and equipment designers can provide information regarding the training requirements, tasks, and conditions under which the job is performed.

Because no one method is superior to the others, multiple methods are usually used. The methods vary in the type of information as well as the level of detail of the information. Questionnaires have the advantage of being able to collect information from a large number of persons. Also, questionnaires allow many employees to participate in the needs assessment process. However, when using questionnaires it is difficult to collect detailed information regarding training needs. Face-to-face and telephone interviews are time consuming. However, more detailed information regarding training needs can be collected. **Focus groups** are a type of SME interview that involves a face-to-face meeting with groups of SMEs in which the questions that are asked relate to specific training needs. It is important to verify the results of interviews and observations because what employees and managers say they do and what they really do may differ. For example, the author was involved

TABLE 3.2 Advantages and Disadvantages of Needs Assessment Techniques

Technique	Advantages	Disadvantages
Observation	<ul style="list-style-type: none"> Generates data relevant to work environment Minimizes interruption of work 	<ul style="list-style-type: none"> Needs skilled observer Employees' behavior may be affected by being observed
Questionnaires	<ul style="list-style-type: none"> Inexpensive Can collect data from a large number of persons Data easily summarized 	<ul style="list-style-type: none"> Requires time Possible low return rates, inappropriate responses Lacks detail Only provides information directly related to questions asked
Interviews	<ul style="list-style-type: none"> Good at uncovering details of training needs as well as causes and solutions of problems Can explore unanticipated issues that come up Questions can be modified 	<ul style="list-style-type: none"> Time consuming Difficult to analyze Needs skilled interviewer Can be threatening to SMEs Difficult to schedule SMEs only provide information they think you want to hear
Focus groups	<ul style="list-style-type: none"> Useful with complex or controversial issues that one person may be unable or unwilling to explore Questions can be modified to explore unanticipated issues 	<ul style="list-style-type: none"> Time-consuming to organize Group members only provide information they think you want to hear Group members may be reluctant to participate if status or position differences exist among members
Documentation (Technical Manuals, Records)	<ul style="list-style-type: none"> Good source of information on procedure Objective Good source of task information for new jobs and jobs in the process of being created 	<ul style="list-style-type: none"> You may be unable to understand technical language Materials may be obsolete

Source: Based on S. V. Steadham, "Learning to Select a Needs Assessment Strategy," *Training and Development Journal* (January 1980): 56–61; R. J. Mirabile, "Everything You Wanted to Know about Competency Modeling," *Training and Development* (August 1997): 74; K. Gupta, *A Practical Guide to Needs Assessment* (San Francisco: Jossey-Bass, 1999); Needs Assessment Decision Aid from http://mmt.marc.gatech.edu/mm_Tools/NADA.html.

in a needs assessment project for the educational services division of a financial services company. The company wanted to determine the training needs of 3,000 employees including managers, nonmanagers, and regional trainers in the needs assessment process. The company had five regional sites geographically dispersed across the United States (e.g., Midwest region, West region).

One of the potential training needs identified by the corporate training staff was that employees were unable to use new technologies such as the Internet to access training programs. Questionnaires administered to all 3,000 employees to help determine their training needs included questions related to skills in using new technology. Because there were too many skills and tasks related to the use of technology to include all of them on the questionnaire (e.g., how to use the personal computer operating system, Web browsers, CD-ROM,

spreadsheets), several general questions were included—for instance, “To what extent do you believe you need training to use new technologies that the company is implementing at your workplace?” Phone interviews were conducted with a small sample of the employees to gather more detailed information regarding specific skill needs.

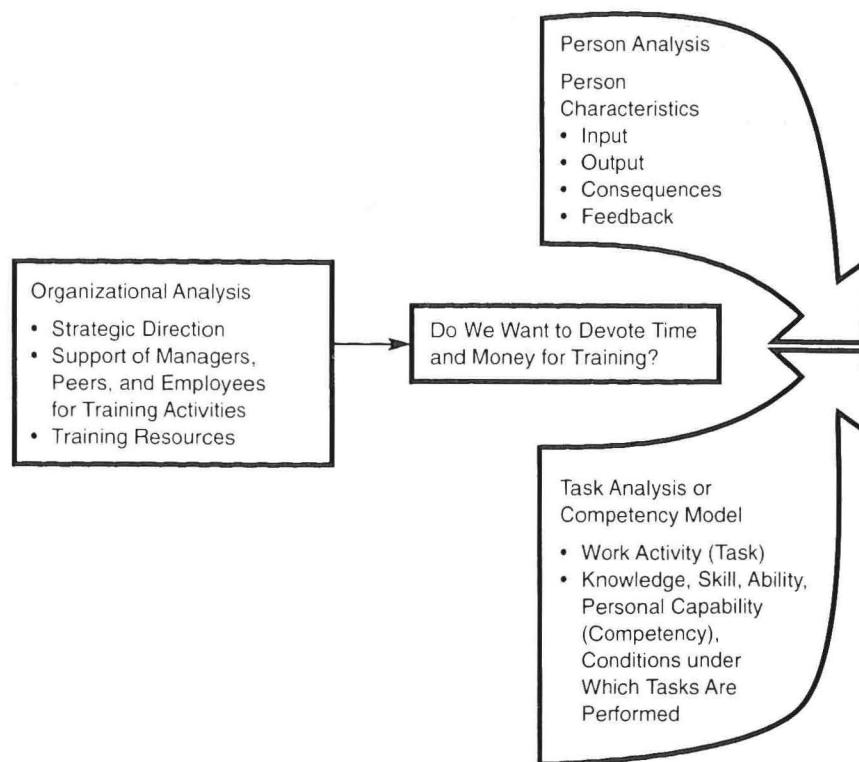
With the increasing emphasis on Total Quality Management, many companies are often also using information about other companies’ training practices (a process known as **benchmarking**) to help determine the appropriate type, level, and frequency of training.⁵ For example, Chevron, Federal Express, GTE, Xerox, and several other companies are members of the American Society for Training and Development (ASTD) benchmarking forum. A common survey instrument is completed by each company. The survey includes questions on training costs, staff size, administration, design, program development, and delivery. The information is summarized and shared with the participating companies.

THE NEEDS ASSESSMENT PROCESS

This section examines the three elements of needs assessment: organizational analysis, person analysis, and task analysis. Figure 3.2 illustrates the needs assessment process. In practice, organizational analysis, person analysis, and task analysis are not conducted in any order. Whether time and money is devoted to training is contingent on the results of organizational, person, and task analyses. While any one analysis can indicate the need for training,

FIGURE 3.2

The needs assessment process



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TABLE 3.3
Questions to
Ask in an
Organizational
Analysis

Source: Based on
S. Tannenbaum, "A
Strategic View of
Organizational Train-
ing and Learning," in
*Creating, Implement-
ing, and Managing
Effective Training and
Development*, ed.
K. Krueger (San Fran-
cisco: Jossey-Bass,
2002), 10–52.

