

# Quality Assurance Methodology Refinement Series



## Training Manager's Guide

*By*

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# Introduction

**“A student does not learn what was in a lecture or book. He learns only what a lecture or book causes him to do.”**

*(E.L. Guthrie, 1942)*

This monograph is part of the Quality Assurance Methodology Refinement Series published by the Quality Assurance Project. Like the other monographs in the series, its purpose is to help those promoting Quality Assurance in health care and other services to achieve lasting impacts. The monograph focuses on how to design, develop, and deliver efficient and cost-effective training.

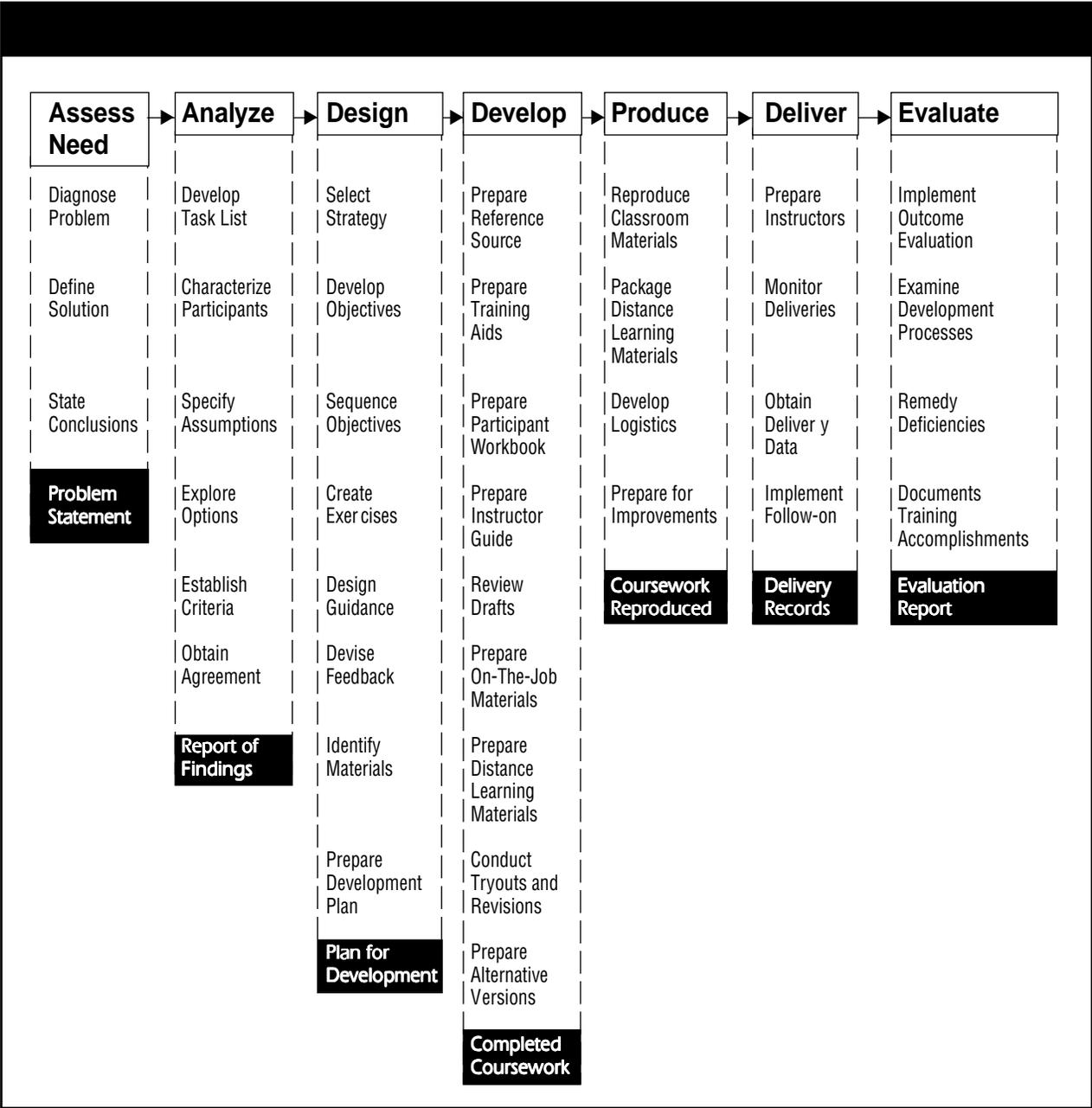
The monograph presents practical guidelines for creating successful learning experiences and provides step-by-step assistance in key training elements, from assessing the need for training to evaluating course preparation and outcomes in the workplace.

A key concept underlying the approach presented here is that uniform success in a training program can be assured only by the systematic application of certain basic principles that help determine the aim and scope of the training, its implementation, and application in the workplace. Effective training must be based on:

1. clear statements describing the performance problem to be resolved
2. ample practice to allow mastery of the performance
3. useful guidance to ensure correctness of the practice
4. frequent feedback to measure learner progress
5. rigorous testing of the training and demonstrated improvement as a result.

The suggestions in this monograph will help you focus attention and energy on those aspects of a training program that promote the achievement of expected results. Several of the recommended steps may seem unnecessary or unfamiliar to you at first. However, after you have tried the approach one or two times, you will not likely follow any other course.

The process begins with the identification of the need for training and continues through its development and implementation. The different phases of the approach are outlined in the following diagram:



The steps for completing each phase of the training process are listed under the title, with the main product for each phase appearing in the shaded box at the end. Note that not all steps are necessary for each training program. Because it is important to verify that your efforts are on track and consistent with quality expectations, the product for each phase should be prepared and submitted to program officials for review before proceeding to the next phase.

# Assess Need

Improving the job performance of workers responsible for providing health care and other important services is a key factor in enhancing quality and reducing costs. Poor work performance can result from many causes, including task requirements that exceed human capabilities, insufficient or non-existent equipment and supplies, unsatisfactory work environments, inadequate procedures for selecting personnel, and contradictory performance standards. While training cannot eradicate these problems, it can be a powerful force in overcoming those which result from inadequate, or poor application of, job skills. The first step, then, in developing a training program is to carefully examine the problem and determine whether training is an appropriate response.

## Step 1. Diagnose the Problem

**Define the problem and examine its probable causes by gathering information, exploring alternative explanations, and comparing outcomes with those in other settings.**

There are many reasons why people do not perform as expected. In general, unsatisfactory performance is evident in organizations that do not function properly and that provide poor and costly services. Shortfalls in health care and other essential services are often blamed on the providers who, it seems, lack the skills and knowledge needed to deliver quality services. Training can have a significant impact on their performance and, in turn, on the overall functioning of the organization. However, when poor performance is not due to lack of skills or knowledge, training is not effective. Therefore, before beginning a training program, you need to conduct a thorough investigation of the problem to determine if, and what type of, training is appropriate.

◆◆◆ *The cross-infection rate at rural health clinics is unacceptably high. Observers visiting the clinics report that clinic personnel do not scrub their hands after each patient, and use unsterilized instruments. Although proper sanitation is stressed in clinic manuals, personnel appear not to follow basic rules. An urgent remedial training program is recommended.*

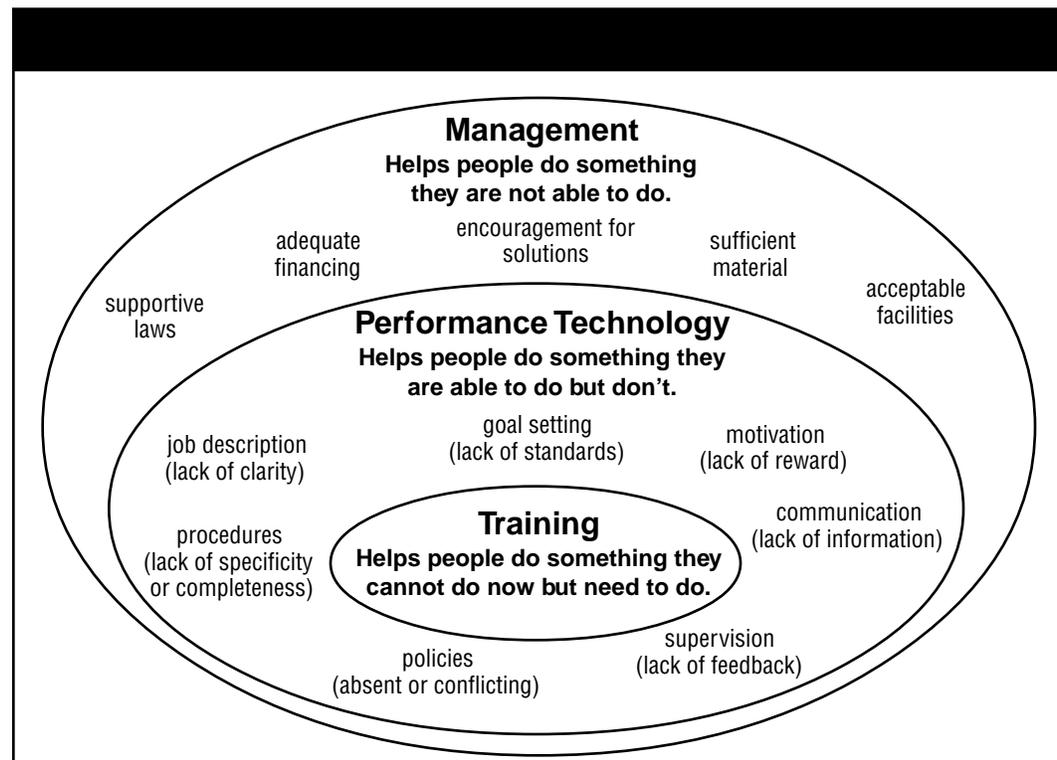
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In your investigation, you can use interviews with staff and supervisors, personal observations, written records, and discussions with experts. Also consider the following questions:

- ◆ Is this a performance problem, or are there other causes?
- ◆ Are there adequate supplies of soap, water, disinfectant?
- ◆ Is there sufficient supervision? Is proper sanitation stressed?
- ◆ Does management agree with the recommendation for training? Will it provide funds?
- ◆ Are workers ignoring the sanitation skills and knowledge they already have?
- ◆ Would the gains from additional or improved training justify its cost?

You may want to begin the investigation by eliciting the views of the workers themselves. Though they may not be able to define the problem, they can often provide insights to help pinpoint its cause. You also want to look for variability among individuals, work settings, or similar activities elsewhere. Try to isolate the conditions, policies, practices, or other elements that contribute to quality outcomes.

Note that improvements are usually incremental. When diagnosing a problem, try to keep it within manageable limits. Clinic workers may be underpaid; the educational system deficient; and public opinion on health services low. While these are important issues, they are not ones you can remedy. Remember, your aim is to determine only whether training will solve a recognized problem. The following diagram will help you do this.



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## Step 2. Define Solution

**Propose the most efficient and cost-effective solution to the problem of skill or knowledge deficit.**

Once you have established that lack of skills or knowledge is responsible for the problem, you must decide what to do about it. Since formal training can be very expensive, you want to explore other solutions that could produce the desired results. Consider, for example:

- ◆ **Job Instructions** – Many tasks require no special skills or knowledge and can be carried out by following a series of steps in a certain order. For example, taking an oral temperature is a task that can be easily performed with the right equipment and clear and complete step-by-step directions. There are many other job tasks that can be performed easily if the tasks are presented one step at a time at a level workers can understand.
- ◆ **Periodic Practice** – Some tasks are not performed frequently enough for acceptable levels of proficiency to be maintained. Periodic drills can help individuals maintain adequate performance levels on tasks that, while important, are hardly ever performed. The drills should be frequent enough so that accompanying training is not required.
- ◆ **Adequate Feedback** – For many reasons, performance levels tend to vary over time, particularly if the individual performing the tasks receives little or no feedback. For some tasks, such as removing a splinter from a child's foot, feedback is automatic. For others, such as recommending a change in diet to correct a nutritional problem, results may become apparent in the future or, in some cases, not at all. Regular feedback from a supervisor can help keep performance levels steady.

Often, developing and implementing a training program is the only practical solution to a problem. Before recommending training, however, consider whether the expected benefits will outweigh the likely costs. For example, is it necessary to train all health workers in child delivery? Would a knowledge of old age diseases contribute to urgent health goals? Do we know enough about what constitutes good management to expect that management training will produce recognizable results?

In Exercise 1-1, you will examine problems and determine whether training is an appropriate solution.



**Turn to Exercise 1-1 NOW**

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## Exercise 1-1

**Directions:** *Training can be the best way to resolve performance problems, but often it is not. Before you suggest training as a solution, you need to determine whether training will be*

- ◆ *effective in helping to solve the problem*
- ◆ *practical for the intended students and circumstances*
- ◆ *economical relative to the expected benefits.*

*The Ministry of Health has identified severe problems that affect the functioning of rural health clinics. A senior official has asked you for your preliminary opinion as to whether a training course should be developed to deal with each of the following problems. Information the Ministry has about each problem is summarized. The official recognizes you may want more information than is available, but needs your preliminary opinion now. Read each problem statement and prepare a brief recommendation as to whether you think training is appropriate. Record your recommendations on the following page.*



### Health Clinic Problems

Many people do not trust the health clinics. They prefer the native medicine people in their own villages. People who do use the clinics tend to return in the future, but there are large numbers of people in the rural areas who have never sought help from a clinic.

We have been able to advance the level of health care offered through our clinics in the past few years. However, many of the clinic workers who have been at the clinics for perhaps ten years or more do not use the new medicines and techniques. We've repeatedly sent instructors to the clinics to lecture about this new knowledge. They report the workers score high when they are asked questions, but fail to use what they have learned.

Observers report that workers at some clinics inappropriately ask people for money before they will be seen or treated. Those who can't or don't pay are forced to wait or, in some instances, are even turned away. We think the supervisors at the clinics are aware of this practice. While we do not believe they share in the payments, we think they are reluctant to raise them as an issue for fear of losing those who often are their best clinic workers.



## Your Suggestions

*For each item, state whether or not training is likely to be an appropriate solution. If not, indicate why. If training is appropriate, what should the aim of that training be?*

Trust the Clinics.

Upgrade Clinic Workers.

Payment for Clinic Services.

*Now turn the page to check your answers.*



## Answers to Clinic Problems

*The need for training can be verified only when you have convincing information that will support its benefits and justify its costs. However, the following suggestions are consistent with the information given. Other answers may also be correct.*

**Trust the Clinic.** No training. Since people using the clinics are likely to return, clinic personnel seem to be doing their jobs well. The Ministry could attempt to resolve the problem through an outreach program that uses advertising and village meetings to encourage people to try the clinics. It might also try incentives for those coming to a clinic for the first time.

**Upgrade Clinic Workers.** Recommend training. Although long-term clinic workers have received instruction, that instruction focused on knowledge rather than practice. The training should include actual practice with the newer medicine and techniques. Also, clinic supervisors have to do a better job of encouraging workers to adopt modern practices. The supervisors may need training to help them do this.

**Payment for Clinic Services.** Recommend training, but for supervisors and not clinic workers. This is not a problem everywhere, so it is unlikely to be one that cannot be solved. It is more probable that the supervisors in affected clinics would benefit from training on how to deal with the problem. The training should provide them with the skills they need to be firm and get the workers to stop the practice without having to discharge them.

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## Step 3. State Your Conclusions

**Establish the aim, scope, and expected results of training proposed to solve a problem.**

Once training has been selected as the solution, you need to prepare a written statement that succinctly describes what the problem is and how training will solve it. You want to provide specific details regarding the scope and content of the training and, most importantly, its expected benefits and overall contribution to organizational functioning.

This statement will serve as a guide to subsequent training development and delivery efforts. Several people usually participate in preparing and presenting a training program. It will be helpful to them and make your coordination of their efforts easier if you communicate your intentions as explicitly as possible. Focus on what participants will do differently following training, such as provide effective neonatal counseling, initiate effective outreach programs, or reduce waste in the use of medications.

Your written statement of scope, which should include only what is necessary to accomplish your particular aim, will help you resist the many suggestions you will receive for adding topics that, while useful, will contribute little to your goal. You can create other training courses to meet different needs later on. The success of your present training design will determine how many opportunities you will have to develop more programs in the future.

## Summary

Assessing the need for training requires a thorough examination of the problem. Compile evidence, explore alternatives, and determine whether training will improve organizational functioning. Consider the following questions as your training development proceeds:

- ◆ Is the problem well defined? Do you understand it well enough to clearly describe it to others?
- ◆ Is it a performance problem? Will changes in performance alleviate the problem?
- ◆ Is satisfactory performance possible? Is there evidence that present or future personnel could adequately perform the tasks involved?
- ◆ Would workers be able to perform the tasks satisfactorily under the right circumstances? Do they need new skills or knowledge?
- ◆ Are there alternatives to training? If training is appropriate, what performance improvements can be expected?
- ◆ How will organizational functioning be affected by improved performance? Do training benefits to the organization outweigh its cost?

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# Analyze

You have confirmed the need for training. Now you must analyze the performance problem to determine what the scope of the training will be, who will attend, what alternatives exist for providing the training, and what the expected outcomes are. The analysis phase is essential if training is to yield a recognizable improvement in organizational functioning.

## Step 1. Develop a Task List

**List the tasks involved in the activity(ies) you want to improve through training, describing each in terms of an action and what it is to accomplish.**

Begin your analysis with a careful examination of the tasks involved in the performance you want to improve. Prepare a list of these tasks which will serve as the foundation of your training development effort.

A task is a segment of an activity that has clear beginning and end points. A task may be relatively simple, such as “Take a rectal temperature” or very complex, such as “Hire staff for a new clinic.” A task is usually the responsibility of one person, but is often performed in collaboration with others. A task usually involves both knowledge and skill. It may be done the same way every time or it may be done differently, depending on the circumstances. A task usually consists of a number of individual steps.

