

# Training 101

## First Steps

What kind of training do employees need? What's the best way to give it to them? How will you know when they've gotten it? This month, "Training 101" looks at the nuts and bolts of training programs.

First, we'll talk about needs assessments. How do you know what kind of training employees need? If you thought having them fill out a questionnaire was enough, you'd better think again. Learn the difference between a needs assessment and an employee "wish list," and make sure you're giving them what they really need.

Once you've determined what kind of training is called for, you've got to figure out how to present it to trainees. Is individual instruction the best way to get your message across? Perhaps your topic and budget favor a whole-group, lecture approach. Should participants learn a skill by doing it, or by hearing it explained? Maybe a combination of techniques is called for. Here's a roundup of instructional methods that every trainer should know, along with tips for knowing which ones are appropriate in different situations.

Of course, training doesn't do much good if you have no way of determining whether trainees have mastered a subject. Tests seem pretty familiar to anyone who's been through high school or college, but there's more to testing than meets the eye. Tests have many uses in training. Besides measuring trainees' progress, they can also be used for diagnosing training needs, identifying employees who need training, and evaluating your training programs. Learn how to use different kinds of tests, where to get them, and what makes a good one.

### More Than Questionnaires

*By Roger Kaufman, professor and director of the Center for Needs Assessment and Planning, Florida State University, Tallahassee, FL 32306.*

"What goes around comes around," an old adage professes. It applies to those who send out questionnaires and call them needs assessments—even believing that they are. More often than not, bad news awaits people who exclusively use the questionnaire approach in hopes of assessing needs. Respondents tend to provide information about desired solutions, without first relating them to underlying gaps in results.

Questionnaires are popular, in part because they are easy to administer, but questionnaires rarely provide all of the information required for useful needs assessments. Let's see why.

First some definitions:

- A need is a gap in results, not a deficiency in resources, methods, means, processes, or procedures.
- A needs assessment identifies gaps in results, and places the identified needs in priority order for resolution.

### Needs assessments, wants assessments, and wish lists

No matter how nicely we ask, or how extensively we probe, people's opinions about needs do not necessarily correlate with actual performance or results. In other words, perceptions and realities don't always match.

A "wants assessment" doesn't provide information on needs, because what people want is not necessarily what they require. I use the term "wish list" for the same thing: the result of asking people what they want, usually solutions, instead of finding out about gaps in results—needs.

Most questionnaires only tap into wants, or wishes, concerning resources and solutions. The risk is that people will choose solutions before identifying the underlying problems.

If we cannot have confidence that people's perceptions of reality are the same as reality, what are the risks of asking people only about what they believe, think, or feel? Results are results. Opinions are opinions. When they agree, then we have a fine basis for assessing needs. When they don't, we have problems.

### Questionnaires can be useful

Alone, questionnaires provide only part of the picture. Two sources of data are used for needs assessments. "Soft" or judgment-based data, such as those gathered by questionnaires, allow us to tap into perceptions of needs. "Hard" or performance-based data allow us to identify the nature of actual results. A needs assessment worth betting on will use both sources in order to determine needs and set priorities.

Questionnaires are useful for collecting people's perceptions. When used as part of a needs assessment, they may be important for revealing perceived realities. Used alone, they are risky, because they represent only part of the picture: perceived reality, not observed actuality. But used together with observed performance, they can provide the critical elements in identifying and assessing needs.

When you use a questionnaire to help assess needs, make sure it accomplishes the following tasks:

- inquires about ends, not means.
- identifies the two results dimensions, "what is" and "what should be."
- probes into three levels of needs—external needs with consequences outside the organization (such as safety of the output and contribution to profits); organizational contributions from the

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perspective of outside clients (such as meeting delivery specifications and deadlines); and building-block results such as jobs, tasks, or products (such as a high-quality fender or a correct blood analysis).

- is both valid or reliable.
- is long enough to get reliable responses, but short enough so that people will respond.

With a well-planned questionnaire—and a method of observing actual performance, as opposed to perception alone—you can make a useful, successful assessment of needs.