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| <p>How might the training content affect our employees' relationship with our customers?</p> | <p>What might suppliers, customers, or partners need to know about the training program?</p> |
| <p>How does this program align with the strategic needs of the business?</p> | <p>Should organizational resources be devoted to this program?</p> |
| <p>What do we need from managers and peers for this training to succeed?</p> | <p>What features of the work environment might interfere with training (e.g., lack of equipment, no time to use new skills)?</p> |
| <p>Do we have experts who can help us develop the program content and ensure that we understand the needs of the business as we develop the program?</p> | <p>Will employees perceive the training program as an opportunity? reward? punishment? waste of time?</p> |
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companies need to consider the information from all three types of analysis before the decision is made to devote time and money for training. Because organizational analysis is concerned with identifying whether training fits with the company's strategic objectives and whether the company has the budget, time, and expertise for training (the context for training), it is usually conducted first. Person analysis and task analysis are often conducted at the same time because it is difficult to determine whether performance deficiencies are a training problem without understanding the tasks and the work environment. An initial organizational analysis may suggest that a company does not want to spend financial resources on training. However, if person analysis reveals that a large number of employees lack a skill in an important area that is related to the company's business objectives (such as customer service), upper-level managers may decide to reallocate financial resources for training.

Organizational Analysis

Organizational analysis involves identifying whether training supports the company's strategic direction; whether managers, peers, and employees support training activity; and what training resources are available. Table 3.3 provides questions that trainers should answer in an organizational analysis. Some combination of documentation, interviews, or focus groups of managers and individuals in the training function should be used to answer these questions.

Company's Strategic Direction

How the company's business strategy influences training was discussed in Chapter 2. The strategic role of training influences the frequency and type of training and how the training function is organized in the company. In companies in which training is expected to contribute to the achievement of business strategies and goals, the amount of money allocated to training and the frequency of training will likely be higher than in companies in which training is done haphazardly or with no strategic intent in mind. For example, companies that believe learning contributes to their competitive advantage or that have adopted high-performance work systems (e.g., teams) are likely to have greater training budgets and conduct more training. The business strategy also influences the type of training. For example, as noted in Chapter 2, companies that have adopted a disinvestment strategy are more likely to focus on outplacement assistance and job search skills training than are companies with

other strategic initiatives. Last, the greater the strategic role of training, the more likely the company will organize the training function using the virtual training organization or corporate university models. Both of these models emphasize that training is used to help solve business problems.

Support of Managers, Peers, and Employees for Training Activities

A number of studies have found that peer and manager support for training is critical along with employee enthusiasm and motivation to attend training. The key factors for success are a positive attitude among peers, managers, and employees about participation in training activities; managers' and peers' willingness to provide information to trainees about how they can more effectively use knowledge, skill, or behaviors learned in training on the job; and opportunities for trainees to use training content in their jobs.⁶ If peers' and managers' attitudes and behaviors are not supportive, employees are not likely to apply training content to their jobs.

Training Resources

It is necessary to identify whether the company has the budget, time, and expertise for training. For example, if the company is installing computer-based manufacturing equipment in one of its plants, it has three possible strategies for dealing with the need to have computer-literate employees. First, the company can decide that given its staff expertise and budget, it can use internal consultants to train all affected employees. Second, the company may decide that it is more cost-effective to identify employees who are computer-literate by using tests and work samples. Employees who fail the test or perform below standards on the work sample can be reassigned to other jobs. Choosing this strategy suggests that the company has decided to devote resources to selection and placement rather than training. Third, because it lacks time or expertise, the company may decide to purchase training from a consultant.

One way to identify training resources is for companies that have similar operations or departments located across the country or the world to share practices.⁷ For example, Pfizer Pharmaceuticals created a "virtual learning team" to promote the sharing of "best practices" in technical training among its U.S. manufacturing sites. Training managers from New York, Brooklyn, New Jersey, Missouri, Nebraska, Indiana, Puerto Rico, and Belgium serve on the team. The team members meet face-to-face once every business quarter and also have a regular conference call every six weeks. The objectives of the team are to (1) provide a centralized focus to Pfizer's training strategies, (2) enable training managers to mentor peers and exchange training practices, and (3) establish training standards for each of the manufacturing sites. The team has made some valuable contributions, including the development of a new operator training standard, a 10-step method for teaching and evaluating the skills of employees who make drug products or operate machinery. The team based the standard on an existing practice at one of the manufacturing sites. Another accomplishment was that the Brooklyn and Puerto Rico team representatives found that they had similar work areas in their plants, so they decided to each create one module of a new training plan and transfer each module to the other location.

If a company decides to purchase a training program from a consultant or vendor rather than build the program in-house, it is important to choose a high-quality provider. Training providers may include individual consultants, consulting firms, or academic institutions. Many companies identify vendors and consultants who can provide training services by

TABLE 3.4
Questions to Ask
Vendors and Consultants

Source: Based on R. Zenke and J. Armstrong, "Evaluating Multimedia Developers," *Training* (November 1996): 33–38.

How much and what type of experience does your company have in designing and delivering training?

What are the qualifications and experiences of your staff?

Can you provide demonstrations or examples of training programs you have developed?

Would you provide references of clients for whom you worked?

What evidence do you have that your programs work?

using requests for proposals.⁸ A **request for proposal (RFP)** is a document that outlines for potential vendors and consultants the type of service the company is seeking, the type and number of references needed, the number of employees who need to be trained, funding for the project, the follow-up process used to determine level of satisfaction and service, expected date of completion of the project, and the date when proposals must be received by the company. The RFP may be mailed to potential consultants and vendors or posted on the company's website. The RFP is valuable because it provides a standard set of criteria against which all consultants will be evaluated. The RFP also helps eliminate the need to evaluate outside vendors that cannot provide the needed services.

Usually the RFP helps to identify several vendors who meet the criteria. The next step is to choose the preferred provider. Table 3.4 provides examples of questions to ask vendors. Managers and trainers should check the vendor's reputation by contacting prior clients and professional organizations (such as the American Society for Training and Development). The consultant's experience should be evaluated. (For example, in what industry has the vendor worked?) Managers should carefully consider the services, materials, and fees outlined in the consulting contract. For example, it is not uncommon for training materials, manuals, and handouts to remain the property of the consultant. If the company wishes to use these materials for training at a later date, it would have to pay additional fees to the consultant.

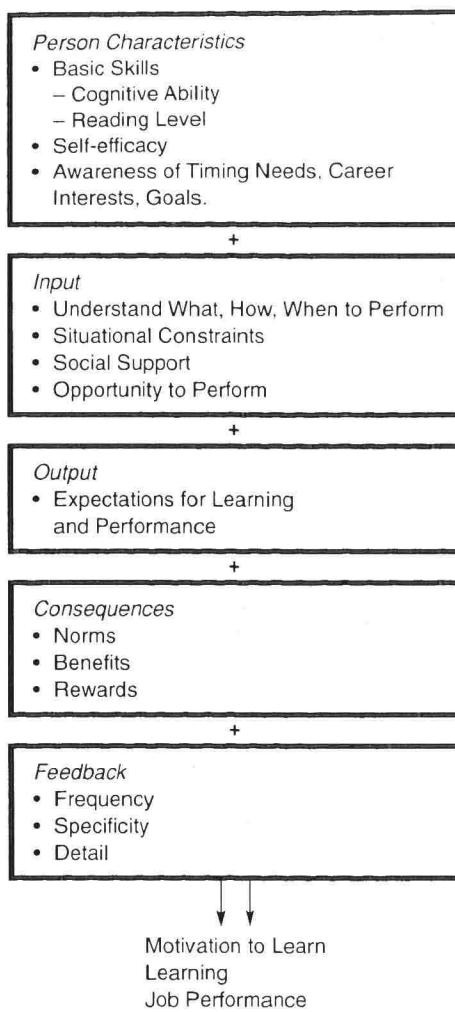
When using a consultant or other outside vendor to provide training services, it is also important to consider the extent to which the training program will be customized based on the company's needs or whether the consultant is going to provide training services based on a generic framework that it applies to many different organizations. For example, Towers Perrin, a well-known, successful New York consulting firm, told several clients that it would study their companies in detail and provide a customized diversity training program to fit their needs. However, six companies (including Nissan USA, Thompson Consumer Electronics, and Harris Bank) were given the same 18 recommendations (e.g., separate the concept of affirmative action from that of managing diversity)!⁹