You may have difficulty deciding how much of an activity should be included in one task. Obviously, most tasks can be divided into smaller units or combined into larger ones. Ordinarily, think of a task as representing one assignment—what someone could be directed to do once they know how.

Another way to look at a task list is to aim for about five to 30 tasks to describe the organizational activity you want to improve. Remember, this list does not have to include everything a person

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does on the job. You have identified one activity or set of activities as particularly in need of training. Your task list should encompass that activity and communicate what it involves clearly and thoroughly.

Tasks for a task list can be identified in several ways. The best way is to observe people as they perform the activity to see what they do. You may need to observe a few people or several people, depending on how variable the activity is. Observing actual performance is also helpful in providing insights that can be used later in the design and development of instructional materials.

A second way to identify tasks is to ask experts to list them for you. Seek help from several experts and combine their views. You may have to revise the wording they use to reduce ambiguity. If so, ask the experts to review the resulting list to check for accuracy.

A third way to produce a task list is through systems analysis. In this approach, the activity is examined logically to specify the tasks that must be performed to achieve a successful outcome. You may have to depend on systems analysis to identify tasks if the activity is new and as yet not performed. If you choose this approach, you want to elicit help from a systems analysis specialist to be sure the tasks you specify are the best ones for your training program.

How you describe a task for your task list is very important. Tasks that are properly labeled are easier to communicate to others and help ensure that training achieves its intended goal. The basic components of a task description are:

- ◆ the action to be performed
- ◆ the outcome to be achieved.

Look at these task statements:

◆◆◆ ***Perform sterilization of instruments, syringes, and needles in compliance with all written procedures.***

***Fill out a weekly supplies order form that is complete and accurate.***

***Conduct an orientation for new clinic personnel so they can begin useful work immediately.***

Each task statement begins with an action verb. Avoid verbs like “understands,” “knows,” “recognizes,” or “remembers.” Avoid adding “is able to” before the action verb. Avoid multiple verbs that represent two tasks in one task statement. The more direct the task statement is, the easier it will be to develop training.

The second part specifies what the task performance should accomplish, the standard that says the task performance is complete. Is the clinic worker to measure infant weights accurately to the nearest kilogram, gram, etc.? How accurate or encompassing the outcome has to be can strongly influence how you will train and how long or intensive training will be.

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Creating a task list usually requires a full understanding of the job, the circumstances, and, in particular, the tasks within the job which contribute most to successful performance. Exercise 2-1 gives you an opportunity to practice identifying tasks and communicating them clearly to others. Use your imagination to understand the job and what it entails.



**Turn to Exercise 2-1 NOW**

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## Exercise 2-1: Task List

**Directions:** *Identifying tasks for training and describing them clearly are necessary to a quality training program. This exercise will help you build those skills. Read the interview with Adam and then complete the task list that follows. Several tasks have been written in for you. Find the tasks missing from the list and write a task statement for each of these tasks.*



Hello. My name is Adam. I am a project leader at the Ministry of Health. My current assignment is to conduct a national child immunization survey. We will train about 120 field investigators who will gather survey data from selected sites around the country. These field workers will collect information from both community health workers and the mothers of children age 6 months to 5 years.

The investigators must go to the selected site, interview half of the community health workers employed there and also interview 100 mothers in that service area. The health workers will be asked to show the investigator their child health visit records so the investigator can record the number of children immunized in a typical month and their ages. The mothers will be asked about their child closest to the age of 4, but not yet 5. The investigator will want to know if that child was immunized and at what age. A different form will be used for each health worker and mother interviewed.

It is important that the investigators correctly select health workers and mothers to interview based on a sampling procedure we have developed, be able to gain the confidence of those they talk to, and accurately record the information they obtain on our standardized record forms. It is essential that they convince each person they contact to provide the needed information, and to be truthful. Otherwise the results may be suspect. The investigators will send the results here. They will not have to do any analysis.

*Look at the partially completed task list on the next page. Write out brief descriptions of important tasks missing from the list in the spaces provided. Refer back to the interview with Adam to identify the tasks missing from the list.*



## Your Task List for Field Investigators

1. Determine the number of health workers who are registered at the selected site.
2. Use the written health worker selection procedure to choose those to be interviewed.
3. Initiate an interview with each selected health worker in a way that gains that person's confidence.
4. \_\_\_\_\_  
\_\_\_\_\_
5. Transfer the data accurately to a record form.
6. Choose 100 mothers to be interviewed using the written mother selection procedure.
7. \_\_\_\_\_  
\_\_\_\_\_
8. Identify the mother's child closest to the age of 4, but not yet 5.
9. Collect data from mother on whether that child was immunized and at what age.
10. \_\_\_\_\_  
\_\_\_\_\_
11. Send survey results to the Ministry of Health.

*When you have filled in the missing blanks, turn the page for the correct answers.*



## Task List Answers

1. Determine the number of health workers who are registered at the selected site.
2. Use the written health worker selection procedure to choose those to be interviewed.
3. Initiate an interview with each selected health worker in a way that gains that person's confidence.
- 4. Review health worker's immunization records for one month to determine the number of children immunized and their ages.**
5. Transfer the data accurately to a record form.
6. Choose 100 mothers to be interviewed using the written mother selection procedure.
- 7. Initiate an interview with each selected mother in a way that gains that person's confidence.**
8. Identify the mother's child closest to the age of 4, but not yet 5.
9. Collect data from mother on whether that child was immunized and at what age.
- 10. Transfer the data accurately to a record form.**
11. Send survey results to the Ministry of Health.

*You did not have to word your tasks exactly this way to be correct. But, you should start with an action verb and describe the task clearly enough to communicate what you mean to others.*

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## Step 2. Identify Participant Characteristics

**Profile the intended trainees according to their entering skills and knowledge, barriers to learning, and variability.**

Once your task list is completed, you can turn your attention to the individuals who will receive the training. First, you will need to identify the skills and knowledge they already have that you can build on, as well as any barriers they might bring to training that could interfere with learning.

Begin specifying trainee characteristics by considering the particular population they represent. Are they physicians, nurses, experienced clinical workers, or new hires? Are they reasonably literate? Do they all use the same language? If relevant in their society, are they young or old, male or female, from different ethnic backgrounds? Answering these questions will help you gain a good understanding of what the participants will be like and what you can expect from them.

Knowing the trainees' overall characteristics is not always enough; you often have to delve deeper to determine what assumptions you can make. For example, can you assume they can add and subtract well enough to calculate percentages, or will you need to include basic arithmetic in the training program? Can you assume that hospital administrators are comfortable using desktop computers, or that regional supervisors can plot seasonably adjusted trend lines?

Trainees generally have different levels of skills and knowledge. When variability among trainees is limited, a single training design is likely to suit everyone. However, when variability is high, several versions of your training program may be needed to accommodate different subgroups of participants.

A high level of variability may also suggest a need to be selective about who will attend the course. In this case, you might want to establish certain prerequisites for attendance. While administering a test may not be practical, you might consider devising a simple biographical data form to be completed by the applicant, or a rating form to be completed by the person's supervisor and submitted with the application.

In addition to developing a working description of the intended trainees, you also want to carefully identify any barriers to learning that might be present. For example, do any of the participants have physical handicaps? Do they lack motivation because of beliefs such as training is a waste of time and attendance suggests deficiency?

There are several barriers which may be common to most or all intended participants. Being tested, speaking in front of a group, attending classes with supervisors or members of the opposite sex, or being willing to complete homework assignments may not conform with cultural norms. Regional differences may evoke unwanted competition in cross-regional classes. Even learning itself may not be given high priority. You need to find out whether you need to be prepared for spotty attendance, frequent tardiness, or negative attitudes.

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Pay particular attention to language issues. Even though the trainees may be described as “knowing English,” their lack of fluency in the language may make them hesitant to ask questions or speak in class. The instructional materials may have to be written at a level that is easy for them to understand. One solution may be to prepare and deliver the training in the language used by the participants. However, unless you are reasonably proficient in that language, it may be difficult for you to control the quality of the training.

Consider the following questions to help guide your investigation:

- ◆ Have participants received prior training on any of these tasks?
- ◆ Can some/most participants currently perform any of these tasks satisfactorily?
- ◆ What is the educational level of most participants?
- ◆ Are participants already performing the basic job or are they new to the work?
- ◆ What language should be used for training?
- ◆ How many participants will require training?
- ◆ Will participants be paid while attending training? Will they be rewarded for successfully completing the program?

Use the answers to these and other questions to construct a participant profile. Then use the profile to decide which underlying skills and knowledge will be included in the training, how quickly the training will proceed, at what reading level will text materials be developed, and what kinds of practice exercises will be appropriate. Emphasize in the profile any differences you have identified between these participants and personnel performing similar tasks elsewhere.

The following is a typical participant profile:

- ◆◆◆ *Male (30%, Female (70%))*
  - Age: 20 to 25 years*
  - High school graduate, often without a science background*
  - French speaking, fully literate*
  - Usually no prior formal health care background*
  - Usually no prior formal work experience*
  - Positions offered only to those with a passing grade*

In general, these participants do not represent a difficult or highly variable population. Because they all are high school graduates, you could expect them to have basic skills, to be familiar with classroom instruction, and to be motivated to learn.

Note that the list includes information on the sex and age of participants. While demographic information does not generally have a significant impact on the design of the training, the information should still be requested. It may become useful for selecting examples and exercises later on.

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## Step 3. Specify Requirements, Resources, and Constraints

**Examine the requirements to be met by training, the resources available to develop and deliver training, and the constraints that must be recognized in preparing and presenting training.**

In order to have a significant impact, training must be carefully planned and managed. Planning begins with a review and analysis of requirements, resources, and constraints. You cannot plan on participants attending a course at their district hospital, for example, unless you know that classroom space, housing, and transportation for trainees is available.

Training requirements include the number of people to be trained, the pace at which participants must complete their training, and any external standards or conditions that must be met.

How you prepare your training will depend on the number of participants. A training program intended for one-time delivery to a small group of participants generally requires a more modest investment in course development than a program intended for hundreds or thousands of participants at multiple locations. A course offered only once can be presented by a very able and knowledgeable trainer; a course given many times at many locations needs to be “instructor proof” to maintain a consistent level of quality among many instructors. Pilot sessions to refine the course make little sense if the training will not be repeated. Elaborate audiovisual aids may be economically unsound when only a small number of participants is involved.

Another requirement that should be examined carefully is schedule. The need for training may have arisen from the planned introduction of new equipment, new procedures, or new personnel. Training may have to be in place to take advantage of that equipment, procedures, or new hires. Remedial or upgrade training may also be on a timetable. The problems to be overcome may be so critical that urgent interventions are necessary. Tight deadlines should never be met through training development shortcuts, however. The quality of training should be especially high to ensure successful outcomes.

Be cautious when forecasting that a training program will have utility well into the future. You will need to assess the likelihood that such a course will have to be revised periodically to incorporate new content or accommodate changes in the participant population. Therefore, be careful not to produce a course that is resistant to improvement. Even good courses can be made better if revisited regularly.

Other requirements can include external ones, such as those that need to be met for accrediting a facility or licensing individuals. Your task list may need to be expanded to encompass these as well as the basic requirements of job performance. You may decide that these additional requirements would not be appropriate inclusions in your training program. However, you should be aware of them when you make that decision.

The resources you have for training development and delivery are, of course, major ingredients of your planning. Training programs are almost always team efforts. Quality comes from expertise

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in instructional design, content area, curriculum writing, production processes, training delivery, and evaluation. Few people are skilled in all of these areas, and even fewer can achieve real success without the help of colleagues. Being able to identify or assemble a team of specialists for ideas, suggestions, critiques, or assistance will largely determine what can be done and how successful the outcome will be.

Other people who may be required are writers, illustrators, word processors, video producers, trainers, and logistics managers. You may also need curriculum specialists, translators, and learners to participate in tryouts. You have to make sure, however, that the process remains manageable. Good training is the result of good technology; avoid involving others who cannot, or will not, employ this technology.

In addition to examining requirements and resources, you must also identify any other barriers that might affect training design or delivery. For example, you can include in your design only simple audiovisual materials if training is to be delivered in remote areas that do not have electricity. If the prospective trainers have little or no experience in delivering training, you will need to develop a highly structured course and a TOT (training of trainers) program. Reading assignments cannot be given to trainees who have marginal literacy skills; audiotapes might be used in place of written materials.

Logistics are a serious concern when planning a training program. In many areas of the world where transportation is poor, getting participants to and from the training site can be problematic. Limited availability of training space places constraints on class size. Reproduction of needed quantities of classroom materials may not be easily accomplished. If training is to be delivered at the work site, does class attendance take priority over job responsibilities?

Factors such as participant motivation and interest cannot be ignored. If you lack experience conducting training in a setting similar to the one for which you are planning, take the time to become familiar with what you can expect from trainees. Talk to prospective participants to learn their preferences and expectations and to find out what they liked and disliked about prior training programs they attended.

It is important to list any problem areas you uncover and their probable impacts. Be specific and share your observations with decision-making officials. Objectively presenting the problems provides officials with the opportunity to make changes to help alleviate them. You will also be able to use the problem list to review and refine your training design and devise contingency plans when necessary.

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## Step 4. Explore Training Delivery Options

**Consider the benefits and liabilities of alternative ways of delivering training, including classroom instruction, on-the-job tutoring, and distance learning.**

Most training designers think only of classroom instruction when they plan training delivery. However, most new skills and knowledge are acquired outside of a classroom. People learn much of what they do and know on their own, sometimes with the help of books but often through experience. They also learn with the help of others, including co-workers, friends, or supervisors. Distance learning tools, such as correspondence courses, televised lessons, and computer-based instruction also provide ongoing learning opportunities.

Learning outside of the classroom is often less effective, however, because the training is poorly designed. Practice is essential to learning, but it must be controlled in order for the learning to be reliable and efficient. Too often, training outside the classroom lacks the organization, structure, and control that a training professional would provide.

Techniques have been developed to overcome many of these problems and should be considered, particularly when significant barriers to traditional classroom training delivery have been identified, or when a lack of resources or other constraints suggest that classroom instruction will be inappropriate.

One alternative is on-the-job training. Supervisors, mentors or even experienced employees can provide training. Because these tutors are not professional trainers, however, they need carefully developed guidance to help them make their efforts as productive as they should be. On-the-job training can be very economical and it can be tailored to match the circumstances at that location as well as the characteristics of the individual learner.

Another alternative is distance training through the use of correspondence courses, self-teaching lessons, television, radio, telephone links, and computers. These learning channels offer considerable flexibility in scheduling training. However, considerable creativity and effort are required to devise training programs that are effective and able to accommodate sizable differences in learner backgrounds and learning ability.

Your choice of training delivery alternatives will depend on the

- ◆ amount of training likely to be needed
- ◆ characteristics and variability of learners
- ◆ access to qualified instructors, on-the-job mentors, or distance learning channels
- ◆ facility in assembling classes of learners
- ◆ types and complexity of tasks included in the training
- ◆ anticipated number of learners.

Alternative approaches to instruction that you may wish to consider are described in more detail in the Design Phase.

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## Step 5. Determine Key Outcome Indicators

**Establish the criteria you will use to verify that your training has improved performance and has made the desired contribution to organizational functioning.**

Selecting criteria to demonstrate what your program will accomplish is essential for justifying the investment in training. Establishing clear, concrete expectations enables you to focus your efforts on providing convincing evidence of training benefits.

Two levels of criteria are desirable. First, a demonstration that training has remedied specific performance problems and, secondly, that it has brought about the desired changes in organizational functioning.

Your criteria should be derived from your analysis of the problem. For example, in the case of clinic patients who discontinue their medication prematurely, you could suggest that additional training for clinic personnel on how to counsel patients will correct the problem. Then, if your training is effective, there should be a demonstrated improvement in counseling and a reduction in the number of patients who discontinue their treatment.

Begin with performance criteria—what your learners will do after training that they could not do before. Choose three or four core tasks from your task list, all or most of which should be observable in the job setting. (Do not worry now about how you or someone else will carry out the observation. This will be dealt with in the Evaluation Phase. For now, you only need to select the tasks you think best represent the goals of your training.) Then identify indicators that convincingly represent the intended organizational improvements. Though a difficult task, finding positive changes is well worth the effort. Look for ways in which the organization or its client will benefit as a direct result of your training program and the improved performance of the trainees.

Consider the following examples.

◆◆◆ *Patient's waiting time is reduced.*

*All routinely needed supplies are on hand.*

*Neonatal visits are increased.*

*Staff report improved job satisfaction.*

*Contagious disease reports are submitted regularly.*

It is not necessary to identify a large number of improvements. One or two for each problem area covered by the training are sufficient. If you cannot identify any specific improvements that will result from your training, you have not defined the problem or solution as explicitly as necessary. Go back and review your analysis of the need and purpose of your training.

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It is important to choose outcome indicators that are deemed valuable by officials sponsoring the training. Choose only those that can directly result from training and will convince program officials that they have made a worthwhile investment. Exercise 2-2, will provide you with the opportunity to identify performance outcomes and organizational benefits that will help justify the need for training.



**Turn to Exercise 2-2 NOW**

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## Exercise 2-2: Outcome Indicators

**Directions:** *Read more from the interview with Adam when he indicates the purpose of the survey and his expectations for the training to be given to the field investigators. Then write two outcome indicators—one describing an important outcome relating to the performance of field investigators following training and the other specifying at least one resulting benefit to the organization.*



The Ministry of Health considers this childhood immunization survey to be important for several reasons. First of all, it will give us an accurate picture of childhood immunization activity across the country. We will find out what percent of children are immunized at each age and for each region. This will help us determine how much we need to invest in improving the immunization rate and where this investment is most needed. Another benefit from the survey will be a better understanding of the reasons mothers give to bring their child to a health clinic for immunizations, as well as the barriers—such as distance—to their taking advantage of services already available to them. And, third, we want to find out if there is a discrepancy between the immunization records at the clinics and the reports given to us by mothers.

