Training Needs Assessment

Understanding what employees need to know

By Tracey L. Cekada

AN EMPLOYEE TRIPS over an open file cabinet drawer. Another has a near-hit when standing beneath an overhead hoist. The typical solution to such incidents? Training, training and more training.

But is this really necessary? While workers without occupational safety and health training are likely at a greater risk for workplace injury and illness, it is the adequacy of this training that is critical (Cohen & Colligan, 1998, p. 22). Sometimes, too much training can reduce its effectiveness and decrease its credibility. The difference between effective and ineffective training may be death, injury, pain, suffering and lost profits (Whiles, 1999, p. 10).

The resources spent on training are astonishing. An estimated $50 billion is spent annually on formal training, with an additional $90 to $120 billion on less-structured, informal training (Broad & Newstrom, 1992, p. 5). "According to a 1999 survey by *Training* magazine, 77% of respondents offer safety training to employees, leading it to rank seventh among 30 programs offered" (Machles, 2002, p. 32). Each year, corporate America provides nearly 2 billion training hours to 60 million employees (Diether & Loos, 2000, p. 28).

How much training content do employees retain 1 month, 6 months or 1 year after the training has been conducted? Estimates suggest that only 10% to 15% of training content is retained after 1 year (Broad & Newstrom, 1992, p. 7). This problem is compounded when management believes that required regulatory training needs are met simply by completing and documenting the training, and pays no attention to training effectiveness.

Often, training is espoused as the answer to all safety-related problems in the workplace. As a result, real problems may not be resolved. Additionally, overtraining can lead to frustration and damage the credibility of management and the training program (Blair & Seo, 2007, p. 42). The transformation from implementing required training to today's newer model that focuses on performance-based training will only heighten the need to ensure that training is both the correct solution and effective (Holton, Bates & Naquin, 2000, p. 250).

What Is a Training Needs Assessment?

A training needs assessment is used to determine whether training is the right solution to a workplace problem. It is an "ongoing process of gathering data to determine what training needs exist so that training can be developed to help the organization accomplish its objectives" (Brown, 2002, p. 569). Said more simply, it is the "process of collecting information about an expressed or implied organizational need that could be met by conducting training" (Barbazette, 2006, p. 5).

Essentially, information is collected and analyzed so a training plan can be created. The assessment determines the need for training, identifies what training is needed, and examines the type and scope of resources needed to support a training program (Sorenson, 2002, p. 32). According to Rossett (1987, p. 15), a company conducts a training needs assessment to seek information about 1) optimal performance or knowledge; 2) actual or current performance or knowledge; 3) feelings of trainees and other significant people; 4) causes of the problems; and 5) solutions to the problem.

Why Conduct a Training Needs Assessment?

A training needs analysis often reveals the need for well-targeted training (McArdle, 1998, p. 4). By conducting an effective assessment, a company verifies that training is the appropriate solution to a performance deficiency. Training cannot solve problems caused by poor system design, insufficient resources or understaffing (Sorenson, 2002, p. 32). In some cases, increasing an employee's knowledge and skills may not resolve the problem or deficiency, so training would waste valuable resources and time.

A training needs assessment can help determine

Tracey L. Cekada, D.Sc., CSP, CHSP, *is an assistant professor of safety sciences at Indiana University of Pennsylvania. She holds a B.S in Occupational Health and Safety from Slippery Rock University, an M.S. in Environmental Science and Policy from The Johns Hopkins University, and a D.Sc. in Information Systems and Communications from Robert Morris University. Cekada is a professional member of ASSE's Western Pennsylvania Chapter.*

current performance or knowledge levels related to a specific activity, as well as the optimal performance or knowledge level needed. For example, suppose slips, trips and falls are up 25% in the production line area. This could signal a developing problem. By conducting a needs assessments, the company can gather information regarding the competence of workers or the task itself; such information helps identify causes of problems (Rossett, 1987, p. 15).