How long should it take a vendor or consultant to develop a training program? The answer is "It depends."¹⁰ Some consultants estimate that development time ranges from 10 to 20 hours for each hour of instruction. Highly technical content requiring more frequent meetings with SMEs can add an additional 50 percent more time. For training programs using new technology (such as a CD-ROM) development time can range from 300 to 1,000 hours per hour of program time depending on how much animation, graphics, video, and audio are included; how much new content needs to be developed; the number of practice exercises and type of feedback to be provided to trainees; and the amount of "branches" to different instructional sequences. Chapter 8 details the use of new technologies in training.

FIGURE 3.3

Process for analyzing the factors that influence employee performance and learning

Source: G. Rummel, "In Search of the Holy Performance Grail," *Training and Development* (April 1996): 26–31.



Person Analysis

Person analysis helps to identify employees who need training, that is, whether current performance or expected performance indicates a need for training. The need for training may result from the pressure points in Figure 3.1, including performance problems, changes in the job, or use of new technology.

A major pressure point for training is poor or substandard performance. Poor performance is indicated by customer complaints, low performance ratings, or on-the-job incidents such as accidents and unsafe behavior. Another potential indicator of the need for training is if the job changes such that current levels of performance need to be improved or employees must be able to complete new tasks.

Figure 3.3 shows a process for analyzing the factors that influence performance and learning. This process involves determining employees' readiness for training. **Readiness for training** refers to whether (1) employees have the personal characteristics (ability, attitudes,

beliefs, and motivation) necessary to learn program content and apply it on the job and (2) the work environment will facilitate learning and not interfere with performance. This process includes evaluating person characteristics, input, output, consequences, and feedback.¹¹ **Person characteristics** refer to the employees' knowledge, skill, ability, and attitudes. **Input** relates to the instructions that tell employees what, how, and when to perform. Input also refers to the resources that the employees are given to help them perform. These resources may include equipment, time, or budget. **Output** refers to the job's performance standards. **Consequences** refer to the type of incentives that employees receive for performing well. **Feedback** refers to the information that employees receive while they are performing.

Interviews or questionnaires can be used to measure person characteristics, input, output, consequences, and feedback. For example, a package delivery company believed that lead drivers were valuable for providing on-the-job training for new employees.¹² The company employed 110 lead drivers. The lead driver job involved driving, delivery, and bookkeeping duties. The lead drivers benefited from training because coaching and training made their jobs more interesting. The company benefited because on-the-job training was relatively inexpensive and effective. Lead drivers often quickly spotted and corrected performance problems with new trainees. Lead drivers knew the technical aspects of the delivery job quite well. Although many of the lead drivers were good trainers and coaches, the company believed they needed to learn how to coach and train the new drivers. The company used interviews to identify what type of coaching and training skills the lead drivers needed. Interviews were conducted with 14 lead drivers, six supervisors, and two regional vice presidents. The interview for the lead drivers consisted of questions such as

- What types of situations call for coaching on your part?
- What keeps you from being a good coach on the job?
- How do you encourage or motivate other lead drivers? Do you use incentives or rewards? Do you try other things (compliments, personal attention)?
- What common types of performance problems do new hires have?
- What were the biggest problems you encountered as a new coach and trainer? What mistakes did you make? What lessons have you learned over time?
- Tell me about a successful coaching experience and an unsuccessful coaching experience.

Recurring trends in the interview data were noted and categorized. For example, interview questions on obstacles to coaching related to three themes: lack of time to coach, the physical environment (no privacy), and reluctance to coach peers. These three topics were covered in the coaching course.

Person characteristics, input, output, consequences, and feedback also influence motivation to learn. **Motivation to learn** is trainees' desire to learn the content of training programs.¹³ Consider how your motivation to learn may be influenced by personal characteristics and the environment. You may have no problem understanding and comprehending the contents of this textbook. But your learning may be inhibited because of your attitude toward the course. That is, perhaps you don't believe the course will be important for your career. Maybe you're taking the course only because it fits your schedule or is required in your degree program. Learning may also be inhibited by the environment. For example, maybe you want to learn, but your study environment prevents you from doing so. Every time you are prepared to read

and review your notes and the textbook, your roommates could be having a party. Even if you don't join them, the music may be so loud that you can't concentrate!

Marriott International, the hotel and restaurant chain, found that personal characteristics were having a significant influence on the success rate of the company's welfare-to-work program.¹⁴ This program involved training welfare recipients for jobs in the company's hotels and restaurants. (These types of programs are discussed in greater detail in Chapter 9.) Many trainees were unable to complete the training program because of poor attendance resulting from unreliable child care, drug problems, or abusive husbands or boyfriends. As a result, Marriott has instituted tight standards for selecting welfare recipients into the training program. These standards include requiring trainees to have child care, transportation, and housing arrangements. Also, Marriott plans to add an additional drug test during training. Currently, trainees are tested for drugs only at the beginning of training.

A number of research studies have shown that motivation to learn is related to knowledge gained, behavior change, or skill acquisition resulting from training.¹⁵ Besides considering the factors of person characteristics, input, output, consequences, and feedback in determining whether training is the best solution to a performance problem, managers should also consider these factors prior to sending employees to a training program. These factors relate to the employees' motivation to learn. The following sections describe each of these factors and its relationship to performance and learning.

Person Characteristics

Basic skills refer to skills that are necessary for employees to successfully perform on the job and learn the content of training programs. Basic skills include cognitive ability and reading and writing skills. For example, one assumption that your professor is making in this course is that you have the necessary reading level to comprehend this textbook and the other course materials such as overhead transparencies, videos, or readings. If you lacked the necessary reading level, you likely would not learn much about training in this course. As Chapter 1 mentioned, recent forecasts of skill levels of the U.S. work force indicate that managers will likely have to work with employees who lack basic skills. A literacy audit can be used to determine employees' basic skill levels. Table 3.5 shows the activities involved in conducting a literacy audit.

Cognitive Ability Research shows that cognitive ability influences learning and job performance. **Cognitive ability** includes three dimensions: verbal comprehension, quantitative ability, and reasoning ability.¹⁶ Verbal comprehension refers to the person's capacity to understand and use written and spoken language. Quantitative ability refers to how fast and accurately a person can solve math problems. Reasoning ability refers to the person's capacity to invent solutions to problems. Research shows that cognitive ability is related to successful performance in all jobs.¹⁷ The importance of cognitive ability for job success increases as the job becomes more complex.