All of this depends on the performance of the field investigators who conduct the survey. They have to gain the confidence of the people they collect data from and record the information accurately. They also have to correctly use our sampling procedures.

*Now answer the two questions on the next page. Write out your answers.*



## Your Outcome Indicators

Identify one important outcome that will be evident in the performance of field investigators following their training.

Identify one important benefit to the functioning of the Ministry of Health that will result from training.

*Compare your answers to those on the following page.*



## **Outcome Indicator Answers**

Field investigators' performance. You should have written one of the following outcomes:

- ◆ Gains the confidence of the people contacted for information.
- ◆ Records the information received accurately.

You should not have written, "understands the importance of the study." This is not a task; it is not an activity that would be one of the aims of your training program.

Ministry of Health functioning. You should have written one of the following benefits:

- ◆ Objective information on the number of children immunized by age and by region.
- ◆ Improved information on why mothers bring their children for immunizations.
- ◆ Accurate information on the match between clinic records and reports by mothers.

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## Step 6. Obtain Agreement From Program Officials

**Share your task list, participant profile, list of resources and constraints, and the improvements you expect from training with responsible officials for their approval.**

The final step in the Analysis Phase is to assemble your results for review by program officials. Their concurrence is important for two reasons. First, you want to be sure that you are on target with respect to their expectations and the problems they want solved. Your list of tasks and your indicators should correspond closely to what they hoped the training analysis would accomplish. Remember, however, that you have focused the training on what the participants will do or accomplish, not on what they will know or understand. You may have to point out that learning to “appreciate the value of quality assurance in a health delivery setting” is not a substitute for learning to “develop a customized quality assurance checklist for use in a health delivery setting.”

The second reason for seeking the concurrence of program officials is to check your mutual understanding of the participant population, external requirements to be met, resources available for preparing and conducting training, and considered constraints. Program officials may not agree with your analysis and, more than likely, will even identify solutions that were not previously available. For example, they may offer assistance in arranging classroom space or providing subsistence and transportation for trainers to deliver the course on-site at rural clinics.

Your report can be brief, but it should consider all elements of concern to decision makers. Two questions you cannot answer yet, however, are how long the training course will last and how long it will take to prepare. With experience, you will be able to provide estimates. Until then, do not commit yourself to any time frame until you have prepared the course design.

The following is an outline of a training program report that could be submitted to officials. The headings are suitable for organizing an analysis report for any kind of training.

- ◆◆◆ *The Problem*
- Solutions Considered (and why you chose training)*
- List of Tasks*
- Resources and Constraints*
- Expected Benefits (your criteria)*

Once you receive agreement from program officials, you are ready to move on to the Design Phase. Your training analysis report will now serve as a blueprint for the next phase. The information you compiled, particularly the task list, will serve as the foundation for an efficient and effective training program.

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## Summary

Your training program will be based on your analysis of the specific performance problem; special characteristics of the prospective participants; requirements, constraints, and limits on resources; options for delivering training; and indicators you will use to verify success. Your foundation should be comprehensive and trustworthy, one you can depend on as training development proceeds. Your analysis should provide answers to the following questions:

- ◆ Has every relevant task been identified? Has each task been stated as an action and its outcome?
- ◆ Can you make a profile of the intended trainees and indicate how each characteristic will impact on your training design?
- ◆ Do you have a clear understanding of deadlines, cost constraints, and other requirements? Do you know what help and other resources will be made available?
- ◆ Have you explored alternatives to classroom training?
- ◆ Have you established clear criteria for assessing the success of the training in organizational functioning?
- ◆ Do program officials agree with your task list, participant profile, identified resources and requirements, training delivery plan, and proposed outcome criteria?

# Design

In the Analyze Phase, you identified the goals of training. In the Design Phase, you will determine how to achieve them. Remember, training is focused on performance—what learners will do following training that they could not do, or could not do well, before training. The content presented to the learners during training is a means to that end, not an end itself.

## Step 1. Select an Overall Instructional Strategy

**Choose the method(s) you will use to deliver training based on identified needs, opportunities, and constraints.**

Not all training is delivered in classroom settings. As you learned in the Analyze Phase, other techniques, such as self-study, computer-based instruction, or on-the-job training, may be better suited to solve a particular problem. Choosing an appropriate instructional strategy is easier when you understand the advantages and limitations of each.

**Classroom instruction** is the training technique most familiar to people. Learners are assembled in a classroom where an instructor provides information, guidance, and feedback. Classroom instruction can be expensive, however, for training courses that are offered many times. The use of different instructors usually involves a training course to teach them how to present the program. Furthermore, not all instructors provide the same level of quality instruction. Therefore, constant supervision may be needed to ensure that desired training standards are being maintained.

One advantage to using instructors is that they can adjust the training to meet the individual needs of learners. Instructors can correct student errors, answer questions, and deal with unexpected problems. A good instructor can recognize and remedy poor motivation and other barriers to learning. These benefits are lost, however, in classes with more than twenty or thirty participants where interaction between individual students and the instructor is difficult.

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Another advantage of classroom instruction is that the instructor can monitor the practice essential to learning. To be efficient, however, practice must be controlled and carried out in successive steps of gradually increasing difficulty, thereby allowing most students to succeed. Structured feedback is necessary so that learners do not practice incorrect performance. Written feedback consisting of the correct answer is effective for some practice, such as solving math problems or creating a staffing pattern for a hypothetical clinic. However, instructor feedback is necessary for other skills such as interviewing applicants for a position or setting a fractured limb.

**On-the-job instruction.** One alternative to classroom training is to rely on supervisors, co-workers, or even friends as instructional resources. A considerable amount of learning takes place this way everyday in our lives. For example, someone shows us how to perform a new task on a computer, or teaches a child how to ride a bicycle, or works with a trainee on improving managerial skills. Mentoring in a formal instructional setting can also be very effective. Examples are discussing a planned research study with a professor, reviewing for a history examination with a group of fellow students, or learning how to repair an automobile through on-the-job training.

As these examples suggest, formal training is not a prerequisite for tutoring. The main difficulty, however, is in providing sufficient structure to ensure that all targeted instructional objectives are met and that the sequence of learning steps is appropriate. An instructional designer can develop a training program specifically for tutorial use that helps overcome these limitations. The result can be a highly personalized, flexible, and effective training course.

**Distance learning materials.** Self-study, with or without additional instruction, guidance or feedback, is a popular alternative to instructor-based training. Several options have been created to provide instruction without having to attend classes. Each option has its advantages and disadvantages, which should be carefully weighed before a selection is made.

◆ **Correspondence and other self-study courses** allow for flexible scheduling and self-paced learning. They are also relatively inexpensive. Well designed classroom training can often be adapted for use in a correspondence or self-study program. The main drawbacks of these approaches are delayed feedback, insufficient practice opportunities, and high drop-out rates. These problems, however, can be largely overcome through proper design of materials and delivery.

The simplest correspondence and self-study courses consist of a textbook, an exercise workbook, and a means of providing feedback to the learner after practice. In many instances, the exercises seem to be little more than afterthoughts appearing in the form of problems, assignments, or multiple-choice questions at the end of a chapter. Rather than designing the text around the practice, the exercises are generally developed after the text has been written as a way to check on text comprehension.

While correspondence courses have some advantage over self-study textbooks, very few enrollees actually complete an entire program. A traditional correspondence course consists of a

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series of lessons mailed one at a time to students. The learner reads the text, completes the exercises, and sends the results back to the instructor who, in turn, sends feedback and the next lesson back to the student.

Despite their limited results, several features explain the popularity of commercial correspondence courses. For example, lessons are short and can be easily completed in one sitting. Feedback is as prompt as the mails permit and is presented in an encouraging rather than critical tone. Periodic text revisions based on learner errors, comments, and complaints make learning easier. The first few lessons in nearly all commercial correspondence courses are designed for learner success and are therefore highly motivating, a feature all training developers should include in their designs.

Many self-study and correspondence courses include audiotapes, videotapes, or component kits, which make the package more attractive to prospective buyers. These accompanying materials can benefit learners if they support and encourage the kind and amount of practice a learner needs to reach proficiency.

- ◆ **Computer-based training (CBT)** uses modern technology to deliver self-study instruction. The effectiveness of these programs varies considerably, with some doing little more than reproducing text and problems from a book onto a screen which is often harder to read and less convenient to use than the book itself. Better quality CBT takes advantage of the response analyzing capabilities of a computer to evaluate a student's response and provide immediate feedback. Some CBT is based on simulators that permit non-verbal responses, such as learning to recognize the appearance of a condition or practicing manual skills. One enormous advantage of CBT is that it can accommodate a range of correct responses or alternative paths for arriving at a correct response, such as in medical diagnosis.

Another advantage of CBT is that it can be used with audiovisual aids, such as videodisk and CD-ROM, to display still or motion pictures. Many instructional designs that depend on color or motion pictures would be prohibitively expensive as the basis for distance learning if only printed materials could be used.

On-line CBT, accessible through Internet or other networks, is becoming increasingly more popular as a training delivery tool because it combines the flexibility of complex visual displays with opportunities to interact directly with an instructor when difficulty is encountered. On-line CBT can also be used to evaluate mastery in a controlled way, which can be important for establishing certification qualifications. The only real limit is the extent to which task performance can be captured electronically.

- ◆ **Remote communication systems**, including the telephone, radio, and television are other options for distance learning. One-way transmissions are predominantly used, although

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two-way systems are becoming more popular. Unfortunately, however, very few of these courses are designed to encourage practice. Instead, most consist of illustrated lectures followed, in a two-way system, by an opportunity to ask questions or seek clarification.

Nevertheless, remote communication does have its place in instruction, particularly as an inexpensive way to deliver follow-up instruction or coaching after formal training ends. Learners returning to their jobs can, for example, use broadcast television to see a repeat demonstration of how a particular task is performed, or have regular telephone access to a coach who might not be able to make frequent visits to the workplace.

The instructional strategy you select will have a significant impact on the success of your training efforts. A classroom-based course may be the best choice, but there are many alternatives you should consider. Whatever strategy you choose should be reflected throughout the subsequent steps of the development process. The strategy must be considered when specifying instructional objectives, preparing training materials, and evaluating the training and its contribution to organizational functioning.

## Step 2. Develop the Instructional Objectives

**List the specific objectives to be attained during training that represent the tasks, task components, or combinations of tasks needed for successful performance, and a method for confirming that each instructional objective has been achieved.**

It is helpful to write out your instructional objectives, as these are essential for keeping your training development efforts on track. Just as a highway map shows only major locations and junctions, a task list provides only overall goals and objectives. In both cases, more information is generally needed to reach a destination. Detailed information keeps you on course and clear of unnecessary deviations, backtracking, or confusion.

Instructional objectives identify what must be accomplished during training to bring learners from where they are now to where you want them to be. The objectives specify the successive steps involved in achieving task performance. For example, if you are training rural clinic workers to administer childhood inoculations, your objectives might include:

- ◆ Determine if allergic reaction is likely.
- ◆ Prepare inoculation site.
- ◆ Recheck syringe.
- ◆ Administer inoculation.
- ◆ Comfort patient.
- ◆ Explain side effects to parent.

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Objectives that go beyond the tasks on your approved task list, or those in which learners are already proficient, should not be included. Training is costly; therefore, you need to resist the temptation to focus on unnecessary objectives. It is more productive to devote training time and resources on those that are truly needed.

The objective statement is similar to the task statement. An objective must clearly communicate what will be done, under what circumstances, and to what standards. Each objective should begin with an action verb. As with task statements, avoid beginning objectives with words such as “appreciates,” “realizes,” or “comprehends.” Express your objectives in terms that allow you and others to verify that the knowledge or skill being taught has actually been acquired. For example, instead of “knows the meaning of quality assurance” you might say “defines,” “explains,” or “identifies examples of” quality assurance.

The second part of your objective statement describes the circumstances under which the correct performance will occur. Obviously, mastering multiplication without paper and pencil is easier if the numbers are limited to single digits. Contrast that skill with multiplying four-digit numbers using a calculator. Different circumstances require different kinds and levels of instruction.

The third part of the objective statement specifies the standard for gauging success. Perfection or expertness are not realistic outcomes. Instead, specify the minimal levels of time needed, accuracy, or other features that constitute acceptable job performance. This will focus attention on helping most learners reach the basic standard rather than a few greatly exceed it.

The task list you prepared in the Analyze Phase will help you begin developing your list of instructional objectives. Each task should, when possible, contain a parallel, or “terminal,” instructional objective that states what trainees will be expected to learn in the course. Sometimes, however, actual task performance may not be practical in the training setting. So instead of “Administer oral rehydration therapy quickly and correctly,” you might eliminate the need for a patient by writing an instructional objective that says “Demonstrates the correct procedure for administering oral rehydration therapy.”

Objectives are written in many different styles. Yours can be written in whatever style suits you, but be sure to include all three sections—action, circumstances, and standard. Consider the following examples.

◆◆◆ *Checks on condition and comfort of every patient in designated unit of the hospital at least once every four hours.*

*Develops yearly budget for supplies to be purchased based on an analysis of prior purchases, current inventory, and cost information that is within ten percent of a model budget developed by experts.*

*Designs posters advocating family planning for illiterate women that at least half of them interpret correctly.*

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For each terminal objective, you are likely to need some subsidiary, or “enabling,” objectives that act as building blocks for accomplishing the terminal objective. You can derive the enabling objectives by working backwards from the terminal objective and continuing until you reach a point where you feel confident students have pre-training capability.

The number of enabling objectives you need for each terminal objective depends on the scope of the training and how critical the knowledge or skill represented by that enabling objective is to eventual success. For the oral rehydration therapy example, you might want “Calculates amount of solution to be administered based on body weight” as one enabling objective. Then, in order to achieve that objective, you may want additional enabling objectives such as “estimates body weight within ten percent.”

While listing instructional objectives is a demanding task, it is essential for guiding other steps in the design and development of training. You might wish to seek help, particularly on verifying your list of objectives, through performance observations, expert reviews on the subject, or conclusions of systems analysts.

In specifying training objectives, concentrate your efforts on identifying what students must learn rather than on how the objective is stated. Writing clear objectives comes with practice. However, be careful not to neglect important objectives because of an initial inability to express them in words.

Instructional objectives are a series of mileposts one passes on the road from here to there. It is important to know when learners have reached a milepost. There are several ways to help determine this. First, ask the students to produce the product called for by a given objective. Learners might complete a form, measure out liquid as they would for a medication, or list five areas of quality weakness in their own hospital. You can look at the form, the amount of liquid, or the list to decide whether students achieved the objective.

The second approach applies when there is no end product. You watch a trainee complete a step to see whether his or her performance is acceptable. You could watch pairs of trainees interact in role plays, for example, or observe learners positioning a stethoscope. A third way involves testing trainees on their knowledge of the material, such as basic anatomy.

Note that you need to establish criteria to judge the acceptability of products, performance, or test results as part of the development of measures. You have to decide in advance what level of proficiency you are willing to call acceptable; that is, sufficient for training to continue on to other tasks or task components.

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Exercise 3-1 will give you an opportunity to write objectives. Remember that each objective should begin with an action, indicate the circumstances, and end with the standard the performance has to meet.



**Turn to Exercise 3-1 NOW**

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## Exercise 3-1: Writing Objectives

**Directions:** *Your task list and the other information in the Analyze Phase report have been approved by the Ministry of Health. You and Adam have now begun to work together on specifying instructional objectives for the field investigator training program. Read what Adam tells you about two of the tasks from your task list, and prepare a terminal objective for each one. Terminal objectives specify what actions a learner can perform by the end of training, under what circumstances, and to what standards.*



This task—inspecting clinic immunization records for the survey—is very important. Our procedure requires the field investigators to examine all health service records for a representative month and record the birth month and year of each child between 6 months and 5 years of age who was immunized during that month. Some clinic records will indicate the child’s age instead of birth date. In these cases, field investigators will record the age instead. We will adjust the data here.

I can also tell you more about what we expect when the mothers are interviewed. In our country, there isn’t a lot of trust in the Government, particularly among poorer people. They have to be talked to in a friendly way, not the way an official would talk to them. The custom here in rural areas is to begin a conversation by talking about the weather or something else that’s not personal before getting serious. The interviewers will have to learn to go slow and appear relaxed.

*Write a terminal objective representing performance of each of these two tasks. Be sure to include the action, the circumstances, and the standard to be achieved. Use the space on the following page*



## **Your Terminal Objectives**

Inspecting clinic records:

Interviewing mothers:

*When you have finished, compare your answers with those on the following page.*



## Terminal Objectives Answers

**Inspecting clinic records.** *You should have written something similar to this. Your objective should include all three parts (shown by/):*

Records birth month and year or age of immunized children/from one month of health clinic records/with no errors.

**Interviewing mothers.** *You should have written something similar to this. Your objective should include all three parts (shown by /):*

Begins a mother's interview with a non-personal topic/at the mother's residence/in a friendly, relaxed way.

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## Step 3. Sequence the Instructional Objectives

**Arrange the instructional objectives in a sequence that will make learning and/or the delivery of instruction easier.**

You now have a sizable list of instructional objectives. The next step is to arrange them in the best possible sequence. Many training designers give sequencing only cursory attention. This can result in training that is difficult to present, boring or confusing to the learners, and generally ineffective. The sequence you prepare at this point may change as your training design evolves, so consider it only as a starting point.

Begin by reviewing the objectives. You have to eliminate duplication and minimize overlap. When possible, assemble objectives into groups that share common elements, such as calculation of percentages or basic patient counseling skills. Combine similar objectives into one.

Next, develop an overall structure for ordering the objectives. Spiraling tends to work well. Put all orientation objectives in the lower level and then spiral through objectives at increasing levels of difficulty. Limit the spiral, however, to a cluster of tasks or job activities that go together. Another structure is to begin with objectives involving easier, more basic tasks and gradually move to objectives for the most difficult and challenging tasks.