## Ways and Means

*By Larry Hillman, professor of organizational studies at Wayne State University, Detroit, MI 48202; David Schwandt, director of the Office of Organizational Development, U.S. General Accounting Office, 441 G Street NW, Room 7840, Washington, DC 20548; and David Bartz, professor of educational administration at Eastern Illinois University, Charleston, IL 61920.*

Companies often choose their trainers based on content expertise alone. But knowledge of content doesn't ensure success in training. Trainers must also have the knowledge and skills to understand various instructional methods and put them into practice when they are called for.

Classroom training is situational. No single, "magical" instructional method will work in every circumstance. A trainer must consider the course content and participants' needs and interests in order to determine the most appropriate strategies for helping learners learn.

### Instructional methods

Many trainers have found the instructional methods reviewed here

to be successful and cost-effective. They can be used individually or in combination. The first step, of course, is to understand the different methods and how to use them. All should be part of any classroom trainer's bag of tricks.

**Time-on learning** is a powerful instructional method, but it is important to emphasize time-on learning as opposed to time-on task. Having participants spend time on a task in classroom training does not ensure that learning is taking place or that instruction is being delivered at a meaningful level. If trainees don't have the background information to understand a task or concept, they could spend hours trying to master it, but the time would be wasted.

The key is to apply time-on learning in such a way that the instructor considers the specific needs of participants based on their levels of understanding. That doesn't mean that classroom instruction must be one-to-one or in small subgroups. In most classroom training situations, participants have common needs and similar levels of background knowledge.

**Whole-group instruction** (also known as total-group or class instruction) is a basic method of classroom training that is often used in conjunction with films, videos, audiocassettes, and lectures. It can be useful in cases where limited resources make small-group or one-to-one training unrealistic.

Another advantage of whole-group instruction is that it increases time-on task. But again, simply increasing time-on task does not necessarily increase student learning. For example, time-on task is increased (by definition) when a trainer instructs all 25 participants on the same task or skill at the same time, as opposed to working with subgroups or individuals. But some participants may have background knowledge and skills for learning the new task, while others do not. Using whole-group instruction

when participants are on different levels of readiness increases time-on task, but will probably have a negative effect on individual learning.

**The lecture method** is often used with whole-group instruction. Accompanying the lecture with a written handout that summarizes the content is usually a good idea; some people learn more effectively through the written word. Lectures should be kept to 30 minutes or less; mini-lectures of about 10 minutes may be best. To aid understanding, only a few major points should be covered in a lecture. Lectures are not the preferred method for teaching abstract, complex, or detailed information.

**Checking for understanding**, a systematic way of getting feedback, is also used in conjunction with whole-group instruction. The trainer uses verbal probes or questions directed at participants of above-average, average, and below-average background knowledge and skills. If the group is too large for the trainer to use verbal probes or questions, written criteria (and answers) can be used so that participants can check their own levels of understanding.

**Instruction by objectives** clarifies to the participant and the trainer the exact skills to be learned. Instruction by objectives prompts trainers to focus their attention on the most important elements of a segment of content. It specifically communicates to participants what they are expected to learn or accomplish. Instruction by objectives may also furnish a tangential benefit to trainers, in that it allows them to assess the relationship between the amount of classroom time spent and the importance of an objective.

**Adaptive or individualized instruction** has the advantage of effectively providing for the specific needs of participants. Instruction is paced for the needs of learners, and content is presented in such a way that it is challenging, yet attainable, based on learners' backgrounds.

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The name "individualized" instruction does not mean that all the training has to be done one-to-one, although a certain amount of individualization is usually necessary.

**Mastery learning** is an instructional method that establishes the skills to be mastered in each segment of instruction, and then uses an assessment or testing process to determine if they have been. When participants master one skill, they move on to a new skill. If participants do not master the skill, they are recycled through supplemental instruction and then reassessed. The cycle is commonly referred to as the feedback-corrective process. The important point is that participants do not progress to the next skill level until they have mastered the previous skill.

Some people believe that mastery learning requires extensive one-to-one instruction, but that isn't always true. At first, participants may be divided into subgroups, or whole-group instruction may be used. After the trainer determines through assessment that a trainee has not mastered a particular skill, the trainee must be given supplemental instruction. If other participants need the same instruction, they can be grouped together. If not, one-to-one instruction is necessary.