For example, a supermarket cashier needs low to moderate levels of all three dimensions of cognitive ability to successfully perform that job. An emergency room physician needs higher levels of verbal comprehension, quantitative ability, and reasoning ability than the cashier. The supermarket cashier needs to understand basic math operations (addition, subtraction, etc.) to give customers the correct amount of change. The cashier also needs to invent solutions to problems. (For example, how does the cashier deal with items that are not priced that the customer wants to purchase?) The cashier also needs to be able to understand

TABLE 3.5
Steps in
Performing a
Literacy Audit

Source: U.S. Department of Education, U.S. Department of Labor, *The Bottom Line: Basic Skills in the Workplace* (Washington, DC: 1988), 14–15.

- Step 1: Observe employees to determine the basic skills they need to be successful in their job. Note the materials the employee uses on the job, the tasks performed, and the reading, writing, and computations completed by the employee.
- Step 2: Collect all materials that are written and read on the job and identify computations that must be performed to determine the necessary level of basic skill proficiency. Materials include bills, memos, and forms such as inventory lists and requisition sheets.
- Step 3: Interview employees to determine the basic skills they believe are needed to do the job. Consider the basic skill requirements of the job yourself.
- Step 4: Determine whether employees have the basic skills needed to successfully perform the job. Combine the information gathered by observing and interviewing employees and evaluating materials they use on their job. Write a description of each job in terms of reading, writing, and computation skills needed to perform successfully.
- Step 5: Develop or buy tests that ask questions relating specifically to the employees' job. Ask employees to complete the tests.
- Step 6: Compare test results with the description of the basic skills required for the job (from step 5). If the level of employees' reading, writing, and computation skills does not match the basic skills required by the job, then a basic skills problem exists.

and communicate with customers (verbal comprehension). The physician also needs quantitative ability, but at a higher level. For example, when dealing with an infant experiencing seizures in an emergency situation, the physician needs to be able to calculate the correct dosage of medicine (based on an adult dosage) to stop the seizures after considering the child's weight. The physician has to be able to quickly diagnose the situation and determine what actions (blood tests, X-rays, respiratory therapy) are necessary. The physician also needs to communicate clearly to the patient's parents the treatment and recovery process.

Cognitive ability influences job performance and ability to learn in training programs. If trainees lack the cognitive ability level necessary to perform job tasks, they will not perform well. Also, trainees' level of cognitive ability can influence how well they can learn in training programs.¹⁸ Trainees with low levels of cognitive ability are more likely to fail to complete training or (at the end of training) receive lower grades on tests to measure how much they have learned.

To identify employees without the cognitive ability to succeed on the job or in training programs, companies use paper-and-pencil cognitive ability tests. Determining a job's cognitive ability requirement is part of the task analysis process discussed later in this chapter.

Reading Ability Lack of the appropriate reading level can impede performance and learning in training programs. Material used in training should be evaluated to ensure that its reading level does not exceed that required by the job. **Readability** refers to the difficulty level of written materials.¹⁹ A readability assessment usually involves analysis of sentence length and word difficulty.

If trainees' reading level does not match the level needed for the training materials, four options are available. First, determine whether it is feasible to lower the reading level of training materials or use video or on-the-job training, which involves learning by watching and practicing rather than by reading. Second, employees without the necessary reading level could be identified through reading tests and reassigned to other positions more congruent

with their skill levels. Third, again using reading tests, identify employees who lack the necessary reading skills and provide them with remedial training. Fourth, determine whether the job can be redesigned to accommodate employees' reading levels. The fourth option is certainly the most costly and least practical. Therefore, alternative training methods need to be considered, or managers can elect a nontraining option. Nontraining options include selecting employees for jobs and training opportunities on the basis of reading, computation, writing, and other basic skill requirements.

Many companies are finding that employees lack the basic skills needed to successfully complete training programs. For example, a training program for 1,800 hourly employees at Georgia-Pacific (a paper manufacturer) was ineffective.²⁰ Employees reported that they understood training content but once they left training and returned to their jobs, they couldn't successfully perform maintenance tasks. In trying to determine the cause of the failed training, employees' basic skills were tested. Tests revealed that many employees had difficulty reading and writing. As a result, they were unable to understand the materials used in training. This translated into reduced learning and poor job performance.

To help ensure that employees have the necessary basic skills needed to succeed in training, Georgia-Pacific developed a basic skills assessment and training program. The first step involved assessment (or measurement) of employees' basic skills. A test of reading and math skills was given to employees. People who scored at or above a ninth grade reading level were eligible to attend training programs. Those with literacy levels below ninth grade were counseled to attend basic skills training. Because Georgia-Pacific's primary concern was how to convince employees to attend training, the company had to establish trust with the employees. In general, employees who lack basic skills are embarrassed to admit they have difficulty and are afraid that their lack of literacy will cost them their jobs. To alleviate these fears, employees received confidential counseling about their test results, they were not required to start basic skills training immediately after the assessment, and the company did not put information regarding test results (pass or fail) in employees' personnel files.

A local community college supplied the basic skills training. Classes were set up close to Georgia-Pacific's plants so employees could attend classes before or after their work shifts. There was no charge for the classes. Now the work force has the necessary basic skills. To ensure that new employees do not lack basic skills, Georgia-Pacific has changed its hiring qualifications. The company does not accept applications from anyone who hasn't completed a specific 18-month schedule of courses at the community college.

Another approach to improving basic skills is incorporating basic skills instruction into training programs. An example is the electronics technician training program developed by the Ford Foundation.²¹ Before the start of the program, students are given information about electronic technician jobs. Students are told they will learn how to think about operating, maintaining, and repairing electrical equipment that they are familiar with such as flashlights, curling irons, and lamps. These appliances were selected because they are useful for introducing basic electronic concepts and procedures.

Trainees are given a book that covers the basic literacy skills needed to read training and job-related material in electronics. The book's exercises and worksheets help the trainee master "reading-to-do" and "reading-to-learn" skills that have been identified as required in the majority of jobs.²² Reading-to-do involves searching for and reading information in

the necessary skills to succeed in training programs. The first step of reading comprehension involves reading manuals, books, or charts (e.g., looking up information such as repair specifications in a technical manual or scanning tables and graphs to locate information). Reading-to-learn involves reading information to apply it in the future, such as reading instructions on how to use a piece of equipment (e.g., paraphrasing and summarizing information).

Besides learning reading skills related to electronics, trainees study how electronics is used in flashlights and table lamps. The textbook introduces students to math concepts and their applications, including scientific notation needed to understand waves that appear on an oscilloscope. This training program has prepared competent electronic technicians for entry-level positions.

Self-Efficacy **Self-efficacy** is employees' belief that they can successfully perform their job or learn the content of the training program. The job environment can be threatening to many employees who may not have been successful performers in the past. For example, as you will see in Chapter 10, people who are hired through a welfare-to-work program—a program designed to help find jobs for welfare recipients—may lack self-efficacy. The training environment can also be threatening to people who have not received training or formal education for some length of time, lack education, or are not experienced in the training program's subject matter. For example, training employees to use equipment for computer-based manufacturing may represent a potential threat, especially if they are intimidated by new technology and do not have the confidence in their ability to master the skills needed to use a computer. Research has demonstrated that self-efficacy is related to performance in training programs.²³ Employees' self-efficacy level can be increased by

1. Letting employees know that the purpose of training is to try to improve performance rather than to identify areas in which employees are incompetent.
2. Providing as much information as possible about the training program and purpose of training prior to the actual training.
3. Showing employees the training success of their peers who are now in similar jobs.
4. Providing employees with feedback that learning is under their control and they have the ability and the responsibility to overcome any learning difficulties they experience in the program.