Those who conduct the assessment must have a clear understanding of the problem and must consider all solutions, not just training, before they present their findings to management and determine the best solution. "When properly done, a needs analysis is a wise investment for the organization. It saves time, money and effort by working on the right problems" (McArdle, 1998, p. 4). Failure to conduct a training needs assessment or conducting one ineffectively can lead to costly mistakes. For example, suppose a company relies on training to fix a problem when another solution may have been more effective or uses training to solve a problem without addressing the skills needed to perform a task.

Background Information on Training Needs Assessment

Although the scholarly literature on training needs assessments is limited, several case studies describe how specific organizations or industries have conducted such assessments. Moseley and Heaney (1994) examine reports of assessments conducted across several different disciplines and identify a wide variety of models and techniques that work for each discipline.

Moreover, much of the research on this topic indicates that organizational characteristics, such as size, goals and resources, public versus private sector, global marketplace and corporate climate, may influence the assessment methodology selected. In addition, special challenges that organizations address may require special tools for conducting a training needs assessment (Hannum & Hansen, 1989).

One traditional assessment method asks employees to list or rank desired training courses. Such assessments have been used to quickly assess the training needs of large organizations and allow many employees to be included in the assessment. However, while employee morale may increase temporarily, improvement in on-the-job performance has been limited. One likely reason is that this approach is not performance-based and employees often identify training wants versus training needs.

McGehee and Thayer's (1961) three-tiered approach to conducting needs assessments serves as a fundamental framework. This approach identifies three levels of assessment: organization, operations and individual. Operations analysis is now more commonly known as task or work analysis (Holton, et al., 2000, p. 250).

Organizational Analysis

Organizational analysis "examines where training is needed . . . and under what conditions the training will be conducted. It identifies the knowledge, skills and abilities that employees will need for the future, as the organization and their job evolve or change" (Brown, 2002, p. 572). Through an organizational analysis, data are collected by looking at factors such as absenteeism, safety incidents, lost workdays, turnover rates, grievances, customer complaints or other performance problems. These data are then evaluated to identify where training could improve performance. The organizational analysis phase should also plan for changes in the workplace, such as future skill needs, worker demographics, and laws and regulations (Brown, 2002, p. 572).

•**Future skills.** Understanding how an organization may be changing can reveal future skill needs. For example, will new equipment be installed or new processes implemented? Will standards or regulations change? Is technology changing? Will employees be required to work with other employees or in teams that will require communication and interpersonal skills? Will cultural changes be taking place in the organization?

•**Labor pool.** The labor pool is changing as more workers age and as women or other minorities become more prominent. Economic changes and operating cost adjustments also may require workplace changes, as may competing on a global level.

Abstract: *Developing a training program requires knowing what training is needed. A training needs assessment answers the question of why training is needed and provides some certainty that the resources required to develop and conduct training will deliver the desired performance-based results. This article describes how a training needs assessment is conducted and examines models that can be followed.*

Operations/task analysis looks at the knowledge and skills requirements of each specific job and compares these requirements to employees' actual knowledge and skills. Any gaps reveal a training need.

Understanding these potential changes will help an organization begin to accommodate employees' needs while still meeting the organization's needs.

•**Laws and regulations.** Changes in current safety and environmental regulations as well as new laws may dictate that an organization provide training in specific areas. For example, employees working with hazardous materials may be required to receive annual refresher training. Under the Family Medical Leave Act or Americans with Disabilities Act, information may need to be transferred to employees. If policies on workplace violence or sexual harassment change, this information must be communicated to employees.

Operations/Task Analysis

Operations/task analysis looks at the knowledge and skills requirements of each specific job and compares these requirements to employees' actual knowledge and skills. Any gaps reveal a training need.

Sources for collecting data include job descriptions, standard operating procedures, job safety analysis/job hazard analysis, performance standards, review of literature and best practices, and on-site observation and questioning (Miller & Osinski, 1996, p. 3-4).

An effective task analysis identifies "tasks that have to be performed; conditions under which tasks are to be performed; how often and when tasks are performed; quantity and quality of performance required; skills and knowledge required to perform tasks; and where and how these skills are best acquired" (Brown, 2002, p. 573).