**Cooperative learning** has much potential for use in classroom training. As the name implies, emphasis is placed on cooperation among participants. Cooperative learning depends on developing a classroom atmosphere that focuses on group identification and peers working together in a constructive and cooperative way. Learners often work in small groups of mixed ability.

Cooperative learning techniques are beneficial not only for content mastery, but also for promoting social interaction among participants. That social interaction makes trainees more likely to help each other in learning the course content.

**Matching the participant's learning style with the instructional mode** used by the trainer is a method that has received considerable attention, especially in the context of theories on the different functions of the left and right hemispheres of the brain.

The method is based on the assumption that learning styles vary from person to person. For example, one participant may learn best through verbal communication (lectures); another may learn more effectively through reading. The basic idea is that not all people learn in the same way and that instruction has to be adjusted for trainees' learning styles.

The logic and rationale of matching learning and instructing styles is compelling. But, a trainer is unlikely to be able to determine each participant's learning style in a short period of time. That, of course, limits the usefulness of the method. Still, trainers should be aware of the concept of different learning styles, so that they can use more than one mode of instruction to present content. Remember the old training adage, "say it and let the learner see it."

**Learning by doing** is a popular method of instruction. It uses such activities as simulations, role plays, and games to make classroom training less abstract, because participants acquire a skill as they perform an activity. Learning by doing attempts to minimize the "transfer of training" problem that is often cited as the major deficiency of classroom training. It is often used to complement, not replace, other instructional methods.

**Direct instruction** is characterized by the trainer playing a dominant role in directing the learning activities of participants. The trainer instructs all participants on the same skill, at the same time, by having them all do the same activity. Direct instruction may be the most effective for content that requires low-

order learning levels, such as recall and recognition. For content that calls for creativity, problem solving, and discovery, direct instruction is generally not as effective as such non-directive approaches as the inquiry or discovery method.

**Inquiry or discovery** appeals to many adult learners. It uses a classroom environment in which learners can take part in experimental activities to put together relationships between concepts so that they "discover" how all of the factors of a given skill relate to each other. The discovery method may also emphasize a divergent-thinking approach often used for conceptual and creative thinking.

## In harmony

Knowing a variety of instructional methods does not ensure that a trainer will be successful. The effective trainer not only knows them, but also knows how to choose an instructional method that is in harmony with the training materials and the knowledge and skills that learners bring to the training environment. The success of a given instructional method requires knowing when to use it, how to use it, and under what conditions it is most likely to be effective. The key is in using the appropriate methods in the appropriate situations.

## Testing . . . 1,2,3

*By Amiel T. Sharon, a personnel research psychologist at the U.S. Office of Personnel Management, Washington, DC 20415.*

You are the training manager of an organization that hires a lot of entry-level workers who are unable to cope with the literacy demands of their jobs. You decide to start basic education courses to remedy the skill deficiencies. But you face a major problem. Few of the new

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hires volunteer for remedial training, so you don't know who needs the training and the specific kinds of training they need.

One way you could solve the problem is by administering a diagnostic literacy test to all new hires in certain entry-level positions and assigning them to training based on the test results.

Identifying who needs training is only one of several roles that tests can play in supporting the training function. Tests are also vital for assessing the skill deficiencies of groups of employees, evaluating trainees' progress, motivating trainees, measuring end-of-training achievement, certifying employee competence, and evaluating training effectiveness.

Testing in the workplace is not new. Tests have been around for decades, but lawsuits concerning employment tests in the 1970s and early 1980s has dampened the interest of many employers in using tests for any purpose, including training.

But when used in training programs, tests are generally not considered employment-selection procedures, unless the training is a prerequisite for a particular job. Training tests are less vulnerable to employment-discrimination lawsuits than tests used for selection, promotion, and demotion. Any test, regardless of its purpose, should meet certain standards of quality, but extensive analysis and documentation of a test is generally not required unless the test is used to make selection decisions.

## Tests and training

Tests are useful for identifying training needs, because they provide an accurate picture of employees' current skills, attitudes, and abilities. They can objectively assess current knowledge and skill, and pinpoint weaknesses.

In some respects, tests are superior to traditional needs-assessment techniques that rely on

employees' opinions about their own training needs. Neither employees themselves nor their supervisors may recognize or want to admit that they have training needs, especially in such basic skills as the three *Rs*. Objective tests avoid that problem and provide an unbiased portrait of employees' current knowledge and skills.