Awareness of Training Needs, Career Interests, and Goals To be motivated to learn in training programs, employees must be aware of their skill strengths and weaknesses and of the link between the training program and improvement of their weaknesses.²⁴ Managers should make sure that employees understand why they are asked to attend training programs, and they should communicate the link between training and improvement of skill weaknesses or knowledge deficiencies. This can be accomplished by sharing performance feedback with employees, holding career development discussions, or having employees complete a self-evaluation of their skill strengths and weaknesses as well as career interests and goals.

If possible, employees need to be given a choice of what programs to attend and must understand how actual training assignments are made to maximize motivation to learn. Several recent studies have suggested that giving trainees a choice regarding which programs to attend and then honoring those choices maximizes motivation to learn. Giving employees choices but not necessarily honoring them can undermine motivation to learn.²⁵

Input

Employees' perceptions of two characteristics of the work environment—situational constraints and social support—are determinants of performance and motivation to learn. **Situational constraints** include lack of proper tools and equipment, materials and supplies, budgetary support, and time. **Social support** refers to managers' and peers' willingness to provide feedback and reinforcement.²⁶ If employees have the knowledge, skills, attitudes, and behavior needed to perform but do not have the proper tools and equipment needed, their performance will be inadequate.

To ensure that the work environment enhances trainees' motivation to learn, managers should take the following steps:

1. Provide materials, time, job-related information, and other work aids necessary for employees to use new skills or behavior before participating in training programs.
2. Speak positively about the company's training programs to employees.
3. Let employees know they are doing a good job when they are using training content in their work.
4. Encourage work-group members to involve each other in trying to use new skills on the job by soliciting feedback and sharing training experiences and situations in which training content was helpful.
5. Provide employees with time and opportunities to practice and apply new skills or behaviors to their work.

Output

Poor or substandard performance can occur on the job because employees do not know at what level they are expected to perform. For example, they may not be aware of quality standards related to speed or degree of personalization of service that is expected. Employees may have the knowledge, skill, and attitudes necessary to perform, but fail to perform because they are not aware of the performance standards. Lack of awareness of the performance standards is a communications problem, but it is not a problem that training can "fix."

Understanding the need to perform is important for learning. Trainees need to understand what specifically they are expected to learn in the training program. To ensure that trainees master training content at the appropriate level, trainees in training programs also need to understand the level of proficiency that is expected of them. For example, for tasks, level of proficiency relates to how well employees are to perform a task. For knowledge, level of proficiency may relate to a score on a written test. The standards or level of performance is part of the learning objectives (discussed in Chapter 4).

Consequences

If employees do not believe that rewards or incentives for performance are adequate, they will be unlikely to meet performance standards even if they have the necessary knowledge, behavior, skill, or attitudes. Also, work-group norms may encourage employees not to meet performance standards. **Norms** refer to accepted standards of behavior for work-group members. For example, during labor contract negotiations baggage handlers for Northwest Airlines worked slowly loading and unloading baggage from airplanes. As a result, many passenger departures and arrivals were delayed. The baggage handlers had the knowledge,

skills, and behaviors necessary to unload the planes, but they worked slowly because they were trying to send a message to management that the airlines could not perform effectively if their contract demands were not met.

Consequences also affect learning in training programs. Employees' motivation to learn can be enhanced by communicating to them the potential job-related, personal, and career benefits they may receive as a result of attending training and learning the content of the training program. These benefits may include learning a more efficient way to perform a process or procedure, establishing contacts with other employees in the company (also known as networking), or increasing their opportunity to pursue other jobs in the company. It is important that the communication from the manager about potential benefits be realistic. Unmet expectations about training programs can hinder motivation to learn.²⁷

Feedback

Performance problems can result when employees do not receive feedback regarding the extent to which they are meeting performance standards. Training may not be the best solution to this type of problem if employees know what they are supposed to do (output), but do not understand how close their performance is to the standard. Employees need to be given specific, detailed feedback of effective and ineffective performance. For employees to perform to standard, feedback needs to be given to employees frequently, not just during a yearly performance evaluation.

In Chapter 4 the role of feedback in learning is discussed in detail. Keep in mind that feedback is critical for shaping trainees' behaviors and skills.

Determining Whether Training Is the Best Solution

To determine whether training is needed to solve a performance problem, managers need to analyze characteristics of the performer, input, output, consequences, and feedback. How might this be done?²⁸ Managers should assess the following:

1. Is the performance problem important? Does it have the potential to cost the company a significant amount of money from lost productivity or customers?
2. Do the employees know how to perform effectively? Perhaps they received little or no previous training or the training was ineffective. (This problem is a characteristic of the person.)
3. Can the employees demonstrate the correct knowledge or behavior? Perhaps employees were trained but they infrequently or never used the training content (knowledge, skills, etc.) on the job. (This is an input problem.)
4. Were performance expectations clear (input)? Were there any obstacles to performance such as faulty tools or equipment?
5. Were positive consequences offered for good performance? Was poor performance not rewarded? For example, if employees are dissatisfied with their compensation, their peers or a union may encourage them to slow down their pace of work. (This involves consequences.)
6. Did employees receive timely, relevant, accurate, constructive, and specific feedback about their performance (a feedback issue)?
7. Were other solutions—such as job redesign or transferring employees to other jobs—too expensive or unrealistic?

If employees lack the knowledge and skill to perform and the other factors are satisfactory, training is needed. If employees have the knowledge and skill to perform but input, output, consequences, or feedback is inadequate, training may not be the best solution. For example, if poor performance results from faulty equipment, training cannot solve this problem but repairing the equipment will! If poor performance results from lack of feedback, then employees may not need training, but their managers may need training on how to give performance feedback!

Task Analysis

Task analysis results in a description of work activities, including tasks performed by the employee and the knowledge, skills, and abilities required to complete the tasks. A **job** is a specific position requiring the completion of certain tasks. (The job exemplified in Figure 3.4 is that of an electrical maintenance worker.) A **task** is the employee's work activity in a specific job. Figure 3.4 shows several tasks for the electrical maintenance worker job. These tasks include replacing light bulbs, electrical outlets, and light switches. To complete tasks, employees must have specific levels of knowledge, skill, ability, and other considerations (KSAOs). **Knowledge** includes facts or procedures (e.g., the chemical properties of gold). **Skill** indicates competency in performing a task (e.g., negotiation skill, a skill in getting another person to agree to take a certain course of action). **Ability** includes the physical and mental capacities to perform a task (e.g., spatial ability, the ability to see the relationship between objects in physical space). **Other** refers to the conditions under which tasks are performed. These conditions include identifying the equipment and environment that the employee works in (e.g., the need to wear an oxygen mask, work in extremely hot conditions), time constraints for a task (e.g., deadlines), safety considerations, or performance standards.

Task analysis should be undertaken only after the organizational analysis has determined that the company wants to devote time and money for training. Why? Task analysis is a time-consuming, tedious process that involves a large time commitment to gather and summarize data from many different persons in the company including managers, job incumbents, and trainers.

FIGURE 3.4

Sample items from task analysis questionnaires for the electrical maintenance job

Source: E. E. Holton III and C. Buley, "Top-to-Bottom Curriculum Redesign," *Training & Development* (March 1995): 40-44.