Beginning at the beginning often does not yield an optimum sequence. Contrary to popular belief, step-by-step procedures are best taught by teaching the last step first and working backwards to the beginning.

As you sequence your objectives, be aware of maintaining student interest. Some topics are inherently dull, while others are exciting. Look for ways to vary the arrangement of topics in the sequence. Strive for students to learn something important and to experience success early on in the program.

## Step 4. Decide How Participants Will Practice Task Performance

**Determine how participants will obtain sufficient practice on the skills and knowledge required for task performance.**

There are many views as to how learning occurs. Nearly everyone, however, emphasizes that practice is necessary to attain proficiency. The core principle of effective training is to incorporate practice situations that steadily advance a learner's competencies.

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Many training designers downplay the need for practice except for mechanical skills such as riding a bicycle. Others believe that practice is merely a way to keep learners active in the classroom. Nevertheless, we know that practice is a necessary condition for adequate performance, whether the task is cognitive, manual, or most likely both.

Training based on practice exercises is the only way to make sure participants reach your training objectives. If you cannot devise a practice exercise for a particular performance, it is probably because the objective is unclear or stated in such a way that the performance is unobservable. As a general rule, at least half of all classroom time should be devoted to practice exercises.

As adults, we do not always recognize the role that practice has played in developing our abilities. This is because much of our practice is the result of happenstance. Through experience, we learn to become more persuasive, more literate, or more gracious. For most of us, learning has been chancy at best. We may not have had the opportunities to practice, the guidance needed to practice properly, or the feedback to help improve our performance.

Training means providing and organizing opportunities conducive to learning. Training does not leave learning to chance. Rather it provides learners with guided practice and immediate feedback to avoid practicing errors. The more an error is practiced, the more difficult it is to overcome. In sum, the three essential ingredients for learning are practice, guidance, and feedback.

Always begin by determining the best way for learners to practice job-like performance during training. For example, if you want them to learn how to interview applicants for staff positions, they must practice using interviewing techniques. If you want them to learn how to plot the incidence of communicable diseases, they must practice assembling and converting information into graphic formats. If you want them to learn to work together to solve problems, they must practice doing precisely that.

Examine each instructional objective to decide how the activity can be practiced during training. You could use role plays for applicant interviews, sample sets of information on the incidence of disease for plotting, and problem-solving exercises for learning to work together.

It is the lack of planned practice that makes formal lectures or standard textbooks ineffective as instructional tools. Hardly anyone can remember enough of what they heard or read to recall even a fraction of what was presented. Some of us have helped ourselves learn by taking notes, for example. Notetaking is a form of practice which contributes to learning even if the notes are never read. But because it is not a highly controlled form of practice, it may not be effective for producing learning consistently.

Activities can be practiced in many different ways. Learners can do math problems, write out answers to questions, or fill in blank forms. They can work in small groups to analyze case studies, create a quality assurance check list, or plan a vaccination campaign. They can practice using facts and principles by responding to questions during class discussions, by attaching labels to an

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anatomical diagram, or by giving a presentation to the rest of the class.

Creativity is needed to design practice opportunities that require the desired performance in a controlled and predictable way. Some tasks or task components can be very difficult to practice in the classroom. However, you can schedule field trips to a local clinic, show videotapes of patients awaiting diagnosis, or use simulations such as Resusci-Annie, the device used for practicing cardiopulmonary resuscitation (CPR). Practice exercise formats need not be elaborate or lengthy. All you need to do is arrange for the necessary practice to occur.

You should determine how to provide practice for each instructional objective in your training course, combining practice on several objectives into one exercise when appropriate. If an objective requires practice that is too extensive or cumbersome to include in the course design, focus only on the key elements of the activity. For tasks, such as establishing a customized disaster response plan, that are to be performed at the student's work site, students can practice listing and explaining the steps involved during training.

The amount of practice needed will depend on the scope of the objectives. You may want learners to practice particularly critical or complicated activities several times, varying the exercise content between trials. Remember, you should plan on devoting at least half of all training time to practice exercises.

Designing practice exercises that are interesting and effective is a challenging task. You must devise activities that can be performed successfully by most learners, yet involve the knowledge and skills they will need when they return to their job sites. With experience, you will be able to create these kinds of exercises. Exercise 3-2 provides you with an opportunity to design exercises for several sample instructional objectives.



**Turn to Exercise 3-2 NOW**

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## Exercise 3-2: Designing Exercises

**Directions:** *You and Adam work together on designing exercises for the planned field investigator training. Although you described alternatives to classroom instruction to Adam, you both agreed that classroom training was the most appropriate strategy for this course.*

*Adam required considerable convincing before he agreed that practice exercises were needed. He was familiar with instruction that centered on what the instructor said rather than what the learner did. You were able to persuade him only when you pointed out that he could recall only a few points made during a two-hour lecture he had attended just a few days earlier.*

*You asked Adam to design an exercise for each of two instruction objectives you and he had prepared in a prior step. Adam, in turn, asked for your help.*

*Write out your recommendations to Adam on how you would get learners to practice the two objectives on the following page.*



## Your Exercise Designs

**Objective:** Records birth month and year OR age of immunized children from one month of health clinic records with no errors.

Exercise:

**Objective:** Begins a mother's interview with a non-personal topic at the mother's residence in a friendly, relaxed way.

Exercise:

*Compare your exercise designs with those on the following page.*



## Exercise Design Answers

**Records birth month:** *The following is one way of providing learners with practice on this component of performance.*

Supply each participant with a stack of typical clinic records for children and ask them to record the birth month and year OR the age of each immunized child on a data form. (You could include records of children who have not been immunized, or who are under 6 months or over 5 years of age.)

**Begins mother's interview:** *The following is one way of providing learners with practice on this component of performance.*

Have participants role play beginning interviews with each other. Each participant should have at least 5 or 6 opportunities to take the role of "interviewer" and be critiqued by those with the role of "mother." (You could supply various sets of instructions for when a participant has the role of "mother" to make sure a range of likely scenarios is practiced.)

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## Step 5. Devise the Guidance Needed for Practice to be Successful

**Specify how learners will be prepared for each practice session through guidance, modeling, or exercise structuring.**

Because learning occurs through practice, you want to do what you can to make sure the practice is as correct as possible. You do this by inserting appropriate information, demonstrations, and controls into your course design. Giving directions is an example. You tell learners what the steps are, explain and review them, if necessary, and then have the learners perform them. Alternatively, you could demonstrate the task yourself, or show its performance on videotape. Another alternative is to design the exercise in a way that minimizes errors. For instance, you could give the learners a job aid, have them choose from a list rather than entirely recall a medical term, or have the class listen to recorded chest sounds before they practice using a stethoscope.

Long explanations or lectures are rarely needed. Your goal is to guide learners so they perform correctly. It is not what you say, but what they do that is important. Most lengthy or complicated presentations will be forgotten before practice occurs and, therefore, will not help contribute to correctness.

Many techniques have been created to guide learner responding. Computer-assisted training, for example, intersperses frequent responding with brief presentations. You can achieve the same results in the classroom by having the trainer walk the learners through a procedure that they practice one step at a time. Another approach is to have learners coach one another as they alternate performing the task. The time spent as both learner and coach contributes to improved performance.

Reading assignments, like lectures, attempt to convey information, but are usually ineffective in accomplishing this aim. Reading assignments can be enhanced by explicit instructions that promote relevant practice. For example, students can be asked to memorize a particular list, answer questions based on an important passage, or prepare at least five arguments in favor of a recommended principle. The main problem with reading assignments and lectures is that learners must extract what is important and many are not able to do this. You can greatly enhance training efficiency by doing this for the learners (unless extracting pertinent information is an instructional objective).

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## Step 6. Design Feedback That Confirms or Corrects Learner Responses

**Develop systematic approaches for providing feedback that will encourage correct performance.**

Feedback, the third element of the training paradigm, serves two purposes. First, it assures learners that they are making progress, something which is not always evident to those working through unfamiliar content. Second, it serves as a mechanism for reversing student errors. Feedback is seen in its proper perspective when the training designer accepts responsibility for learning outcomes. Learners have different backgrounds, capabilities, and learning rates. Thus, no training program will be suitable for all students all of the time. Even with carefully devised guidance, some students may encounter problems while attempting task performance and will need feedback to remedy the difficulty. Otherwise, the shortfall in meeting that instructional objective will be compounded throughout the remainder of the training. By accepting responsibility for producing learning, you also accept responsibility for corrective action when learning does not occur.

Feedback that confirms learner progress is easier to plan for than corrective feedback, but not as easy as it sounds. Students with an aptitude for learning will likely lose interest if every correct response is acknowledged in some artificial way. A far better technique is for learners to monitor their own mastery of job skills important to their organization and to their own personal career. Confirming feedback should be designed so that learners see themselves solving real problems, perfecting needed job skills, and easily completing tasks that they could not perform prior to training.

Similarly, feedback that corrects performance must do more than just identify errors. It needs to diagnose problems and help learners overcome them. The challenge is to predict which errors will be made in an exercise and why. Most training designers appropriately choose other ways of diagnosing errors rather than trying to build this logic into the course materials.

One solution is to designate corrective feedback as a part of the instructor's job. The instructor can either observe performance or question the learner afterwards to identify the source of the problem and make remedial suggestions. With this approach, class time must be set aside for this purpose and the instructor must be trained in giving corrective feedback.

A better solution would be to have other learners explain or model correct performance when an error is made. This procedure works best when learners have been organized into work groups. The learners in each group quickly learn to help and tutor each other for the benefit of the whole.

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## Step 7. Identify the Materials and Media Needed to Support Learning

**Identify where training materials and media will be necessary to promote learning or improve the standardization and efficiency of instruction.**

One of the remaining steps in the Design Phase is to identify what materials and media are needed to support the learning process and training delivery. Much will depend, of course, on the instructional strategy you selected when you began the Design Phase. No matter what strategy you selected, however, you will need materials or media that provide learners with guidance, ample practice opportunities, and feedback.

In general, training materials for classroom instruction include texts, exercise directions, and other items distributed to participants which they will use during training and keep afterwards. Training media include videotapes, wall charts, mock-ups, and other aids that help facilitate training presentation.

Selecting materials and media almost always involves striking a balance between what would be desirable and what is practical or affordable. As a rule of thumb, “the simpler the better” provided that learners are given the kinds and amount of practice, guidance, and feedback they need. Piles of handouts and multimedia spectaculars are rarely essential to learning and rarely contribute much to learning outcomes. On the other hand, a training program devoid of all materials and media is usually inefficient and places an unnecessary burden on the instructor.

For most training courses, the designer is likely to select three types of training materials: a reference source, a participant workbook, and an instructor guide. Training aids or media may also be needed. Although these materials are written during the Develop Phase, it is important to decide what role each item will play and what standards they are to meet before that work begins.

Issuing students a textbook, handbook, or other reference source is important for several reasons. First, it provides a standardized source of training content, a way to specify procedures, list facts, present illustrations, and summarize information. Text material can furnish a common ground of content on which training can be built. But it cannot, and should not, be considered the primary vehicle for learning. Texts communicate; they do not instruct. Without controlled practice, which is the essence of training, a text depends on the learner to act as his or her own instructor. That role rarely proves satisfactory.

Second, a reference source is important in that it reduces the amount of lecturing during training so more time can be spent in practice activities. When used prudently, text assignments can prepare participants for the interactive learning that should take place during class time. This can

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be especially important when participant backgrounds and learning abilities are widely varied. Because reading is self-paced, a learner can proceed quickly through already familiar material or spend the time needed to work through more difficult content.

Third, text material provides learners with a convenient source of guidance when they return to the job site. Retention of skills and knowledge can be improved by repetitive practice during training. Yet, even then, some deterioration of performance capabilities can be expected. Providing participants with text material they can refer to later is akin to having an instructor accompany them home.

To be useful, reference sources need to be clear and, more importantly, concise. They should include only the information specifically needed to support training. Historical introductions, lengthy explanations, and diversions should be used only where necessary to provide a context for the instruction.

Another important piece of training material is a participant workbook that provides exercise directions, answers sheets, a class schedule, and other content that facilitates classroom management. Again, quantity is likely to interfere with quality. A participant workbook should not be viewed as a convenient repository for reproduced articles and other handouts that, in theory, enrich but, in practice, contribute little to the purpose of the training.

Another, sometimes very important, part of a participant workbook is an outline of each session derived from the corresponding content in the instructor's guide. Participants can use the outline to keep track of where they are in the session, to check off each topic as it is presented, and to confirm that they have acquired the corresponding skills or knowledge. An outline can also help the instructor stay on track with respect to the purpose of the lesson.

A comprehensive instructor's guide is extremely important for ensuring the desired training outcomes. Even if you plan to deliver the training yourself, you will want to be sure that all intended practice sessions, guidance, and feedback are properly given. The instructor's guide should tell the instructor what to do and when to do it.

The format for an instructor's guide can vary from notes written on several index cards to a word-for-word script. The style you select will depend primarily on the quality of the expected instructors and the rigor of the course design. More support is required if the instructors are not experienced with performance-based training or if they are weak in the content area. A more thorough guide will also be needed if training is to be replicated over time. Weaknesses in training can be eliminated only if you know what they are.

Finally, consider the media or aids you need to support learning. Properly designed media help standardize instruction across training systems and improve efficiency. Training aids also may be essential for practicing skills ranging from bandaging a wound to evaluating an X-ray. Perhaps most important of all, media aids can bring aspects of the real world into the classroom, such as

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a videotaped walk-through of a clinic that participants can view as practice for detecting unsanitary conditions.

The need to stimulate or maintain participant interest is often used as justification for including elaborate media aids in a training design. Note, however, that while an attractive video can be engaging, it will not greatly enhance interest in the course as a whole. Training should be interesting for what it accomplishes, not for how elaborate it is.

Other classroom media include slides, displays, newsprint, overheads, and sound recordings. When considering these, pay attention to practicality and efficiency. Many media depend on electricity. Many are also legible only in small classrooms. Darkening the room can be difficult. The flow of training may be disrupted if the projector lamp burns out or a set of wall charts is lost in transit. Also, consider any burden on the instructors. They may not be able to write legibly on newsprint or operate a projector and speak at the same time.

## Step 8. Prepare a Training Development Plan

**Assemble a written plan that describes the training strategy and design requirements to be met during courseware development.**

The final step in the Design Phase is to assemble the components of your training design into an organized plan for developing the courseware. The plan should succinctly describe your training strategy—how you envision the training as it takes place. The plan should include a brief overview of expected training outcomes, groupings of instructional objectives by units or lessons, and an agenda showing the sequence of units and the tentative allocation of time among units. Your plan should specify what practice will occur during each unit, the form of that activity, and what the accompanying guidance and feedback should emphasize. As appropriate, the plan should indicate what materials and media are needed for each unit.

Estimating the amount of time that will be needed for each lesson or unit can be challenging. Strongly resist the temptation to squeeze time allocations or arbitrarily expand any to fit into some preconceived course length. Base your estimates on how much time each practice session or exercise will take, how long guidance for that practice will take, and what amount of time should be set aside for feedback. Learner accomplishment, and not the clock or calendar, should determine the length of a course. It is better to add or delete objectives than to drag out or compress training without good reason.

The training development plan is not a content outline. Instead, it is a recipe for preparing the training materials. You specify what objectives are to be achieved by each unit, what the practice exercises will consist of, and what materials and media will be needed. The training development plan should be complete to allow courseware development, the next phase, to proceed smoothly.

The type of chart shown in the figure may help you organize the elements of your training design into a cohesive plan. Some examples have been included in the chart to show what kind of entries go in each column. Briefly:

- ◆ **Task** identifies one of the tasks from your approved task list.
- ◆ **Indicator** specifies the performance outcome you expect at the end of training on this task.
- ◆ **Objectives** are the list of instructional objectives to be accomplished during training on this task (you may need 10 or 20 objectives for each task; only sample objectives are included in this chart).
- ◆ **Practice** outlines the practice participants will receive during instruction on each objective (when appropriate, practice on several objectives can be combined).
- ◆ **Guidance** describes the information, demonstration, or other assistance you will present to participants prior to practice.
- ◆ **Feedback** specifies how feedback will be provided to participants following practice.

Task	Indicator	Objectives	Practice	Guidance	Feedback
Per forms Well Baby Examination	Identifies 90% of defects, diseases, and deficiencies.	4. Inspects child's skin for abnormalities.  12. Determine if length and weight are within norms for age.	Identifies skin abnormalities from series of brief video-tapes.  Looks up several examples in tables to identify those beyond norm for age.	Show photographs of skin abnormalities, describing characteristics of each.  Use of tables is described and demonstrated, followed by walk-through.	Instructor provides correct answers while showing videotapes again.  Instructor provides correct answers and then assists participants who made errors with walk-through of that example.
Work as a team	Prepares a collaborative QA implementation plan.	7. Demonstrates respect for views of other team members.	Rephrases/acknowledges comments made by others in group meeting.	Describe positive ways of responding to others; lead class discussion on what to say and do.	Other group members asked to give feedback on comments made by each participant in their group.

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## Summary

A training design is your blueprint for developing course materials. Putting your design on paper may seem burdensome, but each step—such as listing the instructional objectives or deciding how and when practice will occur—must be thought through sooner or later. Thoroughness in the design process will help avoid omissions and inconsistencies in course materials and facilitate their development. Consider the following questions as you proceed with your training design:

- ◆ Is the planned strategy consistent with identified requirements, resources, and constraints?
- ◆ Do your instructional objectives fully reflect every task on your task list? Are they written so that they specify observable performance?
- ◆ Have you grouped and sequenced your instructional objectives to minimize redundancy and simplify instruction?
- ◆ Have you specified how participants will receive practice in performing the behaviors represented by each objective or group of objectives?
- ◆ Have you described the guidance participants will need to perform each practice exercise successfully?
- ◆ Have you specified how feedback will be given after each practice exercise to confirm correct performance and correct errors?
- ◆ Have you identified what materials will be needed to support instruction? Have you described each of these sufficiently for materials development to begin?
- ◆ Have you prepared a training development plan that organizes the elements of your training design?