Tests can identify the development needs of individual as well as groups of employees.

For example, a large manufacturing company was plagued by accidents. Company safety officials administered a test on safety knowledge to all blue-collar workers, and were surprised to find that virtually every employee answered certain questions incorrectly. Analysis of the responses revealed that misinformation was widespread among the workers about certain safety practices. Because of the testing, safety training that focused on the content of the missed questions was given to all workers.

Training is a double-edged sword—it will increase productivity, but only if the workers who need training receive it. It can be a monumental waste of time if employees are given training they don't need. It's not uncommon in some organizations or organizational units to train everyone in the same subject or skill to the same degree, regardless of each individual's need for that particular skill, or his or her proficiency at it.

It won't do much good to train an electronic-maintenance technician in cost accounting unless that skill can be related to the technician's job or career goals. Similarly, it is wasteful to send a cost accountant to courses in cost accounting without first making sure that the employee does not already have the knowledge and skills taught in the course.

Corporate trainers may do well to emulate colleges and universities that recognize the pointlessness of teaching students subjects they

already know. The practice of awarding college credit by examination makes it possible for students to receive credit for college courses by demonstrating their knowledge on tests, regardless of how they acquired the knowledge. The workplace needs similar kinds of examinations to eliminate the practice of blindly sending people to training without first verifying whether they need it.

Progress tests, common in schools, can be useful in employee training programs. Achievement tests given at intervals during a training course have several benefits. First, they provide trainees with feedback, an essential ingredient of learning. Second, they assist the instructor in identifying trainees with learning difficulties, so they can take appropriate remedial action. Finally, instructors can use test results to gauge the effectiveness of their teaching and modify the training accordingly.

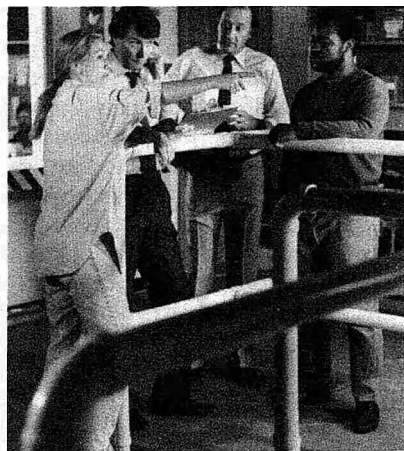
Good training is guided by learning objectives—skills that the trainees must master. End-of-training or mastery examinations are similar to final or comprehensive examinations in college courses. They serve as strong motivators for learning, if students know in advance that they will be expected to demonstrate mastery of a skill or subject at the end of training.

Such tests also make it possible for an employer to certify the competence of a worker before assigning him or her to a particular job. Many training courses, particularly those in "soft" skills such as management, could profit from the introduction of end-of-course mastery tests.

In most organizations, someone is always asking, "What good is training?" Most trainers believe that training improves morale, enhances skills, and increases productivity, but they can't always point to definite proof that those outcomes have occurred. Tests can provide hard evidence of increases in knowledge

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and skill, the foundations for improved productivity. In some cases, testing trainees before and after training can determine what they have learned. By setting objective criteria for training mastery, trainers can find out whether the training is accomplishing its intended objectives, and also its strengths and weaknesses.

## Types of tests

Tests used in the workplace can be classified in various ways, including medium and format, purpose, and skill being assessed. Below is a brief description of the major types of tests and their most appropriate uses in training programs.

### Written, Performance, and Computer-Based

The most common media for training tests are paper and pencil, real or simulated tools and equipment, and computers and video displays.

Written tests are by far the most popular kind of knowledge and skills tests in the workplace. Their appeal derives from their relative ease of development, administration, and scoring. Formats vary widely, but multiple-choice tests are the most popular—they are easy to develop and can be scored objectively. Essay tests allow for a wide range of responses, but their scoring is less efficient and objective.

Performance tests are usually more costly to develop and administer than written examinations. They often require an examiner for each test-taker, special testing equipment, observing and recording hardware, and a lot of time. Those requirements limit the use of performance tests to situations where a high degree of fidelity is required between work and test conditions. Familiar performance tests are the road tests required of driver's license applicants, typing tests, and foreign-language proficiency tests.