Job: Electrical Maintenance Worker

Task Performance Ratings

Task #s	Task Description	Frequency of Performance	Importance	Difficulty
199-264	Replace a light bulb	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
199-265	Replace an electrical outlet	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
199-266	Install a light fixture	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
199-267	Replace a light switch	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
199-268	Install a new circuit breaker	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5

Frequency of Performance	Importance	Difficulty
0=never	1=negligible	1=easiest
5=often	5=extremely high	5=most difficult

Steps in a Task Analysis

A task analysis involves four steps:²⁹

1. Select the job(s) to be analyzed.
2. Develop a preliminary list of tasks performed on the job by (1) interviewing and observing expert employees and their managers and (2) talking with others who have performed a task analysis.
3. Validate or confirm the preliminary list of tasks. This involves having a group of subject matter experts (job incumbents, managers, etc.) answer in a meeting or on a written survey several questions regarding the tasks. The types of questions that may be asked include the following: How frequently is the task performed? How much time is spent performing each task? How important or critical is the task for successful performance of the job? How difficult is the task to learn? Is performance of the task expected of entry-level employees?

Table 3.6 presents a sample task analysis questionnaire. This information is used to determine which tasks will be focused on in the training program. The person or committee conducting the needs assessment must decide the level of ratings across dimensions that will determine that a task should be included in the training program. Tasks that are important, frequently performed, and of moderate-to-high level of difficulty should be trained for. Tasks that are not important and infrequently performed will not be trained for. It is difficult for managers and trainers to decide if tasks that are important, are performed infrequently, and require minimal difficulty should be included in training. Managers and trainers must determine whether or not important tasks—regardless of how frequently they are performed or their level of difficulty—will be included in training.

4. Once the tasks are identified, it is important to identify the knowledge, skills, or abilities necessary to successfully perform each task. This information can be collected through interviews and questionnaires. Recall this chapter's discussion of how ability influences learning. Information concerning basic skill and cognitive ability requirements is critical for determining if certain levels of knowledge, skills, and abilities will be prerequisites for entrance to the training program (or job) or if supplementary training in underlying skills is needed. For training purposes, information concerning how difficult it is to learn the knowledge, skill, or ability is important—as is whether the knowledge, skill, or ability is expected to be acquired by the employee before taking the job.³⁰

Table 3.7 summarizes key points to remember regarding task analysis.

Example of a Task Analysis

Each of the four steps of a task analysis can be seen in this example from a utility company. Trainers were given the job of developing a training system in six months.³¹ The purpose of the program was to identify tasks and knowledge, skills, abilities, and other considerations that would serve as the basis for training program objectives and lesson plans.

The first phase of the project involved identifying potential tasks for each job in the utility's electrical maintenance area. Procedures, equipment lists, and information provided by subject matter experts (SMEs) were used to generate the tasks. SMEs included managers, instructors, and senior technicians. The tasks were incorporated into a questionnaire administered to all technicians in the electrician maintenance department. The questionnaire included 550 tasks. Figure 3.4 shows sample items from the questionnaire for the electrical maintenance job. Technicians were asked to rate each task on importance, difficulty, and frequency of performance. The rating scale for frequency included zero. A zero rating indicated

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Difficulty

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0 1 2 3 4 5

0 1 2 3 4 5

0 1 2 3 4 5

0 1 2 3 4 5

Difficulty

1=easiest

5=most difficult

TABLE 3.6 Sample Task Statement Questionnaire

Name	Date		
Position			
Please rate each of the task statements according to three factors: the <i>importance</i> of the task for effective performance, how <i>frequently</i> the task is performed, and the degree of <i>difficulty</i> required to become effective in the task. Use the following scales in making your ratings.			
Importance	Frequency		
4 = Task is critical for effective performance.	4 = Task is performed once a day.		
3 = Task is important but not critical for effective performance.	3 = Task is performed once a week.		
2 = Task is of some importance for effective performance.	2 = Task is performed once every few months.		
1 = Task is of no importance for effective performance.	1 = Task is performed once or twice a year.		
0 = Task is not performed.	0 = Task is not performed.		
Difficulty			
4 = Effective performance of the task requires extensive prior experience and/or training (12–18 months or longer).			
3 = Effective performance of the task requires minimal prior experience and training (6–12 months).			
2 = Effective performance of the task requires a brief period of prior training and experience (1–6 months).			
1 = Effective performance of the task does not require specific prior training and/or experience.			
0 = This task is not performed.			
Task	Importance	Frequency	Difficulty
1. Ensuring maintenance on equipment, tools, and safety controls			
2. Monitoring employee performance			
3. Scheduling employees			
4. Using statistical software on the computer			
5. Monitoring changes made in processes using statistical methods			

that the technician rating the task had never performed the task. Technicians who rated a task zero were asked not to evaluate the task's difficulty and importance.

Customized software was used to analyze the ratings collected via the questionnaire. The primary requirement used to determine whether a task required training was its importance rating. A task rated “very important” was identified as one requiring training regardless of its frequency or difficulty. If a task was rated moderately important but difficult, it also was designated for training. Tasks rated unimportant, not difficult, or done infrequently were not designated for training.

The list of tasks designated for training was reviewed by the SMEs to determine if it accurately described job tasks. The result was a list of 487 tasks. For each of the 487 tasks,

TABLE 3.7
Key Points to Remember
When Conducting a Task Analysis

Source: Adapted from A. P. Carnvale, L. J. Gunter, and A. S. Meltzer, *Workplace Basics Training Manual* (San Francisco: Jossey-Bass, 1990).

A task analysis should identify both what employees are actually doing and what they should be doing on the job.

Task analysis begins by breaking the job into duties and tasks.

Use more than two methods for collecting task information to increase the validity of the analysis.

For task analysis to be useful, information needs to be collected from subject matter experts (SMEs). SMEs include job incumbents, managers, and employees familiar with the job.

In deciding how to evaluate tasks, the focus should be on tasks necessary to accomplish the company's goals and objectives. These may not be the tasks that are the most difficult or take the most time.

two SMEs identified the necessary knowledge, skills, abilities, and other factors required for performance. This included information on working conditions, cues that initiate the task's start and end, performance standards, safety considerations, and necessary tools and equipment. All data were reviewed by plant technicians and members of the training department. More than 14,000 knowledge, skill, ability, and other considerations were grouped into common areas and assigned an identification code. These groups were then combined into clusters. The clusters represented qualification areas. That is, the task clusters related to linked tasks that the employees must be certified in to perform the job. The clusters were used to identify training lesson plans and course objectives. Trainers also reviewed the clusters to identify prerequisite skills for each cluster.

COMPETENCY MODELS

In today's global and competitive business environment, many companies are finding that it is difficult to determine whether employees have the capabilities needed for success. The necessary capabilities may vary from one business unit to another and even across roles within a business unit. As a result, many companies have started to use competency models to help them identify the knowledge, skills, and personal characteristics (attitudes, personality) needed for successful performance in a job. Competency models are also useful for ensuring that training and development systems are contributing to the development of such knowledge, skills, and personal characteristics.