Individual Analysis

Individual analysis looks at individual employees and how they are performing in their jobs. Employees can be interviewed, questioned or tested to determine their individual level of skill or knowledge. Data also can be collected from their performance reviews. In addition, performance problems can be identified by examining factors such as productivity, absenteeism, tardiness, accidents, grievances, customer complaints, product quality and equipment repairs needed (Miller & Osinski, 1996, p. 4). When deficiencies are identified, training can be initiated to meet an individual employee's needs.

All three levels of the needs analysis are interrelated and data must be collected at all levels. Based on the information gathered, training needs can be identified, learning objectives can be established, and a training program can be developed to meet the organization's needs as well as the employee's needs.

Models for Training Needs Assessments

McClelland (1993) discusses an open-systems model for conducting training needs assessments. This model involves an 11-step approach to conducting a training needs assessment.
1) Define assessment goals.
2) Determine assessment group.
3) Determine availability of qualified resources to conduct and oversee the project.

4) Gain senior management support for and commitment to the process.
5) Review and select assessment methods and instruments.
6) Determine critical time frames.
7) Schedule and implement.
8) Gather feedback.
9) Analyze feedback.
10) Draw conclusions.
11) Present findings and recommendations.

Barbazette (2006) suggests that training needs assessment should answer questions such as why, who, how, what and when.

•**Why.** Asking why helps tie the performance deficiency to a business need and asks whether the benefit of the training is greater than the cost of the current deficiency.

•**Who.** Asking who is involved in the performance deficiency will identify those affected and ensure that the program is customized for them. Other important considerations include the target audience for the training; what is known about them to design and customize the training; and who else may benefit from the training.

•**How.** Asking how the performance deficiency can be corrected will help determine whether training will fix the problem. Doing so reveals whether a skill or knowledge deficiency led to the problem.

•**What.** Asking what is the best way to perform a specific job task will help achieve the desired results. Standard operating procedures may outline how to conduct a task or which government regulations need to be considered when completing a task. It is also important to ask what occupations are involved in the deficiency. Doing so identifies critical tasks that have the potential to produce personal or property damage. This process also may involve reviewing incident data and records, and interviewing employees to gain insight.

•**When.** Asking when training can best be delivered helps minimize the impact on the business. Also, it is important to ask what else is needed to ensure that the training is delivered successfully.

These models help guide development of a training needs assessment. One conclusion from the literature research is that no single model can work in every situation. Instead, the literature available can more purposely serve as a set of guidelines, principles or tools (Holton, et al., 2000, p. 251).

Components of an Effective Training Program

To determine what type of model to follow when selecting a training needs analysis technique, Brown (2002) suggests asking the following questions:
1) What is the nature of the problem being addressed by instruction?
2) How have training needs been identified in the past and with what results?
3) What is the budget for the analysis?
4) How is training needs analysis perceived in the organization?

5) Who is available to help conduct the analysis?

6) What is the time frame for completing the assessment exercise?

7) What will be the measure of a successful training needs analysis report?

The amount of time spent conducting a training needs assessment will vary depending on organizational needs, resources, time available and management commitment. However, the basic steps in this process are as follows:

1) Determine the purpose for the needs assessment. What questions need to be answered? Most

This five-question model is one of several that can be used to conduct a training needs assessment.