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# Develop

At the end of the Design Phase, you assembled a written training development plan as the specifications for curriculum development. Next, in the Develop Phase, you are going to prepare, or oversee the preparation of, the training materials and media.

Before beginning materials development, check to see whether any existing training courses or products can be used or adapted to meet your needs. You should not depend on available materials simply because they have the same general purpose. They may not share some essential objectives, be suitable for your trainees, or be up to date in content. On the other hand, there is no point to creating entirely new materials if satisfactory courses already exist. In addition, you may find sections of previously developed courses that you can merge into your own, or ideas for presentations or exercises that are worth copying or adapting.

## Step 1. Prepare the Reference Source

**Develop a reference source that will support learning during the course and facilitate job performance following training.**

There are three basic ways to produce a reference source. The first is to use a standard textbook or manual. The second is to compile various published articles and other documents appropriate to the course content. And the third is to create a text or manual on your own. The option you choose depends on whether suitable reference sources are available, the cost and trouble involved in providing copies to participants, the expected number of participants, and the number of times the course will be offered.

For a course that will be delivered only once or twice, the labor and expense of preparing a better reference source than you can find or assemble from available materials generally rules out creating your own. Be warned, however, that nothing you are likely to find will fit your training needs very well. Most materials are not written to support training. They have too much superfluous

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content, proceed in a sequence very different from yours, and largely are challenging to read. Even worse, most content-based materials fail to provide the explicit guidance needed for successful practice.

If you have chosen to prepare your own reference source, think of it as a manual rather than as a textbook. The manual should focus on job performance. Its core should be step-by-step job instructions describing what should be done, how to do it, and when to do it. Everything else in the manual should be limited to what is necessary or useful in order to employ these instructions back on the job.

Some examples of content you may want to include in the reference source are explanations of terms and techniques, examples illustrating procedures, check lists to aid in documenting steps completed, diagrams and figures to clarify what is difficult to say in words, and flow charts to identify decision points. If possible, include any data or conversion tables that will be needed on the job, such as a table of suggested sizes of probability samples, a chart showing the codes to be used in categorizing patient contacts, or a list of all district offices. Always include an index and a table of contents.

Organize the material in chapters or sections that correspond to the sequence of steps in job performance. If necessary, you can include an introductory chapter that lays out the purpose of the tasks being described and puts them in context. You also may want to have a concluding chapter that directs the reader to additional sources of information, perhaps with an annotated reading list.

The text should be as simple as possible. The reader should be challenged by the content, not by the style of writing. Use short paragraphs, short sentences, and short words. Keep diversions to a minimum. If you can, use some sort of structured writing. These techniques use different formats for presenting segments of text depending on their purpose. For example, bulleted lists are more readable than lists within sentences. Use labels alongside or above paragraphs to describe the paragraph's purpose. Use distinctive type faces (bold, italics, all capital letters) to help the reader recognize definitions, principles, or examples. If you do use these structuring techniques, be consistent throughout the manual.

You will often want help from others in writing the reference source. You may need help because of the amount of text to be prepared or because of the technical demands of the content. By and large, good writers who can produce the style of writing you want will prepare better and more usable manuscripts than content experts. When content expertise is needed, you or another writer should interview the expert. Take extensive notes on the conversation to use when preparing the material, but write it in the simple style that facilitates learning. Do not confuse the reader with unnecessary information or explanations.

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## Step 2. Prepare the Training Aids

**Develop storyboards and scripts for videotapes, the contents for overheads and charts, and the specifications for needed devices or equipment.**

If you have decided on training devices, simulators, or other aids to facilitate practice during training, decide exactly what you will need. Depending on the circumstances, you will usually want to borrow or rent devices, such as microscopes, or equipment, such as a videotape player, rather than purchase them. You also will want to develop directions for setting up and using these aids. Be sure the instructors receive the information they need to become proficient with them before classes begin. This includes directions on how to diagnose and overcome minor problems, like replacing batteries or re-installing computer software.

If you plan to use videotape, do get competent, professional help. You'll end up saving time and money. An experienced video producer will arrange for actors and narrators, a shooting crew, any necessary sets or locations, and editing and assembling the final package. The producer also can assist you in preparing the storyboard and script. A storyboard is like an outline of the videotape that identifies each camera shot and what is supposed to happen during the shot. The script states what the narrator or actors will say, describes their appearances and actions, and indicates other events such as the contents of the title screen or when music is heard.

You do not need anything fancy to make good use of videotape. Almost always, your goal will be to demonstrate some task or bring realistic situations into the classroom. If you are videotaping a demonstration, such as how to measure the length of an infant or conduct an interview with an applicant, the producer often will advise you to repeat the process several times with the camera in different positions. This will create opportunities to mix portions from the various sequences to give the best possible final product. A good video editor can also assemble an effective portrayal of real world events by using bits and pieces from a number of videotapes shot over a period of time. This may mean extensive revisions to a draft narration script, however, so that it matches the video.

Overheads, slides, newsprint, and other still visuals are much easier to prepare. Use them to show something graphically, like a pie chart or a pile of coins representing money saved. Showing words, like a list of steps in a procedure, is often more distracting than helpful to trainees. If you do need to present words, present them in the trainee's workbook. That way you do not have to dim the lights, worry about the projector failing, or run the risk of trainees copying the words incorrectly. If you nevertheless insist on visuals with words, remember that nine lines of type per overhead or slide is considered the maximum for readability.

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## Step 3. Prepare the Participant Workbook

**Develop a participant workbook that contains exercise instructions and materials, session outlines and objectives, directions for any post-training activities, and information needed while attending training.**

You want the participant workbook to support the training and make learning as simple and as painless as possible. Much of the time spent in class, fifty percent or more, should be devoted to practice activities—either individually or in small groups. Although the nature of this practice was determined in the Design Phase, you now have to develop the exercise instructions and materials to help your learners get as much out of their practice as possible.

Begin the development of each exercise by visualizing what you want the participants to do. They might fill out a form, analyze some data, prepare a job description, develop a policy statement, or design an action plan for use when they return to their job sites. Next, prepare any content they will need to perform the exercise. Try to make the content realistic. Give them a set of data similar to what they will obtain when they perform the task. Present information in the form of a brief story, a case history, or a series of letters they have received. Check the content carefully by performing the exercise yourself to make sure everything needed is there. You will also need the results for preparing feedback on the exercise to be included in the instructor guide.

Finally, prepare the directions for the exercise. Tell the participants exactly what you want them to do so they can focus on the practice they need and not spend time figuring out what they are to accomplish. Give them worksheets if this will help. If the task is long or difficult, organize the instructions as a series of steps. Remember, multiple exercises with diminishing levels of guidance may be needed for learners to get the practice they must have to achieve proficiency.

Another component of the participant workbook should be an outline of each session and the objectives to be achieved as the result of that session. These outlines and objectives will serve as advance organizers for the participants, and help give structure to what they are learning. Outlines can be in the form of topic headings, summary statements, questions, or a combination of these. Provide room on the sheet for the learner to write notes, prepare questions, or record answers. Even notetaking can be a valuable form of practice.

By including your objectives, you are making a commitment to the participants that they will meet them as the result of attending your training. This will help give purpose to the exercises—they will be doing what you said they will be able to do. Whether the objective is to identify the skin rash characteristic of chickenpox or state five basic principles of quality assurance, they should demonstrate to you and themselves that they can do exactly that.

Lastly, the participant workbook should contain any additional information your participants will need. You may want to incorporate some administrative information concerning housing, meals, attendance, and so forth. Most trainees appreciate an overall course schedule, particularly if classes do not begin and end at the same time each day. If you are going to administer a paper-

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and-pencil examination, give the trainees a few sample questions or problems. Describe all homework or post-course assignments. If you plan to use handouts, include them in the participant workbook.

## Step 4. Prepare the Instructor Guide

**Develop an instructor guide that will fully support and standardize training delivery by the intended instructors.**

The instructor guide provides the structure or foundation needed for the training to proceed as it was designed. Its key features are the content of the guidance to be presented by the instructor, directions on how to conduct the exercises so they are successful, and instructions on providing feedback following each exercise. The instructor guide should also contain information on needed materials, media, and classroom arrangements, and on the amount of time to be devoted to each activity. A properly prepared instructor guide leaves nothing to chance.

In large part, the level of detail in the instructor guide is determined by how many different instructors will deliver the training and what their qualifications are. The larger the number of instructors who will be involved and the weaker their credentials, the more explicit the guide must be. Note that two dimensions must be considered. An instructor may be strong in classroom skills but weak in the content area. That instructor needs to have the content carefully spelled out, all examples fully described, and the answers to likely participant questions included.

In contrast, an instructor can have little classroom experience but be a content expert. The problems you must anticipate from these instructors are straying too much from the training design to tell anecdotes and war stories, and failing to appreciate the importance of guidance and feedback in developing learner competencies. A content-expert instructor needs detailed directions on how to prepare participants for, and conduct, exercises. He or she also needs structure to maintain the course schedule.

Begin with any appropriate administrative and supportive information you feel will be of help to the instructor before training begins. Tell the instructor what tasks the course covers, what the learners will be like, and how the instructor's performance will be monitored. Describe necessary arrangements such as a classroom seating plan or a need for break-out rooms. Provide suggestions that will help the instructor do a good job, such as those described under the Deliver Phase.

As already noted, the format you use to guide an instructor can range from a very bare outline to a word-for-word script. Most curriculum developers avoid these extremes, using a format somewhere in between. Another approach is to include both formats in the instructor guide. Then, an instructor can prepare for a session by reading the script but deliver the training less rigidly by following the outline.

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The guidance portion of a lesson most often will be in the form of a brief lecture, a walk through of procedures, or a live or videotaped demonstration. Remember, the purpose of guidance is to make sure all participants will perform an exercise successfully. Only content needed to guide performance should be presented. You cannot increase the likelihood of successful performance on an overly difficult exercise by increasing the length of the lecture that precedes it. A better approach is to have a series of similar exercises of increasing complexity, with any additional guidance needed interspersed between exercises.

Although the focus of guidance is on preparing participants to practice new skills correctly, do not ignore content that will facilitate learning and the later application of their new skills and knowledge. You want to put the task in context by pointing out its purpose and importance in the job setting. You want to provide examples that cover the likely range of situations where that task is useful. And you want to emphasize any significant advantages or limitations that may affect outcomes.

Do not expect participants to learn because you told them something you wanted them to learn. They have to practice it. You may want to describe a procedure and then have the trainees respond by naming the steps out loud. You may want to present a concept or principle and have the trainees write out a summary statement of it in their workbooks. You may want to explain a technique and have the trainees tell you how it would be applied to a series of examples. Participating in an interactive presentation not only is more stimulating than listening to a lecture, but it also is a very sound way to elicit desirable practice.

Directions for preparing and conducting exercises are very important. You want the intended participant practice to be consistent, or standardized, across all deliveries. You also want the instructions to the participants to be as straightforward as possible so they can concentrate on what they are learning rather than on what they are to do. Be sure the instructors know when they must set up apparatus or make other preparations ahead of time. It is too late to discover advance arrangements are needed when the instructor comes to the beginning of a scheduled exercise.

The remaining component required for the instructor guide is how to give feedback. This does not involve the instructor's style—presumably, instructors will be selected because they can be courteous, cheerful, and constructive in how they interact with trainees. Instead, you want to make certain that every participant is clear as to the acceptability of his or her exercise performance and, if not, why not.

The nature of the feedback needed depends heavily on the exercise design. In general, feedback from fellow participants is more desirable than feedback from the instructor. Not only is it perceived as less judgmental, but it also is more likely to be readily understood—remember, it was the instructor's guidance that resulted in the errors in the first place. Furthermore, learning how to judge and apply standards to task performance is valuable in its own right. Participants who can detect and correct another's performance deficits can do the same for themselves.

A number of feedback techniques can be used. Among them are:

- ◆ pairing participants for an exercise, with each reviewing the other's performance

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- ◆ having one group of participants prepare checklist items or other criteria to apply when another group presents exercise results in class
  - ◆ giving participants a list of common errors prior to an exercise for use in evaluating their own performance
  - ◆ grouping learners in teams where more able participants will give others informal feedback as they jointly perform a team project
  - ◆ calling on participants who report different exercise results to explain what they did
  - ◆ having the instructor review a procedure and present step-by-step results rather than just offering the final, correct result.

Regardless of the technique used, participants should be encouraged to correct any mistakes they made as the feedback is presented. Just as good guidance is designed to prevent errors, good feedback should lead to doing a step or task correctly as a way of preventing the error from being repeated in the future. We learn from practicing the correct response, not by being told simply that what we did was wrong.

One last important ingredient in describing how feedback should be offered is what the instructor should do to help a participant who is persistently behind the rest of the class. Although some policymakers consider this as solely the participant's problem, most training specialists feel an effort should be made to overcome the problem if possible. The instructor guide should offer suggestions to the instructor on possible solutions including asking the participant to reread the reference assignments, arranging additional practice for that participant, or helping the participant obtain tutoring assistance from others in the class.

The success of your training will depend significantly on the quality of your instructor guide, or the quality of your directions to the learner if other delivery techniques such as self-study, on-the-job coaching, or computer-based training are used. There are four kinds of mistakes that can be particularly critical in achieving your desired results. Make sure to avoid these mistakes:

- ◆ failure to require practice, or adequate practice, in performing the task
- ◆ insufficient guidance on task performance to make sure the practice will be successful
- ◆ little or no feedback following practice of the kind that will confirm success and remedy errors
- ◆ superfluous content that does not contribute to learning the task.

You can practice some of the skills needed to prepare a quality instructor guide in Exercise 4-1.



**Turn to Exercise 4-1 NOW**

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## Exercise 4-1: Instructional Materials

**Directions:** *Adam has proceeded to try his hand at developing a section of the Instructor Guide for the field investigator training course. He has asked for your comments on his first effort, covering the task: “Use the written health worker selection procedure to choose those to be interviewed.” Read this draft and make notes on suggestions you would make to Adam for improving this material.*



### Health Worker Selection Procedure

Let’s turn our attention to how you will select which health workers to obtain records from.

The Ministry of Health has a sampling procedure developed specifically for us by Dr. Sabrina Wise from Fairmount University. Dr. Wise is an expert on sampling methods. She has written several books including, “Quasigeographic Sampling Procedures.”

Dr. Wise’s sampling technique uses a set of tables. There is a separate table for each size of clinic you will visit, from one to twenty health workers. You must determine the number of health workers at the clinic, then refer to that table. The table will tell you how many workers to interview and the order in which you are to select those individuals based on an alphabetical list of their names. Part-time workers are to be included only if they work more than twenty hours per week.

I want to make sure you understand how important it is to follow this procedure. The accuracy of the results depends on our use of proper sampling methods. When I spoke with Dr. Wise, she said the only problems you are likely to encounter are when a health worker is absent at the time of your visit or when a health worker to be interviewed is either new or assigned to duties that do not include providing childhood immunizations.

Look at sampling table number four in your workbook. This is for a clinic of four workers. It says you must interview two health workers at that clinic, workers 1 and 4. Everybody see that? Good.

Are there any questions before I move on to the next topic?



## **Instructional Materials Suggestions**

List suggestions you would make to Adam to improve the quality of his guide.

*When you have finished, compare your suggestions with those on the following page.*



## **Instructional Materials Answers**

*There are a number of improvements you could have suggested. You should have included at least these:*

- ◆ The participants do not practice the task, beginning with a count of how many clinic workers are employed at least twenty hours per week, arranging their names in an alphabetical list, referring to the proper sampling table, determining how many workers should be interviewed, and identifying which workers to interview from the list.
- ◆ The participants are not offered the necessary guidance in what to do when a selected health worker is absent or if the health worker selected has not or does not administer immunizations.
- ◆ There is considerable unnecessary content, such as background information on Dr. Wise, which is likely to detract from learning the task itself.

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## Step 5. Develop Materials for On-The-Job Training

**Prepare the materials needed for on-the-job training, including materials needed by the mentor who will facilitate learning.**

On-the-job training has several distinct advantages. First, it allows a learner to develop new skills while remaining available for urgent work assignments. Second, practice occurs under the same, site-specific circumstances where the tasks will be performed. Third, the mentor can adapt the training to fit the particular needs and strengths of that learner. And, fourth, the training can usually be provided much less expensively than when classes are assembled.

To be effective, on-the-job training must include the same ingredients as other forms of training—realistic practice, adequate guidance, and helpful feedback. Unfortunately, most supervisors and co-workers have neither the patience nor the understanding of how training works to successfully manage an individual's training experience. With the proper assistance, however, workplace mentors can effectively oversee on-the-job training. In addition, they can use their own knowledge of the tasks to provide learners with personalized explanations and help.

Materials for on-the-job training are prepared much the same way as materials for classroom use. Generally, a reference source is prepared first, followed by the development of a set of exercises. In place of an instructor guide, the mentor is furnished with a set of explicit directions on adapting exercises to meet local circumstances, on coaching the learner, and on giving useful feedback. Generally, the mentor also needs a set of criteria for deciding whether performance on any one exercise is satisfactory. This guidance to the mentor usually allows the mentor flexibility in adapting the training to fit both the mentor and the learner.

## Step 6. Develop Materials for Distance Learning

**Prepare the materials needed to conduct training through correspondence courses, computer-based training, or remote communication systems.**

If your training design calls for training delivered using distance learning techniques, the instructional materials will be very different from those needed for classroom training. You not only have to be concerned about whether the materials produce learning, but whether they can maintain the trainee's attention and motivation over an extended period of time. More "teach yourself" books, on topics ranging from Polish to plumbing, are purchased than any other category of books. Very few individuals, including yourself perhaps, have ever finished one of these books and developed the skills they had hoped to learn. Computer-based training (CBT) and televised, or other remotely-presented courses, have similar deficiencies. Completion rates tend to be low, achievement is often limited, and learner satisfaction is rarely high.