Computer-based tests and those using interactive videodiscs are relatively new developments in testing. A computer monitor or video screen presents the test questions or situations. Trainees respond by typing on a keyboard or touching the screen.

Interactive video has a strong element of realism, because the person being tested can react to images, often moving pictures and video vignettes, that reproduce the real job situation.

Although such tests are expensive to develop, they have some advantages over written and performance tests. Their capabilities of branching to different test questions, recording and tallying student responses, and providing for immediate feedback or results, as well as their realism, make them useful media for both training and testing.

### Aptitude and Achievement

Another way to classify tests is by their purpose and content. Aptitude tests measure the basic skills or innate or acquired capacity to learn an occupation. They are appropriate for determining the need for basic-skills training, as well as for predicting the likelihood of success in apprentice, technical, and specialized training.

The General Aptitude Test Battery, administered by the United States Employment Service, is one of the most widely used standardized aptitude tests for employment referral and selection. It measures aptitudes such as general learning ability, and verbal, numerical, and spatial abilities.

An achievement test assesses a person's knowledge or competence in a particular subject or field. It measures the end result of education and training. Licensing and certification tests in many professions, such as the bar examination for attorneys, are good examples. Achievement tests are typically administered at the end of training programs, and

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are also useful for evaluating the training itself.

## Where to get them

Regardless of the kinds of tests you plan to use in your training program, you need to decide where to get them. You can choose to purchase tests from a commercial test publisher, develop them in-house, or contract out for tailor-made tests for your specific purpose and organization.

Good sources of information about commercial tests are *Tests in Print III* (1983), which provides factual information on almost all tests published in the United States, and the *Mental Measurements Yearbook* (1978) and *Test Critiques* (1987), which contain reviews and critiques of all kinds of tests.

Off-the-shelf commercial tests have the advantages of being readily available and relatively inexpensive, but they should be used only if they truly meet your needs. If you need a test to evaluate trainees in a secretarial course, for example, make sure that the content of the test matches the content of your training. If 10 percent of your course is on filing, a test with 50 percent of the questions on filing is clearly inappropriate.

In many cases, custom-developed tests will be the most appropriate for assessing needs or measuring training outcomes, but they do have some drawbacks. They require special expertise to develop, administer, and interpret; long lead times; and higher costs than off-the-shelf tests. If in-house trainers and instructors lack the expertise to develop effective tests, you may need to hire consultants to assist or train them in test development and interpretation.

## What is a good test?

Good tests are both reliable and valid.

Reliability refers to the consistency of the scores yielded by a test. If you were to give a test to the

same person at two different times, you would expect the scores to be similar, assuming that no change has occurred in learning loss or gain.

Validity refers to the accuracy of inferences made from test scores. A valid test will allow you to determine with some degree of confidence whether a person who has completed a particular training program has mastered the content of the program. Good tests designed to measure the outcomes of training include only topics taught in training, not extraneous questions. They require the trainee to perform the same behaviors on the test as those in the training objectives.

Even when you develop the best of tests, all your efforts can go for naught unless you administer, score, and apply the scores appropriately to your situation. For example, testing conditions should be the same for all test takers, or the scores of different trainees will not be comparable. When administering performance and other tests that require raters, make sure that raters agree on how to score trainees. That can be accomplished by training the raters in how to do the scoring.

Pay special attention to older employees who have been out of school for a long time. They may feel anxious about being tested; you need to allay their fears by assuring them that the test results will not be used against them.

You may need to set a passing score or cut-off point for a test, perhaps to determine who needs training or who has achieved mastery of a subject. Many instructors choose arbitrary passing scores, such as 70 percent correct answers, which are not always the most appropriate cut-off points. No way of setting a passing score is purely objective, but rational and systematic techniques, based on expert judgment and statistical analysis, are acceptable.

## A vital role

Tests play a vital role in training. They can diagnose training needs and learning deficiencies, identify employees who need training, measure trainee progress and achievement, certify employee competence, and evaluate training programs. By testing employees before, during, and after training, you can obtain valuable information for managing employee development and improving your training programs.

*"Training 101" is edited by Cathy Petrini. Send your short articles for consideration to Training 101, Training & Development Journal, 1630 Duke Street, Box 1443, Alexandria, VA 22313.*

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