Figure 1

Figure 1

Example of a Training Needs Assessment

	Questions to consider	Outcomes
Why	1) Is there a performance deficiency in the workplace? 2) How do we know this? What data is this deficiency tied to (e.g., absenteeism, productivity loss, lost workdays, injuries, grievances, damage to equipment/personnel/environment)? 3) Even if no performance deficiency exists, what expected changes in the workplace may impact performance (e.g., recent changes in regulations; lay-offs to staff that may require other workers to pick up additional tasks; new processes or equipment being installed)?	• Employees are provided with annual refresher training on confined spaces. This training covers the minimum requirements outlined in the OSHA standard. There have been no injuries or damage to equipment in the past 5 years related to entry into any of these spaces. • Although initially everything may look alright, employees are anticipating significant layoffs to the maintenance staff and supervisory-level employees. As a result, additional staff members may need to be pulled from other departments to assist employees during entry into permit-required confined spaces (PRCS). These employees do not have the requisite knowledge and hands-on experience to carry out the duties of the attendant, entrant and entry supervisor.
Who	4) Who is involved in the performance deficiency? 5) If there are expected changes in the workplace, who else could benefit from the training?	• Maintenance department; supervisory personnel from the maintenance, engineering and carpentry shops; employees from the engineering and carpentry shops. • Supervisors from all divisions of facilities management could benefit from this training so that they can educate their staff properly.
How	6) How can the performance deficiency be corrected? 7) Can training improve this performance deficiency? (Did a skill or knowledge deficiency lead to the problem?)	• While a current performance deficiency does not exist, it is anticipated that once the layoffs take place, there is an increased risk of employee injury if proper PRCS procedures are not followed because current staffing needs will not be met. Because there may be a change in assigned duties under these new conditions and because some employees are new to the PRCS program, training will be necessary. This training should be provided to the new staff and reeducation on the current staff can improve performance. Current staff who are familiar with PRCS entry procedures may need to participate in educating new employees to the program.
What	8) What is the best way to perform this specific job task? This information can be gathered from reviewing standard operating procedures (SOPs), regulations or job hazard analysis, or by conducting interviews, conducting on-site observations, reviewing best practices and reviewing performance reviews. 9) Does the employee have these skills and this knowledge? (This information can be gathered in much the same way as in question 8.) 10) What are the critical tasks that have the potential to produce personal, property or environmental damage?	• SOPs for entry into PRCS are available in the maintenance department. The PRCS program should also be referenced. These should both be used as the primary documents to reviewing PRCS entry procedures. • It is expected that there will be two or three people on each shift who can serve in one of the following capacities: 1) entrant; 2) attendant; or 3) entry supervisor. However, employees should be cross-trained to be able to serve as either the entrant or the attendant. Supervisors from all divisions of facilities management should be trained to serve as the entry supervisor. However, it is expected that supervisors in the maintenance department should still have ultimate control over the permits. • Because of anticipated involvement between different divisions of the facilities management department to carry out the PRCS procedures, the SOPs will need to be revised. Employees and supervisors will need to be trained on these new procedures. It is recommended that all divisions of facilities management (engineering, maintenance, carpentry, etc.) meet to discuss the best approach to carrying out entry procedures. • Training should cover at a minimum those requirements outlined in 29 CFR 1910.146(h)-(j).
When	11) When should training take place so that it provides the most benefit to the employee and has the least impact on business operations? 12) What format is most effective (e.g., classroom, hands-on, self-directed)? 13) What else is needed to make the training successful?	• Training should take place as soon as possible after layoffs occur. Training must occur before the scheduled quarterly entry into the space. It is recommended that training be conducted for approximately 1 hour at the start of the daylight shift. Evening and night shift employees should attend this training session as well. • It is suggested that during the training session employees go through the permitting procedures and be taken to a PRCS for hands-on experience. • Refresher training should be conducted annually. Additional training may be necessary if there is a change in assigned duties or a change in permit space operations that presents a new hazard, or when there are deviations or inadequacies in employees' knowledge.

A training department can use an annual review questionnaire as a first step in conducting a training needs assessment. It asks department managers several key questions about training needs.

commonly, needs assessments provide data for budgeting or scheduling (DiLauro, 1979, p. 352). However, consider other needs as well, such as identifying individual skill or knowledge needs, organizational development needs, financial planning, staffing concerns and performance improvement needs.

2) Gather data. A wealth of knowledge can be gathered using tools such as observations, questionnaires, interviews, performance appraisals, focus groups, advisory groups, tests and document reviews. The best approach may be a combination of methods such as focus groups followed by observation that may reinforce the findings.

3) Analyze the data. This involves identifying any discrepancies or gaps between the skills and knowledge possessed by employees and those skills and knowledge required or desired for the job.

4) Determine what needs can be met by training. This step involves identifying performance problems that can be corrected by increasing employees' skill or knowledge. Problems related to issues such as motivation, morale, resources, system design or learning disabilities should not be fixed with training.