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Two problems seem to characterize distance learning materials. First, emphasis almost always is given to content over practice. Individuals are expected to learn by watching, reading, or listening rather than by doing. The authors of these materials tend to assume most individuals are adept at teaching themselves—a skill some persons, but far from all, have mastered. Second, the difficulty level is chosen to challenge the learner rather than to make learning easy. During learning, it is important to recognize that progress is being made before the effort becomes aversive and commitment fades. Some commercial correspondence courses are sold on the basis of a sample lesson deliberately designed to convince the learner that success will be nearly effortless. Unfortunately, that degree of quality is unlikely for the subsequent lessons.

CBT materials vary greatly in their style. Most, including the tutorial materials that accompany many software packages, provide essential information in text form but are light on practice, coaching, and—particularly—feedback. Often, computer-based training is designed around reading text, learning from it, and then answering questions that measure comprehension. While answering questions is described as “active learning,” this type of practice does not develop the skills required for real task performance.

Other styles of CBT do promote appropriate practice by leading the individual learner through the steps in a procedure, providing ample coaching, and responding with differential feedback depending on the correctness of the response and the type of error, if one was made. CBT, when properly prepared, has additional advantages such as being able to assess the learner’s progress and directing him or her to appropriate reviews or remedial sequences.

Remotely delivered training also varies greatly in the use of good instructional practices. While lectures by experts that were characteristic of the early days of instructional television have largely disappeared, the need for practice still receives little emphasis. Even very dramatic scenes that heighten interest do not compensate for a lack of step-by-step direction followed by pauses that allow the learner to perform the task. While some televised cooking and home repair programs do provide much needed guidance, they often fall short in providing practice for those viewers most in need of effective instruction. Very rarely do they contain any corrective feedback that a learner needs to overcome an error.

These problems with remotely delivered training are particularly severe if they are videotaped for television or audiotaped for radio. The learner cannot interrupt the delivery to have some portion repeated or clarified, or to try performing a step or task. Live, two-way deliveries are somewhat better in this respect because the instructor can ask questions, evaluate answers, and provide additional guidance or feedback if needed. Learners can seek clarifications, at least in a limited way, but controlled practice is difficult to include.

A number of special talents may be required to develop materials intended for distance learning. CBT, in particular, involves certain skills in organizing the materials and creating the controlling software that are best left to experienced professionals.

Materials for distance learning have to be largely self-contained. They have to provide guidance, exercises, and feedback comparable to what a learner would experience in a classroom. One

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difference in approach is that much smaller steps are used. The reason is that no live instructor is present to overcome any difficulties the learner might experience. Small steps counteract this by making it easy for the learner to repeat only a small portion of a lesson rather than go back to the beginning. Small steps are created by dividing needed practice into brief segments, each with its own guidance and feedback. For example, the procedure for using a computer to track hospital supplies would be practiced one step at a time rather than several steps at a time as it would in a classroom setting.

Modified forms of practice exercises may also be needed. Although the learners can be supplied with kits of materials and equipment they will learn to use through distance learning, some skills may be difficult, or even dangerous, to practice without direct supervision. However, self-study materials have been developed that allow trainees to learn supervision, computer programming, report writing, and other complex subjects. If you can discover how to get the needed practice to occur, you can teach just about anything using distance learning that you would teach in a classroom.

Tryouts, as will be described, are even more essential for distance learning materials, regardless of the technique used, than for materials designed for classroom use. You should plan on conducting tryouts with a sizable number of individuals representative of your target learner population. Revisions and improvements should be made after each tryout. The result will be a self-study or remotely attended course that will be as effective as possible in achieving its instructional objectives.

## **Step 7. Review the Draft Materials**

**Do a thorough review of the draft materials for consistency, correctness, accuracy of content, clarity, completeness, and other features.**

Once the training materials are drafted, a careful review is needed, particularly if several different writers participated. You want to make sure all components called for by the course design have been prepared. You also want to make sure they fit together in the way you intended. If that has not already been done, assign times to each presentation, each exercise, and each session as a whole. Remember to insert time allocations for lunch and rest breaks.

The major emphasis in your review should be on whether the objectives for each session were adequately covered. Refer back to your design. Although a number of modifications from your design may have been made as the materials were being developed, you want to make sure the participants practice performing the tasks, or key aspects of the tasks, that are to be learned. Then review the guidance and feedback surrounding each practice exercise to see if they are sufficient to produce correct responding and to overcome any errors made. Next, check out the reference source. It should fully support the training but not go beyond it with extraneous, unnecessary content. Finally, look at the training aids. Any media should have a clear instructional role.

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Make sure the content is technically accurate and that it is consistent across all of the materials. Check tables, procedures, policies, and so forth against reliable source documents. Get help from a technical expert if you are not one yourself.

Less important, but still significant, is the writing itself. The goal should be consistently good communication. Look for ways to reduce elegance and substitute short, direct sentences. Learners will be challenged enough by what they are to learn—any material to be read should be pitched at several grade levels lower than the minimum reading competency you expect participants to have. Try also to maintain consistency in how words, particularly technical terms, are used throughout all of the course materials.

There are a few more potential problems you should look for. One is any lack of cultural sensitivity. Many ways of phrasing a concept or example that are acceptable in one subculture may be offensive or even incomprehensible to learners from another. The same logic applies to gender references, to standards of morality, to roles to be taken during role plays, and so forth. Instructors may need additional directions in how to handle discussions, assign participants to groups, or encourage questions if the training will be delivered in other cultures.

During your review, focus on keeping the instruction as lean, or minimal, as possible. As you will see from the discussion of tryouts in Step 8, it will be much easier to add to the materials than to reduce them. Long-winded explanations and overblown exercises can be very boring and detract from learning—edit down whenever possible. A modest amount of redundancy is desirable, however, especially for information presented orally by the instructor. During a lecture, the participant cannot go back and revisit content that may have been missed, as would be possible with text.

## Step 8. Conduct Tryouts and Make Revisions

**Conduct tryouts of the materials with typical learners or, if not possible, with other individuals to identify the need for revisions.**

Now that the materials are all prepared, assembled, and reviewed, initiate one or more tryouts of the training course to detect any problems or weaknesses. Even the most skilled curriculum designers and developers rarely produce draft courses that are entirely optimal. What seems clear to the writers may be confusing to the learners. Exercises may not work as expected. Too much or too little time may be allocated to a session.

A tryout need not be a formal rehearsal of the course. In fact, an informal atmosphere where learners participating in the tryout are urged to act as collaborators in actively contributing to course development may be preferable. In addition to seeing what happens, you will need to find out why it happened. In an informal tryout, participants can be urged to identify problems to you as they occur—and, often, to suggest solutions as well. By watching what occurs and taking careful notes, you will have the information you need to correct and revise the course so it works as you intended.

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Five or six tryout participants, either individually or in small groups, should be sufficient for pilot testing the training. But even a tryout with one individual, and even if that person does not match the target population, is far better than none. Choose a co-worker or anyone else. You want to get enough feedback to fix problems and improve the training's effectiveness and efficiency. Whenever possible, the tryout instructor should be someone who will present the course later. This "dry run" will help familiarize that person with the course, and what to expect at each session.

Do not be dismayed if problems do emerge. You should expect at least some, and it is better to discover them here than during full-scale deliveries. Make revisions, if you can, as you go along and while the problem is still fresh. You may want to strengthen some guidance, add some examples, improve the directions for an exercise, lengthen the time set aside for discussion, or increase the number of practice opportunities. The chances are that any change will improve on what you discovered to be faulty.

Depending on the extent of revision, you may want to schedule one or more additional tryouts, both to verify your revisions and to spot new problems. If the course is going to be offered repeatedly over a period of time, you may want to use the first delivery or two as tryouts also. Again, do not be reluctant to seek the assistance of participants in identifying and diagnosing weaknesses. They are probably the best possible judges of where learning was difficult. In addition, get comments from the instructor and any observers, including yourself, who may be present at the first formal delivery. Also, try to inspect learner exercise worksheets and any notes they took on presentations. You may be surprised by where they made mistakes and by what they thought was important enough to write down.

Tryouts and revisions usually conclude the Develop Phase of training preparation. Next, in the Produce Phase, the course materials will be prepared for distribution to the trainees and instructors. However, you must be ready to develop alternative translations or versions of the training as the need arises.

## Step 9. Prepare Alternative Versions

**Modify the course if necessary for delivery to different audiences, to adjust to unforeseen delivery circumstances, or to update the content.**

An interest in having the course delivered in another language is likely to occur when the training topic has international appeal. An example is the application of quality assurance processes to improve the delivery of basic health services. This training may be enormously valuable in countries where the intended participants are likely to profit only if the instruction is in a language other than English.

In most instances, a literal, word-for-word translation will not yield entirely satisfactory results. The translation must also include a reanalysis of the target audience to identify what can be substantial differences in background knowledge, host organization structures, and classroom tra-

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ditions. Some segments of the training will require increased attention and others less. Examples and exercises may have to be revised to fit the circumstances where the tasks will be performed. Homework may not be customary. Group exercises, role plays, and discussion periods may have to be modified to match cultural settings.

Even with the help of expert translators, some form of tryouts should be undertaken before a course translated to another language is scheduled for routine delivery. A tryout is the only way to gain assurance that the training will proceed smoothly and effectively. If you know in advance that the course will be adapted for delivery in another language, you can make that step easier by recognizing when cultural, language, or background assumptions are made during the Design Phase. Do not, however, try to create a “universal” course from the beginning. Training that fails to reflect the experiences, values, and environments of the participants most often will fail to match participant needs.

After the course materials have been developed and tried out, and deliveries have begun, you may need to revise or adjust the course and meet new requirements. For example, senior managers or officials may request an overview version. They will not perform the tasks your course was designed to teach, but they do want to become familiar with what their subordinates are learning and will be doing.

When this happens, avoid the simplistic solution of eliminating the exercises and retaining only the presentations. Instead, redesign the course. Devise new exercises suitable for the new audience or an abbreviated time allotment, and prepare the guidance and feedback needed to guide performance in those exercises. For instance, you may want to establish training objectives for senior officials on how to plan and oversee the work that will be performed by their subordinates who attend the longer course.

Use an analogous approach if the course has to be shortened for some reason, but the audience will remain as planned. Here, it would be best to comb through the objectives, eliminating those that are less essential to some basic level of performance. However, retain all of the exercises, guidance, and feedback needed to prepare the learners to accomplish the remaining tasks satisfactorily. If you are going to teach something, teach it well enough to produce tangible results.

An alternative, particularly if the task is an essential one, is to substitute an exercise the participants are to complete when they return to the work site. If you choose this option, be sure to provide additional guidance for the participant to review prior to performing the exercise, and feedback the participant or work supervisor can use to determine the correctness of performance and remedy any deficiencies.

Similar solutions should be implemented in response to other one-time situations. You may want to record text material on audio tape for poor readers, but at a slow pace and with added review to compensate for the opportunities for repetition that text provides. You may want to have the class discuss a case study rather than ask participants to individually analyze the information. Or, you may tell the instructor to show how to calculate a math problem for learners unlikely to get the

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correct answer before they try it by themselves. Again, if necessary, it is better to eliminate an objective than to try, but fail, to achieve it.

Adaptations of the training may also be required for other purposes. For example, fewer learners than planned for may attend a course delivery. Some adaptation may be needed to restructure exercises originally designed for larger groups. It may not be possible to supply or use videotapes or other training aids in certain locations. Courses that need to be spread out over weeks instead of presented all at once will need to be adapted to include refresher segments and, perhaps, repeated practice.

Finally, adaptations may be needed to update the content of the training to reflect changes in applicable regulations, advances in technologies, or shifts in the characteristics of participants. In some instances, minor editing will be all that is required. More usually, however, the updating process should include a systematic revision of the entire course that includes improving its efficiency and effectiveness. Evaluation data, as will be described in Chapter 7, can be very useful in identifying portions of the training that should be strengthened whenever revisions are undertaken for another purpose.

Translations or adaptations of a course can be required for various reasons. When a potential problem becomes evident, devise a remedy in a systematic, logical way. Deliberately overlooking the problem rarely, if ever, will result in a satisfactory outcome. You can try solving a representative problem in Exercise 4-2.



**Turn to Exercise 4-2 NOW**

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## Exercise 4-2: Translations

**Directions:** *Shortly before delivery of his training course is to begin, Adam comes to you with a problem. Read what he says and decide what you would suggest.*



I was told this morning that in one small area in the very north of our country, the residents speak a local dialect instead of our national language. We were not aware of this earlier. I'm told they all know the national language well enough to hold conversations in it, but that they are much more trusting of those who can talk in their dialect.

Based on what you have taught me about training, we should have provided for this in our design, but we did not. Also, all of our training materials have been reproduced and we have neither the time nor the money to make changes in them.

I am concerned that the results from interviews with mothers will not be trustworthy unless the dialect is used. We do have several trainees from those already selected who also know the dialect, but no instructors who do.

What do you suggest we do?



## **Translation Suggestion**

*Summarize what you would suggest to Adam.*

*Compare your suggestion to the one on the following page.*



## Translation Suggestion Answer

*A variety of suggestions are possible. Generally, you would want to avoid significant changes in the course design. You also would not want to run the risk of encouraging participants who know the dialect to individually adapt the way they approach mothers in the area. Relevant practice with guidance and feedback should be provided during training. Here is one solution.*

The task most affected would be interviewing mothers. The trainees able to speak in the dialect should be trained together, either in a separate class or as a group in a larger class. The only aspect of the training that would change significantly would be the segment covering interviews with mothers, most likely conducted using role plays to provide practice.

The role plays should be performed using the dialect. The same general directions for this exercise could be used. However, guidance on what to say probably would need to be modified. The instructor should be told to ask the participants who will use the dialect to work together before the exercise to agree on what would be an appropriate way to conduct the mother interviews. These participants would then practice through role plays among themselves, giving feedback to each other.

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## Summary

The curriculum development process can be long and demanding. There will be large numbers of details to attend to. You have to make sure everything needed has been prepared and that it all fits together. For classroom training, you generally will need a reference source, a participant workbook, an instructor guide, and any necessary media and training aids. The materials for on-the-job or distance learning will take different forms. Consider these questions as training development proceeds:

- ◆ Do you need a reference source? Have you kept the contents to a minimum?
- ◆ Do you need training aids? If you do, did you get help from media experts?
- ◆ Does the participant workbook match the instructor guide? Are they easy to use and appropriate to the intended participants and instructors?
- ◆ Do materials for on-the-job or distance learning include all necessary practice, sufficient guidance, and appropriate feedback?
- ◆ Did you have all of the materials reviewed, even those you wrote yourself?
- ◆ Were all materials tried out with representative participants? Are you satisfied that the training can be presented smoothly and that each objective will be achieved?
- ◆ Have you anticipated the need for translations or alternative versions? Did you preserve pertinent practice exercises when developing alternative versions?

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# Produce

The materials prepared in the Develop Phase are now ready for production. In this phase, you must decide how to produce the materials so they will be easy to use, readily updated, and low in cost. Different considerations are involved depending on whether the materials are for classroom use, distance learning, or on-the-job training. You may also need to consider some additional steps, particularly translating the training materials to another language.

## Step 1. Reproduce the Classroom Materials

**Select formats for the classroom materials and reproduce them in the appropriate quantities.**

Classroom materials should be convenient to use, attractive, and as low in cost as possible. These criteria are sometimes difficult to balance, but all three are important.

Convenience is achieved if materials, particularly those to be distributed to participants, are packaged suitably for extended use. This is particularly important for the material—the participant workbook—that the learners bring with them each day to class. A loose-leaf binder generally is a good choice, and certainly preferable over several volumes of material or an assortment of unbound handouts. You may need to divide the materials into two or more volumes if there are a large number of pages. It then would be better to have all the content needed at one time packaged together, however, than to package the reference materials and workbook separately.

The workbook should be designed for ease of use. Provide ample space for note taking along side session outlines if you have them. Number the pages and provide headers or footers so participants can find where they are supposed to be. Text material should be formatted to heighten readability, with an acceptable type size and style and plenty of white space. Instructor materials should be similarly designed for convenience. Provide room for instructors to add their own notes. Remember, too, that instructors may deliver the course more than once. Their materials will have to be durable enough to be used repeatedly.

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Having an attractive package distinctly adds to the professional appearance of a training program. Computer word processing and desktop publishing programs can provide varying type styles and sizes to improve the way the materials look. A little art work also can add to the attractiveness of the package at little cost. A number of clip-art collections are available that will allow you to easily insert illustrations, icons, and other artwork wherever appropriate. Seek the help of a graphic artist to help you design the materials and improve the image they present.

Typically, the cost of producing materials is rather negligible relative to the cost of developing them. Nevertheless, you want to be alert to opportunities to minimize expenses. Investigate cost-reduction possibilities such as inexpensive binders, less expensive paper, and doing without dividers to separate workbook sections. Quantity is an important consideration. If you have enough lead time, look into purchasing customized loose-leaf binders directly from a manufacturer—they may cost less than a similar quantity of ordering binders obtained at retail. Also explore having the materials printed using an offset process rather than photocopied. At quantities of a few hundred copies or more, printing can be less expensive and more attractive. But do not overdo it. Keep in mind that you may want to revise or update the materials, and not be prevented from doing so by having a large inventory of not-quite-right classroom materials on hand.

Production of materials is not without its problems. You may have to decide how to make the best of a bad situation, as the one presented in Exercise 5-1.