Traditionally, needs assessment has involved identifying knowledge, skills, abilities, and tasks. However, a current trend in training is for needs assessment to focus on competencies. A **competency** refers to areas of personal capability that enable employees to successfully perform their jobs by achieving outcomes or accomplishing tasks.³² A competency can be knowledge, skills, attitudes, values, or personal characteristics. A **competency model** identifies the competencies necessary for each job as well as the knowledge, skills, behavior, and personality characteristics underlying each competency.³³ Table 3.8 shows a competency model for a systems engineer. The left side of the table lists technical competencies within the technical cluster (systems architecture, data migration, documentation). The right side shows behaviors that might be used to determine a systems engineer's level of proficiency for each competency.

TABLE 3.8 Example of Competencies and a Competency Model

Technical Cluster	Proficiency Ratings
Systems Architecture Ability to design complex software applications, establish protocols, and create prototypes.	<p>0—Is not able to perform basic tasks.</p> <p>1—Understands basic principles; can perform tasks with assistance or direction.</p> <p>2—Performs routine tasks with reliable results; works with minimal supervision.</p> <p>3—Performs complex and multiple tasks; can coach or teach others.</p> <p>4—Considered an expert in this task; can describe, teach, and lead others.</p>
Data Migration Ability to establish the necessary platform requirements to efficiently and completely coordinate data transfer.	<p>0—Is not able to perform basic tasks.</p> <p>1—Understands basic principles; can perform tasks with assistance or direction.</p> <p>2—Performs routine tasks with reliable results; works with minimal supervision.</p> <p>3—Performs complex and multiple tasks; can coach or teach others.</p> <p>4—Considered an expert in this task; can describe, teach, and lead others.</p>
Documentation Ability to prepare comprehensive and complete documentation including specifications, flow diagrams, process control, and budgets.	<p>0—Is not able to perform basic tasks.</p> <p>1—Understands basic principles; can perform tasks with assistance or direction.</p> <p>2—Performs routine tasks with reliable results; works with minimal supervision.</p> <p>3—Performs complex and multiple tasks; can coach or teach others.</p> <p>4—Considered an expert in this task; can describe, teach, and lead others.</p>

Source: R. J. Mirabile, "Everything You Wanted to Know about Competency Modeling," *Training and Development* (August 1997): 73–77.

One way to understand competency models is to compare them to job analysis. As you may recall from other classes or experiences, **job analysis** refers to the process of developing a description of the job (tasks, duties, and responsibilities) and the specifications (knowledge, skills, and abilities) that an employee must have to perform it. How does job analysis compare to competency models? Job analysis is more work- and task-focused (what is accomplished), whereas competency modeling is worker-focused (how objectives are met or how work is accomplished). Focusing on “how” versus “what” provides valuable information for training and development. A recent study asked competency modeling experts (consultants, HR practitioners, academics, industrial psychologists) to compare and contrast competency modeling to job analysis.³⁴ The study found several differences between job analysis and competency models. Competency models are more likely to link competencies and the company’s business goals. Competency models provide descriptions of competencies that are common for an entire occupational group, level of jobs, or an entire organization. Job analysis describes what is different across jobs, occupational groups, or

organization levels. Finally, job analysis generates specific knowledge, skill, and abilities for particular jobs. It is used to generate specific requirements to be used for employee selection. The competencies generated by competency modeling are more general and believed to have greater application to a wider variety of purposes including selection, training, employee development, and performance management.

Another way to think about competency models is by considering performance management.³⁵ Unfortunately, many performance management systems suffer from a lack of agreement on what outcomes should be used to evaluate performance. Manager–employee discussions about performance deficiencies tend to lack specificity. By identifying the areas of personal capability that enable employees to successfully perform their jobs, competency models ensure an evaluation of both what gets done and how it gets done. Performance feedback can be directed toward specific concrete examples of behavior; and knowledge, skills, ability, and other characteristics that are necessary for success are clearly described.

How are competencies identified and competency models developed? First, the job or position to be analyzed needs to be identified. Second, any changes in the business strategy need to be identified. The implications of business strategy for training were discussed in Chapter 2. Changes in the business strategy might cause new competencies to be needed or old competencies to be altered. Third, effective and ineffective performers need to be identified. Fourth, the competencies responsible for effective and ineffective performance need to be identified. There are several approaches for identifying competencies. These include analyzing one or several “star” performers, surveying persons who are familiar with the job (subject-matter experts), and developing competencies based on benchmark data of good performers in other companies.³⁶ Fifth, the model needs to be validated. That is, a determination must be made as to whether the competencies included in the model truly are related to effective performance. In Table 3.8’s example of the technical competencies for the system engineer, it is important to verify that (1) the three competencies shown are needed to be successful in the job and (2) the level of proficiency of the competency is appropriate.

Competency models are useful for training and development in several ways³⁷:

- They identify behaviors needed for effective job performance. These models ensure that feedback given to employees as part of a development program (such as 360-degree feedback) relate specifically to individual and organizational success.
- They provide a tool for determining what skills are needed to meet today’s needs as well as the company’s future skill needs. They can be used to evaluate the relationship between the company’s current training programs and present needs. That is, they help align training and development activities with the company’s business goals. They can be used to evaluate how well the offerings relate to anticipated future skill needs.
- They help to determine what skills are needed at different career points.
- They provide a framework for ongoing coaching and feedback to develop employees for current and future roles. By comparing their current personal competencies to those required for a job, employees can identify competencies that need development and choose actions to develop those competencies. These actions may include courses, job experiences, and other types of development. (Development methods are detailed in Chapter 9.)
- They create a “road map” for identifying and developing employees who may be candidates for managerial positions (succession planning).

For example, consider the use of competency models at Cross Country TravCorps, a staffing company that provides short-term employment for nurses, operating room technologists, therapists, and allied health professionals at facilities across the nation.³⁸ Departmental training managers and the training department developed a job-specific competency checklist that identifies skills and job tasks that new employees need to learn to be effective. The checklist is used for on-the-job training. Sprint Corporation, the global communications company, identifies competencies that are used for performance management and development. The seven Sprint Dimensions include leadership, communications, management, personal effectiveness, professional knowledge/global awareness, customer focus, and team approach. The dimensions are used to help employees to improve. Based on the Sprint Dimensions, managers identify suitable development experiences for employees.

SCOPE OF NEEDS ASSESSMENT

Up to this point, the chapter has discussed the various aspects of needs assessment including organizational, person, and task analyses. This involves interviews, observations, and potentially even surveying employees. You might be saying to yourself, This sounds good, but it appears to be a very elaborate process that takes time. What happens if I don't have time to conduct a thorough needs assessment? Should I abandon the process?

Time constraints can limit the length and detail obtained from a needs assessment. However, even if managers demand a training course right now, needs assessment should still be conducted. There are several ways to reduce the time for needs assessment without sacrificing the quality of the process.³⁹ First, the scope of needs assessment depends on the size of the potential "pressure point." If the pressure point seems to be local and has a potentially small impact on the business, then the information-gathering part of needs assessment could consist of only a few interviews with managers or job incumbents. If the pressure point will have a large impact on the business, then more information gathering should be conducted. If, after interviewing subject-matter experts and job incumbents, you can tell that you are not learning anything new about the job, then interviewing could be stopped. Second, you should consider using already available data collected for other purposes. For example, error data, sales data, customer complaints, and exit interviews might provide valuable clues as to the source of performance problems. The Web may be a useful source for quickly conducting interviews with subject-matter experts in different locations. Finally, if you are attuned to the business problems, technological developments, and other issues facing the organization, you will be able to anticipate training needs. For example, if the company is opening sales offices in an international location and introducing new technology in the manufacturing plants, cross-cultural training and training designed to help employees use the new technology undoubtedly will be needed. Be prepared by understanding the business!