5) Propose solutions. If the solution is related to a training deficiency, then a formal or informal training program may be needed. While not the focus of this article, delivering an effective training program encompasses several key steps.

a) Conduct a cost-benefit analysis or business case to determine the financial benefit from conducting the training class.

b) Establish clear objectives. Objectives describe what learners will do; state the conditions under which they will do it; and establish criteria by which successful performance will be judged (Molenda, Pershing & Reigeluth, 1996). Training objectives must be aligned with an organization's business goals and mission. ANSI/ASSE Z490.1 (2001), Criteria for Accepted Practices in Safety, Health and Environmental Training, provides guidance on writing clear, achievable and measurable objectives.

c) Create content and instructional design. Determine the most effective delivery method for the particular situation. Classroom training may be effective for one situation, but not so effective for another. In some cases, a combination of classroom and on-the-job training may be most effective. Other delivery options include video, web-based or computer based-training.

Another consideration is who will deliver the training, internal or external sources The benefits of in-house training may include lower cost, more flexibile scheduling and greater hands-on knowledge of the task at hand. The benefits of an outside consultant may include more interest and credibility related to the topic.

The material created to support the training program is also critical. The content needs to be aligned with the objectives. Activities should enable trainees to apply the principles learned in the classroom. Understanding the audience is essential as well. Adult learners learn differently than others and understanding the challenges and assets that go along with instructing adults will make the training more effective.

d) Transfer knowledge from classroom to workplace. Implementing effective training requires that the learner be enabled to apply the knowledge learned in the classroom in the workplace. Barriers to this training transfer include lack of reinforcement on the job, interference from the environment or a nonsupportive organizational culture (Broad & Newstrom, 1992). Coaching, behavior observation, and accountability for managers, supervisors and employees are ways to improve training transfer.

e) Evaluate training effectiveness. This process can range from having trainees complete course rating forms and taking posttraining tests to more complex and aggressive evaluation methods such as using leading and trailing indicators (e.g., accident data records) to measure performance improvement. When evaluating training, one must differentiate between programs that teach skills and those that convey information (Charney & Conway, 2005, p. 19). Delivering information about policy changes involves conveying information. Enabling someone to perform a job more safely or efficiently or that enables an individual to produce a higher-quality product that improves customer satisfaction is teaching a skill.

f) Implement recommendations from the evalua-

tions. These improvements may range from changing training materials, adjusting the time allotted to content and changing locations to actual improvement in instructor performance, content and evaluation tools. However, if the assessment process stops once program effectiveness is evaluated and the recommended improvements are not made, then continuous improvement is not achieved.

Example of a Training Needs Assessment

Figure 1 (p. 31) presents a simplified example of a training needs assessment for a small-sized organization (fewer than 100 employees) using Barbazette's (2006) five-question approach.

The scenario is as follows: Maintenance employees in a manufacturing plant must enter outdoor manholes (confined spaces) each quarter to check the water levels in these spaces. If water buildup becomes a concern, then the water must be pumped out of these spaces. The spaces are considered permit-required confined spaces (PRCS), so staff must follow the company's PRCS entry program.

To further simplify this process, McConnell (2003) created an annual review questionnaire (Figure 2) that a training department can use as a first step in conducting a training needs assessment. It enables the training department to ask department managers several key questions.

Conclusion

A training needs assessment is used to identify an organization's training needs and determine the type and scope of resources needed to support a training program. The needs assessment is the first step in establishing an effective training program. It serves as the foundation for determining learning objectives, designing training programs and evaluating the training delivered. It also provides managers and trainers an opportunity to get out into the organization and talk to people. Information is collected, ideas are generated and energy is created within the organization. This excitement can help energize any training that may result (Warshauer, 1988, p. 15).

Well-orchestrated training needs assessments can provide many benefits (Warshauer, 1988). These include:

1) increasing the commitment of management and potential participants to ongoing training and development;

2) increasing the visibility of the training function;

3) clarifying crucial organizational issues;

4) providing for the best use of limited resources;

5) providing program and design ideas;

6) formulating strategies for how to proceed with training efforts (p. 16).

Other benefits include the obvious need to provide employees with the skills and knowledge to perform their jobs; helping an organization meet its performance objectives; and improving relationships and employee morale (McConnell, 2003, p. 44-45).