**Turn to Exercise 5-1 NOW**

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## Exercise 5-1: Cost of Materials

**Directions:** *Soon after the language problem for the northern part of the country was resolved, Adam again comes to you with a problem. Read about it and decide what course of action is most appropriate.*

The Ministry just told me it cannot approve the purchase order for printing the training materials. Its printing budget is nearly overspent and absolutely no additional funds can be made available. They did offer to allow us to print half of the quantity of materials we requested. I've thought of three solutions:

1. We could provide one copy for each two or three participants per class, and ask them to share.
2. We could supply materials to every participant, collect them, and reuse them for subsequent classes.
3. We could cut back on the materials by eliminating the reference source and having the instructor lecture on that content instead.

What is your opinion?



## **Cost Suggestion**

*Summarize what you would suggest to Adam. Comment on each of his alternatives.*

1. Sharing.

2. Reuse.

3. Cut Back.

*Compare your comments with those on the following page.*



## Cost Suggestion Answers

*There are no “correct” answers, and each alternative has undesirable consequences. Adam should choose the alternative that will have the least impact on how well the interviewers will perform on the job.*

1. **Sharing.** Training and learning will be more difficult if materials have to be shared. Some participants may not be able to read their assignments or perform every exercise. Also, not every participant would have the reference materials to refer back to after training ends.
2. **Reuse.** This alternative would have very little effect on what happens in the classroom, but no one would be able to take the materials with them for use after training. If the materials contain only essential information, as they should, then this information should be available on the job.
3. **Cut Back.** This is the least desirable alternative. Eliminating the reference source would mean more lectures and an extended training course. Participants would have to learn information, such as the sampling procedures, that could be looked up instead.

*Did you have a better solution?*

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## Step 2. Prepare Materials for Distance Learning

**Package materials intended for distance learning applications in a way that facilitates their use by learners and affords adequate opportunity to track learner progress.**

Course materials designed for distance learning—self-study, computer-based, or remote delivered courses—require particular care during the Produce Phase. Basically, these materials must be prepared with a focus on ease and correctness of use.

As was explained when the development of these materials was discussed in Chapter 4, Step 7, the formats used must encourage learners to proceed through the course in the intended way. For example, correspondence and other self-study courses employ very short lessons, although guidance, practice, and feedback are always included. When practical, the lessons should be separately bound and distributed over time. If the learner is to review his or her own exercise results, sufficient space should be provided to make corrections or retry the exercise.

One of the more difficult problems with self-study courses is the learner's inability to ask questions. By thoroughly trying out the materials, of course, frequently asked questions can be identified and addressed, or addressed more clearly, in the text. A good index and a glossary often help. More complicated issues can be dealt with by referring learners to appropriate reference materials or to their supervisor.

A good format for self-study materials is one the learners are comfortable with. Use tryouts to test alternative formats and seek the suggestions of tryout participants. They may prefer more illustrations, more frequent headings, or more reviews inserted throughout the text.

Computer-based training materials similarly must hold the learner's attention for learning to occur. Format features will be determined during course development and subsequent tryouts, so there is little to do in the Produce Phase except to manufacture copies. However, some additional aids can be incorporated, including an index that allows the learner to locate partially forgotten information or instructions, and a "help" feature that offers further coaching on how to perform an exercise.

Training using remote communication systems poses a number of challenges. One of the more critical is making sure the course is not too polished. Training designed for delivery over television, radio, or telephone is often recorded in advance, using elaborate productions and retakes whenever the instructor stumbles. The result is a course that is too intense and too quickly paced. Unrehearsed recordings with all the hesitations and repetitions of conversational speech are easier to prepare and actually improve learning.

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## Step 3. Develop a Detailed Logistics Plan

**Prepare a checklist of all materials, equipment, and supplies needed for a training delivery and decide how to distribute them to training sites, or for individualized distance learning.**

Few mishaps can affect a well designed training program more seriously than materials and other needed items arriving late or not at all. A good logistics plan is a necessary component of sound training management. It should be comprehensive, detailed, and developed well in advance of when training is supposed to begin.

Begin your logistics plan with an itemized checklist of everything that will be needed at the training site. This will, of course, include copies of the participant and instructor materials, the audiovisual and other equipment required in the classroom, and whatever supplies might be essential to a smooth delivery. Do not forget the little things such as:

- ◆ spare bulbs for a projector
- ◆ chalk and/or colored markers
- ◆ spare materials to replace those lost or damaged
- ◆ extra paper (punched to fit the binders) for exercises
- ◆ name tents or tags if needed
- ◆ extension cords
- ◆ pens or pencils
- ◆ masking tape
- ◆ projection screen.

Along with the checklist, prepare specifications for what will be needed at the training facility. You will need tables and chairs, a source of electricity, a way to dim the lights in the classroom, breakout locations if they will be required, and so forth. Do not overlook details such as a table for a projector, a place for visitors to sit if you expect any, and an easel if the instructor will use newsprint.

Refer back to Step 4 in Chapter 4 on including this checklist and other essential information in the instructor guide.

Next, develop a timetable. The surest approach is to plan on everything reaching the training site with enough time to spare to allow replacements to arrive before training begins. Have a designated contact person, at the site, who is responsible for checking that everything is ready well enough in advance to arrange for replacements or alternatives.

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## Step 4. Develop a Plan for Continuing Improvements

**Develop a procedure for regularly collecting information needed for course revisions, make tentative changes, and try them out.**

Nearly all training courses require revisions at intervals over their useful life. As explained in Step 8 of Chapter 4, the most common reasons are to update course content to reflect advancing knowledge and developments in the field and to improve the effectiveness of the training by fine tuning exercises, presentations, or feedback.

Revisions also may be needed to adapt the course to a changing participant profile, to simplify delivery by less experienced instructors, or to add or delete training on tasks when the course no longer matches job requirements.

The need to initiate revisions can arise from many sources. Evaluation data may reveal that portions of the course turned out less successfully than had been hoped. Instructors may recognize weaknesses in the course based on questions they are asked or the amount of feedback they need to provide. Content experts may suggest corrections or improvements that will improve the course's accuracy, applicability, or efficiency. Supervisors may report weakness on the on-the-job performance of participants.

Saving up this information with the intention of making a major revision is a poor idea. Not only will you be depriving trainees of changes that could improve their learning, but you will also be making the task much more difficult for yourself. By the time you get around to producing a new version, you will have forgotten why some of the changes were needed, and others will appear to be conflicting in how they can be remedied. A major revision is also a very formidable task—one not made easier by your understandable attachment to the course as you originally developed it.

Instead, plan on conducting frequent reviews of the course to identify where revisions are needed. Meet often with instructors and subject matter experts to examine evaluation results and get their suggestions for how the course might be upgraded. Draft these revisions and arrange for at least one tryout. If the tryout proves successful, incorporate the changes when a new batch of materials is produced for future use. If the tryout indicates little improvement, you have the existing version to fall back on while you continue to search for a solution.

## Summary

Producing materials for use in the classroom or other training settings can be expensive and time consuming. You should understand the time and costs well enough in the Design Phase to plan the training within the constraints that have been identified. You should be able to answer these

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questions at the time materials production is being planned—waiting until development is complete may be too late.

- ◆ Have the classroom materials been designed for ease of use? Are they professional looking? Have unnecessary expenses been avoided?
- ◆ Was special attention given to materials intended for distance learning? Were the special requirements of the method to be used adhered to?
- ◆ Do you have a detailed logistics plan for conducting the training program?
- ◆ Have you devised a plan for updating and improving the training if it will continue to be delivered?

# Deliver

Your course has been developed and pilot tested, and you have arranged for the production of the training materials. In this phase, you will prepare for and oversee the delivery of the course. Preliminary steps for this phase actually began during your analysis and design efforts when you decided how the training would be presented. Now, you must implement your training delivery approach in a way that will make learning simple, effective, and as trouble free as possible.

## Step 1. Select and Train Instructors

**Determine how many instructors are needed, including backup instructors; select candidates; conduct training-of-trainers; and provide guidance on course delivery.**

Not all training will be delivered in person by an instructor. As described in the Design and Develop Phases, trainees may be expected to learn individually through correspondence materials, computer-based training, media-supported self-study, television, reading, or mentored practice. Particularly when another person is involved as a coach or tutor, training may proceed in a direction and at a pace dictated by the circumstances and the individual learner's progress more than by a predefined curriculum. Because the learner's supervisor is often the one responsible for providing coaching or tutoring, you may have little say in selecting them or controlling that person's performance. You have to make this form of training as "instructor-proof" as possible.

Most formal training, on the other hand, is presented by an instructor in a traditional classroom. This should not mean that because the setting is conventional, the role of the instructor must be conventional as well. Quality training focuses on the practice needed for learning to occur. By itself, listening or watching affords little opportunity to practice. At best, the participant may squeeze in some practice by taking notes or mentally repeating some of the instructor's choice phrases. The focus of effective training on what the participant does rather than what the instructor says represents a very difficult shift for most instructors. Few experienced teachers are able to instantly become effective trainers. They first have to master a new, and competing, set of skills.

Begin assembling an instructor cadre by deciding how many instructors you will need to meet your delivery schedule. Then add a few more to provide for dropouts, illness, or less-than-satisfactory performance. Remember, you are likely to need backups even if you plan on only one instructor,

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and even if that one instructor is you. Preparing an instructor who will present a course as intended takes time. You want to be prepared if the demand for delivery of your course increases or if you are not be able to deliver the training yourself.

There are a number of qualities to look for in choosing instructors. Even if you have only a small number of candidates to choose from, pick those most likely to turn out well. Some important characteristics are:

- ◆ content knowledge
- ◆ clear and audible speaking voice
- ◆ confidence
- ◆ enthusiasm and cheerfulness
- ◆ patience
- ◆ appropriate use of gestures
- ◆ practical job experience
- ◆ flexibility
- ◆ maintenance of eye contact
- ◆ ability to treat with respect.

No one of these is essential nor will any one assure you that the individual will be a successful instructor. You do want someone, however, who will adhere faithfully to the course design and not present his or her own version of the course instead.

Training for an instructor follows the same principles as training for any other set of tasks. Practice is absolutely necessary, even for individuals who are experienced as classroom teachers. In general, training-of-trainers (TOT) should follow a two-step process. First, each candidate should become thoroughly familiar with the course materials. This means reading the text or reference source carefully, studying the instructor guide in detail and, to the extent possible, performing every exercise. From a participant's point of view, nothing is as disturbing as an instructor who is not entirely familiar with the course material.

Second, candidates should practice delivering segments of the course. If a group of instructors is being trained together, the candidates can take turns delivering segments to the rest of the group. If only one or two instructors are being trained, you and perhaps others on the course development team will have to act as participants. The candidate's presentation should be critiqued immediately upon its completion. The critique should follow the principles of giving feedback described in the Design Phase (Chapter 3, Step 6). It should be constructive. It should model the kind of feedback the candidate is expected to provide in class. And, above all, it should include specific guidance on how the candidate can improve his or her performance.

Many experts have examined training deliveries to identify what an instructor should do.

- ◆ During lectures, the instructor should appear thoroughly prepared and avoid reading aloud or looking at notes. The presentation should be in a conversational tone, as if speaking with the class rather than talking to it. The instructor should be alert to indications of participant discomfort, anxiety, frustration, or boredom. Examples to clarify a point should be personal

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ones, but ones the participants can understand. There should be ample repetition and frequent summaries. The instructor should follow the course design and end the presentation on time.

- ◆ During discussions, the instructor should listen carefully to comments and questions and seek clarification when necessary. If possible, the instructor should call on participants by name. Frequent compliments encourage more active discussions and increase participation. The class should help answer participant questions if opinion or judgment is involved. Criticisms or challenges from the class are best responded to with humor and acceptance, not arguments.
- ◆ During exercises, the instructor should monitor participants closely. He or she should lengthen the time allowed if the participants cannot finish, and shorten it if they finish early. Feedback should consist of guidance that allows errors to be corrected. The instructor should be sympathetic about mistakes, and not critical of those who make them. Teamwork rather than competition among participants should be encouraged. Help to individual participants should be given liberally so their task practice is successful.

An alternative way of training instructors can be used if other instructors are already teaching the course, and the aim is to add a few more. The new candidates should begin by thoroughly familiarizing themselves with the course materials. Next, the candidates should be walked through a training delivery. During the walk-through, with you as the audience, they might deliver a few selected presentations, give directions for a couple of exercises, and provide feedback in response to your exercise results or questions. Then, each candidate can be assigned to co-train with a more experienced instructor for one or two actual deliveries. The candidate shares in conducting portions of the course with the more experienced instructor. The experienced instructor serves as backup and provides corrective feedback to the candidate.

It is a good idea to designate or certify instructors who are prepared to deliver the course. You will want to develop a checklist or set of standards for this purpose as a way of objectively describing your minimum expectations for an instructor's skill and knowledge. If you apply the standards, do not expect all candidates to become qualified after their initial practice, or even at all. Some simply will not achieve the level of proficiency required. Also, do not expect all candidates to turn out identically. Some will be stronger in course content, others in classroom management, and still others in the strength of their presentations. Keep individual weaknesses in mind, however, when planning how you will monitor course deliveries.

Successful classroom instructors are not all identical in their style and characteristics. Nearly all have some deficiencies that are balanced by many more superior qualities. A good instructor works at improving his or her performance by recognizing areas of potential improvement, seeking guidance on overcoming these deficiencies, and then practicing to strengthen classroom training skills. As you learned in the Analyze Phase, knowing what to fix is the first step in improving performance. In Exercise 6-1, you are asked to examine selected features of your own training delivery performance.



**Turn to Exercise 6-1 NOW**

## Exercise 6-1: Instructor Characteristics

**Directions:** Adam has asked you for help in improving the instructor skills of individuals from his office who will deliver the field investigator training.

You respond that practice can help overcome weaknesses, but first each deficiency must be recognized. You have a copy of a rating scale you might recommend to Adam. Although the form covers only selected features of classroom instructor performance, it can be self-administered, which Adam's instructors would like.

However, before suggesting use of the rating scale, you decide to try it on yourself. Use it to rate your own performance as an instructor. If you have no instructor experience, rate the performance of some instructor whose training you attended. Mark each item anywhere along the line from "marginal" to "excellent". When you have finished, answer the question on the following page.



Content Knowledge	Marginal	_ _ _ _ _ _ _	Excellent
Voice and Gestures	Marginal	_ _ _ _ _ _ _	Excellent
Offers Encouragement	Marginal	_ _ _ _ _ _ _	Excellent
Stimulates Discussion	Marginal	_ _ _ _ _ _ _	Excellent
Maintains Schedule	Marginal	_ _ _ _ _ _ _	Excellent
Emphasizes Practice	Marginal	_ _ _ _ _ _ _	Excellent
Does Not Criticize	Marginal	_ _ _ _ _ _ _	Excellent
Conversational Manner	Marginal	_ _ _ _ _ _ _	Excellent



## **Instructor or Characteristics**

*Find the one characteristic where you rated yourself (or another person) the weakest. Briefly, what steps can you take to improve your (or another's) performance in that area? What training is needed?*

*When you have answered, turn the page.*



## Instructor Characteristics Answers

Your answer should have focused on what kind of practice is needed, how that practice can be guided so it is successful, and how feedback can be provided.

For example, suppose “stimulates discussion” was identified as the weakest characteristic. Practice is needed in techniques that encourage class participation. You might list several of these for yourself, find a list in a reference source, or create a list by observing instructors who do this well. This list becomes the guide that will make practice productive. The list could include, as examples:

- ◆ Use open-ended questions
- ◆ Ask other participants to answer a trainee’s question. Ask class for opinions, examples.
- ◆ Compliment participants when they volunteer ideas. Call on non-participants for their views.
- ◆ Avoid giving your own opinion or taking sides.

Next, you have to practice using these techniques. One way would be to write out statements or questions you could comfortably use yourself in a classroom, such as “Can anyone give us an example from their own experience?” or “Does anyone disagree with that point of view?” You should practice saying these statements or questions aloud by yourself, then with a friend or colleague, and then in an actual class. The friend or colleague can give you feedback on your performance, and your success can be confirmed by how well your new skills produce and maintain discussions when you try them in a classroom.

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## Step 2. Continue Monitoring and Guiding Deliveries

**Monitor course deliveries to detect and remedy problems as they occur and provide any guidance that instructors may need.**

Most adult training courses are relatively brief, one to three days, and are delivered only a few times. Because of their pace and intensity, these courses are likely to be demanding both on the participants and the instructor. Close monitoring is needed to ensure quality of the delivery and the attainment of course objectives. It is useful to have an observer present to provide the instructor with frequent feedback and suggestions during the delivery. The role of an observer is particularly critical if you are delivering the training yourself.

Some additional problems are inherent in longer training courses or in those spread out over several weeks. These include issues of participant attendance, level of performance on an end-of-course examination, and certification or some other form of recognition for satisfactory course completion. Policies on these issues should be thought through and formalized well in advance of delivery. And, once in place, they should be communicated to those expecting to attend the training.

Consistency among instructors becomes important when a number of individuals share the work of delivering the training. Over time, multiple instructors are likely to diverge in how they present the course. While innovation and improvement are desirable, inconsistency among instructors is not. If several trainers present the same course, they should meet face-to-face occasionally to discuss their experiences, share techniques, and consider any needed updating of course content.

## Step 3. Obtain Data on Course Deliveries

**Establish firm requirements for data instructors must submit promptly following each delivery.**

Tracking deliveries is essential even if you are the only instructor and the course will be delivered only a few times. Basic data to be compiled by the instructor following each delivery will be useful, at least in aggregate, for any future deliveries and for future curriculum designs. You also want to establish a record of who attended the training, who successfully completed it if this is a consideration, and what problems arose. Knowing about problems is important for interpreting evaluation results—for example, unsatisfactory accommodations very often will have a recognizable effect on how trainees rate the quality of a training course.