Needs Assessment in Practice

The manufacturing operations of the Owens-Corning Insulation Business were interested in increasing the productivity, product quality, and safety performance of the business. This was consistent with the company-wide strategy of trying to increase shareholder value, ensure individual dignity, and deliver customer service. To help meet the strategic goals, plant-based

specialists in human resources, training, organization development, and project management created a group to direct training activities. The first priority of this group was to establish supervisor training. At that time there was no formal training for manufacturing supervisors. Therefore, the group worked on developing such a program. Interviews with plant human resource managers and trainers suggested that creation of a generic training program would not be effective. As a result, the group developed a survey that was administered to employees in all of the plants. The survey asked specific questions about the supervisors' skill needs—for example, "The supervisor actively listens to individuals or teams to check for understanding" and "The supervisor meets all deadlines on projects, action items, and special requests." The data collected from the survey indicated that supervisors' greatest skill deficiencies included two-way communications, active listening skills, setting performance expectations, providing feedback, handling conflict, and time management. Each plant supervisor training program was designed based on these needs, taking into account the uniqueness of the facility and its culture.

This example illustrates several things. First, training was viewed as critical for helping the company meet its strategic objectives. As a result, resources and time were allocated for needs assessment and training. Second, the person analysis consisted of a survey of supervisor skills. This information was used to identify overall skill deficiencies across the plants. Training programs were developed to improve the skill deficiencies identified using methods that were congruent with the plant environment and culture. For example, one plant used a three-day skills workshop, a one-day quarterly leadership skills conference (which updates and refreshes supervisors' skills), and an informal once-per-month leadership discussion.

Summary

The first step in a successful training effort is to determine that a training need exists through a process known as needs assessment. Needs assessment involves three steps: organizational analysis, person analysis, and task analysis. Various methods—including observation, interviews, and surveys or questionnaires—are used to conduct a needs assessment. Each has advantages and disadvantages. Organizational analysis involves determining (1) the extent to which training is congruent with the company's business strategy and resources and (2) if peers and managers are likely to provide the support needed for trainees to use training content in the work setting.

Person analysis focuses on identifying whether there is evidence that training is the solution, who needs training, and whether employees have the prerequisite skills, attitudes, and beliefs needed to ensure they master the content of training programs. Because performance problems are one of the major reasons companies consider training employees, it is important to consider how personal characteristics, input, output, consequences, and feedback relate to performance and learning. This means that managers and trainers need to be concerned about employees' basic skill levels, attitudes, and the work environment in determining if performance problems can be solved using training.

Training is likely the best solution to a performance problem if employees don't know how to perform. If employees have not received feedback about their performance, if they lack the equipment needed to perform the job, if the consequences for good performance are negative, or if they are unaware of an expected standard for performance, then training is not likely to be the best solution.

To maximize employees' motivation to learn in training programs, managers and trainers need to understand these factors prior to sending employees to training. For example, lack of basic skills or reading skills can inhibit both job performance and learning.

A task analysis involves identifying the task and knowledge, skills, and abilities that will be trained for. Competency modeling is a new approach to needs assessment that focuses on identifying personal capabilities including knowledge, skills, attitudes, values, and personal characteristics.

Key Terms

needs assessment, 74	person characteristics, 85	norms, 90
organizational analysis, 74	input, 85	job, 92
person analysis, 74	output, 85	task, 92
task analysis, 74	consequences, 85	knowledge, 92
subject-matter experts (SMEs), 77	feedback, 85	skill, 92
job incumbent, 77	motivation to learn, 85	ability, 92
focus groups, 78	basic skills, 86	other, 92
benchmarking, 80	cognitive ability, 86	competency, 95
request for proposal (RFP), 83	readability, 87	competency model, 95
readiness for training, 84	self-efficacy, 89	job analysis, 96
	situational constraints, 90	
	social support, 90	

Discussion Questions

1. Which of the factors that influence performance and learning do you think is most important? Which is least important?
2. If you had to conduct a needs assessment for a new job at a new plant, describe the method you would use.
3. Needs assessment involves organization, person, and task analysis. Which one of these analyses do you believe is most important? Which is least important? Why?
4. Why should upper-level managers be included in the needs assessment process?
5. Explain how you would determine if employees had the reading level necessary to succeed in a training program.
6. What conditions would suggest that a company should buy a training program from an outside vendor? Which would suggest that the firm should develop the program itself?
7. Assume you have to prepare older employees with little computer experience to attend a training course on how to use the World Wide Web. How will you ensure that they have high levels of readiness for training? How will you determine their readiness for training?
8. Review the accompanying sample tasks and task ratings for the electronic technician's job. What tasks do you believe should be emphasized in the training program? Why?

Task	Importance	Frequency	Learning Difficulty
1. Replaces components	1	2	1
2. Repairs equipment	2	5	5
3. Interprets instrument readings	1	4	5
4. Uses small tools	2	5	1

Explanation of ratings:

Frequency: 1 = very infrequently to 5 = very frequently.

Importance: 1 = very important to 5 = very unimportant.

Learning difficulty: 1 = easy to 5 = very difficult.

9. Discuss the types of evidence that you would look for in order to determine whether a needs analysis has been improperly conducted.
10. How is competency modeling similar to traditional needs assessment? How does it differ?

Application Assignments



1. Develop a competency model for a job held by a friend, spouse, or roommate (someone other than yourself). Use the process discussed in this chapter to develop your model. Note the most difficult part of developing the model. How could the model be used?
2. The Department of Social Services represents a large portion of your county's budget and total number of employees. The job of eligibility technician is responsible for all client contact, policy interpretation, and financial decisions related to several forms of public aid (e.g., food stamps, aid to families with dependent children). Eligibility technicians must read a large number of memos and announcements of new and revised policies and procedures. Eligibility technicians were complaining they had difficulty reading and responding to this correspondence. The county decided to send the employees to a speed reading program costing \$250 per person. The county has 200 eligibility technicians.

Preliminary evaluation of the speed reading program was that trainees liked it. Two months after the training was conducted, the technicians told their managers that they were not using the speed reading course in their jobs, but were using it in leisure reading at home. When their managers asked why they weren't using it on the job, the typical response was "I never read those memos and policy announcements anyway."

- A. Evaluate the needs assessment process used to determine that speed reading was necessary. What was good about it? Where was it faulty?
- B. How would you have conducted the needs assessment? Be realistic.
3. Consider the interview questions for the lead drivers that are shown on page 85. Write questions that could be used to interview the six lead driver supervisors and the two regional vice presidents. How do these questions differ from those for the lead drivers? How are they similar?
4. Several companies are known for linking their values and human resource practices in ways that have led to business success as well as employee satisfaction. These companies include Southwest Airlines (www.iflyswa.com), Cisco Systems (www.cisco.com), SAS Institute (www.sas.com), the Mens Wearhouse (www.menswearhouse.com), and

Intel (www.intel.com). Choose one of these companies' websites and perform an organizational needs analysis. Read about the company's values and vision; look for statements about the importance of training and personal development. Is training important in the company? Why or why not? Provide supporting evidence from the website.

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