Training is often viewed as a nuisance and as a costly endeavor rather than as a tool to boost the organization's bottom line. These negative perceptions are often the result of the failure to illustrate the cost-benefit of training. This requires asking and answering a key question: What is the difference between the cost of no training versus the cost of training? (Michalak & Yager, 1979, p. 20). Illustrating the cost savings provides a clear indicator (and needed support) to continue with training. ∎

References

ANSI/ASSE. (2001). Criteria for accepted practices in safety, health and environmental training (ANSI/ASSE Z490.1-2001). Des Plaines, IL: Author.

Barbazette, J. (2006). *Training needs assessment: Methods, tolls and techniques.* San Francisco: Pfeiffer.

Blair, E. & Seo, D. (2007, Oct.). Safety training: Making the connection to high performance. *Professional Safety, 52*(10), 42-48.

Broad, M.L. & Newstrom, J.W. (1992). *Transfer of training.* Reading, MA: Perseus Books.

Brown, J. (2002, Winter). Training needs assessment: A must for developing an effective training program. *Public Personnel Management, 31*(4), 569-578.

Charney, C. & Conway, K. (2005). *The trainer's tool kit.* New York: American Management Association.

Cohen, A. & Colligan, J. (1998). *Assessing occupational safety and health training: A literature review* (NIOSH Publication No. 98-145). Washington, DC: U.S. Department of Health and Human Services, CDC, NIOSH.

Diether, J. & Loos, G. (2000). Advancing safety and health training. *Occupational Health and Safety, 69,* 28-34.

DiLauro, T. (1979, Nov./Dec.). Training needs assessment: Current practices and new directions. *Public Personnel Management, 8*(6), 350-359.

Gupta, K. (1999). *A practical guide to needs assessment.* San Francisco: Pfeiffer.

Hannum, W. & Hansen, C. (1989). *Instructional systems development in large organizations.* Englewood Cliffs, NJ. Educational Technologies Publications.

Holton, E., Bates, R. & Naquin, S. (2000, Summer). Large-scale performance-driven training needs assessment: A case study. *Public Personnel Management, 29*(2), 249-267.

Machles, D. (2002, Feb.). Training transfer strategies for the safety professional. *Professional Safety, 47*(2), 32-34.

McArdle, G. (1998). *Conducting a needs analysis.* Menlo Park, CA: CrispLearning.

McClelland, S. (1993). Training needs assessment: An "open-systems" application. *Journal of European Industrial Training, 17*(1), 12-17.

McConnell, J. (2003). *How to identify your organization's training needs.* New York: American Management Association.

McGehee, W. & Thayer, P. (1961). *Training in business and industry.* New York: Wiley.

Michalak, D. & Yager, E. (1979). *Making the training process work.* New York: Harper and Row.

Miller, J. & Osinski, D. (1996, Feb.). Training needs assessment. Retrieved Jan. 26, 2010, from http://www.ispi.org/pdf/suggestedReading/Miller_Osinski.pdf.

Molenda, M., Pershing, J.A. & Reigeluth, C.M. (1996). Designing instructional systems. In R. Craig (Ed.)., *The ASTD training and development handbook.* New York: McGraw-Hill.

Moseley, J. & Heaney, M. (1994). Needs assessment across disciplines. *Performance Improvement Quarterly, 7,* 60-79.

Robotham, G. (2001, May). Safety training that works. *Professional Safety, 46*(5), 33-37.

Rogers, M. (1991). Health and safety training. *Accident Prevention, 38,*(20).

Rossett, A. (1987). *Training needs assessment.* Englewood Cliffs, NJ: Educational Technology Publications.

Sorenson, S. (2002, June). Training for the long run. *Engineered Systems, 32.*

Warshauer, S. (1988). *Inside training and development: Creating effective programs.* San Diego: University Associates.

Whiles, A. (1999, Sept.). Workplace training: The learning curve. *Occupational Health and Training, 10.*

A needs assessment is the first step in establishing an effective training program. It serves as the foundation for determining learning objectives, designing training programs and evaluating the training delivered.