Basic course delivery information includes the number of participants, their names and organizational affiliations, the names of the instructors, any available objective evidence of trainee performance such as test scores or exercise results, and a written description of any problems that occurred. Be skeptical of reports that state nothing unusual happened. Something unusual

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almost always happens. You may also want to supply a checklist that calls the lead instructor's attention to various course components or dimensions, such as whether individual exercises went off as expected or where in the course the participants seemed to be having difficulty. The checklist can also consider whether the materials arrived in satisfactory condition, whether the room arrangement was suitable, and whether any deviations from the course design were needed. Try to get a record of any official visitors.

Some form of participant feedback is desirable for every delivery. Suggested formats for these instruments are described in the next chapter, Evaluate Phase. Because the instructor will administer, collect, and transmit the evaluation forms, it is essential that the instructor views trainee-completed evaluations in their proper light. Instructors should be aware that training delivery is not a popularity contest, and that all negative ratings or remarks should be treated constructively. Often, you will want to help instructors interpret and make use of evaluation results in a way that will enhance their performance. Your intervention may also be needed to prevent unwarranted discouragement by an instructor who is overly sensitive to criticism or less-than-perfect ratings.

## Step 4. Implement Follow-On Training Activities

**Initiate and manage any follow-on activities for participants such as practicum assignments, job-site coaching, or additional self-study.**

Most training courses are too brief to provide sufficient practice for high levels of competency or retention. A quality training experience will normally give participants a foundation upon which they can build proficiency through additional practice on the job. For many training programs, follow-on activities are essential not only to improve skill levels but also to ensure the long-term retention of knowledge acquired during course attendance.

A number of techniques have been devised for promoting continued learning once formal training is over. For some purposes, periodic refresher training can be scheduled that aims at both reviewing and repeating key training activities and updating participants on new developments. These sessions can often be designed to fit into a short time frame and accommodate participants who attended different deliveries of the fundamental course.

Various self-study options also make it possible to continue instruction after a trainee leaves a training course. As described in the Analyze and Design Phases, alternatives include correspondence programs, computer-based training, and remote delivery formats. Whether used as a substitute for, or supplement to, attending a live training course, self-study materials require the same, and perhaps more, careful curriculum development efforts than you would use for instructor-led training. You have to make self-study learning convenient, engaging, and adaptable. Above all, however, you have to be sure the trainee can recognize he or she is making real progress. This is by far the best way to maintain the trainee's motivation.

Practicum assignments are still another way to continue instruction after a training course ends.

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The participant is provided with a series of exercises or assignments to be completed after returning to work. When possible, these activities include normal job assignments. For example, the participant gathers quality improvement data, analyzes it, and prepares recommendations. The products of the assignment are reviewed by the individual's supervisor or, better yet, sent to an instructor for a critique.

Yet another option is to provide follow-on job-site coaching. Either an instructor or a specially trained coach visits the participant at intervals to assist him or her in transferring knowledge and skill from the classroom to the workplace. The assistance may be in the form of tutoring, expert help in planning or beginning a task, or reviews of work assignments already accomplished. The aim of coaching is to provide the participant with guidance and feedback on practical applications of job content. Former participants who have succeeded in making good use of what they learned often make good coaches but, like instructors, they should be selected and trained to serve this role. Supervisors also can oversee follow-on training if provided with the directions they need to manage this training and the guidance they require to do it successfully.

## Summary

Training delivery will rarely be free of trouble, but you can minimize the problems you will face by carefully selecting and training instructors, making the necessary arrangements to regularly monitor training deliveries, and collecting data on deliveries needed to document what happened. You must be particularly concerned if you will deliver the training yourself. Seek the opinion of other professionals as to whether you have the characteristics of a good instructor. Do not ignore post-training activities, such as further practice back at the job setting, that will help develop and maintain high quality performance. Your plans for training delivery should provide answers to these questions:

- ◆ Have you identified how instructors will be selected, including the criteria you will use? Have you developed a formal training program for instructors that includes ample practice?
- ◆ Have you devised a way to monitor instructor performance during training deliveries? Have you developed a plan for retraining or replacing instructors who are unsatisfactory?
- ◆ Have you prepared clear requirements as to the data instructors must submit after each delivery? Do you know how you will use this information as it arrives to maintain the quality of the training?
- ◆ Have you planned follow-on activities that will help participants develop and maintain their competencies? Have you prepared the materials needed to support follow-on training?

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# Evaluate

Systematic evaluation at each step in the process of preparing and presenting training is the only way to ensure a high quality outcome. Evaluation is not performed to pass judgment on how the training was designed, developed, or delivered. Rather, it is intended to provide timely, objective information that will demonstrate what the training did, and help detect, diagnose, and overcome any problems that interfere with a course's success. By collecting usable information in an orderly, systematic way, the training can be kept on target and strengthened at each step.

## Step 1. Implement Evaluation of Training Outcomes

**Review how to assess instructional results and outcomes and how to document training achievements.**

While the evaluation of training outcomes does not occur until after training has been completed, deciding how the course as a whole will be assessed should be settled early in the Design Phase. Both the host agency and the training team should agree beforehand on what is expected from the training and how the results will be measured. These decisions will help you plan your evaluation of each step in the training development process. Starting with ways to measure outcomes rather than processes may seem to be the wrong order, but it will keep attention focused on the important outcomes—the lasting benefits of the training.

Outcome evaluation should demonstrate how well the training did its job. You may be training community health workers, hospital administrators, or members of a national health financing board. In each case, the training had some purpose—to improve the rate of childhood vaccinations, to install a quality assurance program, or to develop rationales for setting health sector priorities. Your outcome evaluation should provide understandable and convincing documentary evidence that the goals were reached.

The key outcome indicators you identified in the Analysis Phase should be used, whenever possible, to evaluate training outcomes. You may wish to add some that now seem more indicative of training impact and delete others that are too difficult to measure. However, your original list of

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indicators should serve as the basis for your overall evaluation. In planning how you will validate outcomes, recognize that some time may elapse between the end of training and when your projected outcomes should be recognizable—usually after your participants have had a chance to polish their skills in their own job settings.

Identifying appropriate measures is not easy. Many outcomes are quite complex, and most depend on factors, such as situational constraints, that tend to confound the measurement process. Nevertheless, do the best you can to capture the sense of what changes or improvements were defined when the need was established. Sometimes, for example, measures based on simple counts will do—the number or percentage of pregnant women immunized against tetanus, the number of hospitals with written quality assurance plans, or the number of health planning decisions supported by rationales.

Measures for other outcomes may take the form of ratings by supervisors, peers, or clients; observations based on a checklist of essential behaviors; or an analysis of completed forms or other work products. Still another approach to documenting outcomes is through the use of indirect measures of tasks that are difficult to assess directly. Teamwork in a hospital setting might be examined by the number of contacts among different staff members during a typical shift. The more staff talk to each other, and the greater the number of interactions among them, the more likely it will be that teamwork is operating. Other examples of indicators are attendance at in-service training sessions, sharing of supplies among clinics, and even the ratio of smiling to frowning employees.

Regardless of the outcome measures you use (direct or indirect), you want them to reflect job requirements as closely as possible. End-of-course examinations can be useful for diagnosing course weaknesses, but they are not very convincing to others that the training was worthwhile. Instead, you want to demonstrate that training improved organizational functioning, or at least that performance in the workplace was enhanced.

A baseline measure against which to compare your findings may be needed. Obviously, no control or comparison data are necessary if the tasks to be learned are totally new. On the other hand, even then some comparative information might be useful. For instance, teaching clerks to use a computer for managing supplies is a new task and contrasting the computer skills of those receiving training against those who have not does not make much sense. But a very useful comparison would be the resulting accuracy of inventory and speed of resupply between the computerized system and the former paper-based system.

The use of control groups does not make such sense in real world settings because the two groups will rarely be equivalent. However, comparisons can be made using historical data or data on the target population at large. Regardless of the basis for comparison, be very cautious about using rigorous statistical tests to analyze outcomes. In nearly every instance, such tests will fail to achieve significance because of the uncontrollable variation in group members and workplace circumstances. Furthermore, your measures may not be as precise as needed for most statistical tests. As will be discussed below, the results should demonstrate an evident gain without further analysis. Complex statistical treatments will not improve an otherwise weak outcome.

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Depending on the number of participants who attended and the resources you have for conducting an outcome evaluation, you will probably want to limit your effort to only a sample of graduates. Obtaining a statistically valid sample is not essential and could involve unnecessary expense. Your goal, instead, should be to include as many and as diverse individuals in your sample as needed to convince others of the level of success you achieved.

When deciding how you will measure outcomes, begin by revisiting the need you hoped to satisfy through training. The need, remember, usually reflects some problem in organizational functioning. If there is no problem, there is no need to fix anything. And training is an appropriate solution only when new or better skills will lessen or eliminate the problem. By looking at the need and the evidence for it, you should be able to identify one or more outcomes that establish the contribution of your training to organizational functioning. In Exercise 7-1, you will practice suggesting an outcome measure.



**Turn to Exercise 7-1 NOW**

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## Exercise 7-1: Outcome Measures

**Directions:** *Adam has asked you for help in measuring the success of the training in terms of benefits to Ministry of Health functioning. He reminded you that you described three indicators of improvement during the Analysis Phase (Exercise 2-2). In particular, he has asked you how you would measure whether the training resulted in:*

*“Improved information on why mothers bring their children for immunizations.”*



## **Outcome Measures**

How can this outcome be measured? How would you determine whether this outcome from training was realized?

*Answer the question. Then compare your answer with the one on the following page.*



## Outcome Measures Answer

One measure closely related to the skills addressed in training might be “Data from interviews with mothers are categorized by reasons for attending and not attending.” Further “This data is available to immunization program planners.”

If the data is present and used to improve the immunization program, you might expect an increase in the number of mothers bringing their children to the clinic. Therefore, you might develop a measure related to immunization coverage – “The proportion of completely immunized children under age 2 compared to the target population”. This does relate to the benefits identified in Exercise 2-2, and is a logical measure of the outcome of the quality of immunization practices. However, it is not immediately apparent that this measure relates to the training content. One needs to follow the logic of increased knowledge of reasons for attendance leading to programmatic changes to appeal to those reasons.

In your answer, you should focus on information the Ministry officials can use to increase the proportion of mothers who bring their children for immunization. Some information may have less practical value than other information. For example, you might stratify reasons for bringing children to the clinic by the age of the mother, or you might state an outcome measure as “Identification of the five reasons most often mentioned for not bringing children for immunization”. Each may logically measure whether the training resulted in improved information on why mothers bring their children for immunization. However, the age stratified data may not give you practical insight about how you might make immunization program improvements unless you know that different age mothers have different attendance practices.

Other measures, of course, could be suggested. Your answer also is correct if it:

- ◆ is objective and not someone’s overall judgement or impression
- ◆ contributes clearly to the organization’s mission or goals
- ◆ can be tied to skills learned during training.

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## Step 2. Design and Conduct Process Evaluations

**Develop and implement procedures for assessing each major step in the training design, development, and delivery process and for diagnosing weaknesses.**

In addition to evaluating outcomes, you want to have a well thought out plan in place for evaluating the processes that led to those outcomes. Process evaluation is a form of quality assurance. You collect information at each step so that you know you are on track and that there are no major deficiencies to increasingly detract from course success as you move through the remaining phases. You also want information that is sufficiently diagnostic to point you toward corrective action when weaknesses are uncovered.

Process information is meant for your use, not to demonstrate your accomplishments. A large initial investment in process evaluation is neither essential nor wise. You should compile only enough information to give you the confidence you need to proceed to the next phase, or to refine what you have done so it meets your standards and expectations. Incorporate enough process evaluation, however, to ensure positive results when the outcome evaluation is done.

Process should be examined during, or at the end of, each phase. Generally, you want to investigate those issues that are of particular concern or interest to you. Some suggestions for process evaluations follow. Whether you use these or others, remember to focus your attention on learning things about your course that you can do something about. Don't wait until course delivery, for example, to verify your assumptions about target audience characteristics.

**Assess Need Phase.** During this phase, you analyzed the request for assistance you received to confirm that training is an appropriate response to the identified performance problems. Often, though, training by itself may have little impact because of other powerful influences at work. These can be organizational, situational, or cultural; or the performance needed may be so challenging that no one is likely to achieve proficiency.

You may be able to verify your assessment that training will meet the need by identifying people who can satisfactorily perform this, or a similar, job. Find out from them whether the task can be learned or whether performance depends on exceptional talent, strength, or circumstance. If others can learn the job and perform it adequately under ordinary conditions, so can your participants. You need only three or four to confirm your conclusion that training will make a noticeable difference.

You also want to confirm that the identified need is one that organizational officials recognize as worthwhile for the planned investment. Even though the need may be real and your training may resolve it, you may find that no one cares. Be sure to confirm your statement of the need before moving on to the next step.

**Analyze Phase.** In this phase you want to confirm the accuracy of your task list, your participant profile, and your identification of resources and constraints. The adequacy of your task list can be evaluated by having the observers or experts who helped you create the list review it. This does not

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guarantee that your list will be complete, but it can serve as an additional check on the accuracy of your task statements.

Probably little needs to be done to verify your participant profile if it is based on actual contacts with likely attendees. However, if your source of information for the participant profile was an official who described what he or she thought the participants would be like, you should verify it by directly contacting several individuals from the group. Confirm the validity of your participant profile before proceeding far with course design. Erroneous data may lead to wrong assumptions about participant backgrounds and needs.

The resources and constraints you believe exist should also be reviewed for accuracy as the training program takes shape. Remember that conditions may change as training development continues. You want to take advantage of the opening of a new facility, for instance, or be able to schedule a delivery at the time of a regional meeting.

**Design Phase.** This phase focuses on the objectives and strategies you prepared for your training development plan. The steps in this phase are most easily evaluated by asking colleagues familiar with this training approach to review them. The plan should communicate your objectives and strategies clearly, and your approach should be sufficiently detailed so as to convince someone else that the training will work. Encourage suggestions that will improve the quality, thoroughness, or efficiency of the training. You can also try out your plan on those who will help develop the course materials, asking them to explain what your descriptions of practice exercises, guidance, and feedback mean. Their comments will help strengthen the plan before you actually begin materials development.

**Develop Phase.** It is during this phase that ongoing evaluation is most needed and will yield the most results. You want to systematically conduct tryouts of each instructional component while it is still in draft form. No amount of editing and expert review will tell you as much about the draft materials as trying them out on even a few representative participants.

Generally, tryouts will be most productive when the participants are told the purpose of their review and are asked to identify any segment they do not understand. You or a writer can be present to record any problems or improvements they suggest. Tryout participants should not be asked to write out their comments, nor should they experience delay in getting clarification about any particular section. Being present at the tryout allows you to discuss any confusing segments with participants and make on-the-spot revisions.

Participants who are made to feel that they are part of the development team rather than subjects in an experiment will provide more feedback and be less fearful of criticism for poor performance. Assure participants that weaknesses in their learning are due to weaknesses in the material, not to any personal deficiencies. Tryout participants often take pride in their role and are more than willing to continue in it throughout an extended period of development and revision.

The reference materials can be tested by having a few individuals read and comment on them section by section. Course components intended for oral delivery should be read aloud to tryout

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participants, who should be encouraged to interrupt if something is unclear. Having participants perform the practice exercises will not always be feasible. However, they may be able to tell you what they think will happen during each exercise. Then use the information to refine the exercise instructions, verify the planned feedback following the exercise, and estimate how much time the exercise will take.

Audiovisual materials should be tried out early in the development process before final production is underway. Visual scenes for an intended videotape can be simulated or described. Videographs and similar visuals can be presented as text or sketches. You can try out segments of a computer-based training lesson before it is programmed by writing the frames on cards and presenting them to tryout participants in the order that they would see them based on their prior responses.

You will need to give special attention during the Develop Phase to materials intended for use in an unfamiliar setting, such as in a developing country. Elicit the help of local experts to review both the content and training methods to make sure that expectations are met and that the material appropriately reflects cultural norms.

**Produce Phase.** Following individual tryouts, you may want to schedule a pilot test of the course. The materials should be in near final form and reproduced as inexpensively as possible. A pilot test should not result in the identification of major deficiencies—these should have been caught during individual tryouts. On the other hand, delivery of the course in a group setting will allow you to refine the course schedule, particularly for segments that include question and answer periods, group discussions, or group exercises.

**Delivery Phase.** Although the course has been planned and prepared with ongoing quality checks, you will need to regularly obtain data from course deliveries. Aim for information you can collect regularly across successive training sessions. The target audience may change, the quality of instructors may diminish, or changes in the workplace may render some instructional objectives irrelevant. Also, you want to be able to detect unusual events associated with specific deliveries, such as those that might result from an instructor's illness, missing materials, or an unsatisfactory classroom.

There are three frequently used methods for evaluating training deliveries. Each provides information from a different perspective.

**Observer reports.** The first is based on one or more expert observers who attend the training and complete checklists or prepare comments on all relevant aspects of the delivery. Typically, the observers will be asked to focus on the:

- ◆ instructor's adherence to the lesson plan and course schedule, and the reasons for any deviations
- ◆ adequacy of the facilities and equipment, including the quality of trainee housing and meals
- ◆ content and utility of course materials, with notes on problems encountered or changes needed

- ◆ performance of trainees during training, including attendance, reactions to exercises, and level of participation
- ◆ proficiency of the instructor with respect to content knowledge, ease of delivery, and interpersonal skills
- ◆ success of trainees on interim and final examinations and assessments of their achievement of course objectives.

Observers can be course developers, other instructors, or participants' job supervisors. They should not participate in, or interfere with, the instruction. But they should be willing to provide suggestions and comments. Observers should always be furnished with record forms calling their attention to all aspects of training you want them to evaluate. Generally, global judgments are less valuable than a detailed checklist or series of questions requiring concrete answers.

**Participant ratings.** The second method elicits ratings and opinions from participants. These "happiness questionnaires" can be administered at intervals during the training or at its end. Trainees are usually asked to assess the difficulty of the content, the suitability of the materials, the skill of the instructor, and the applicability of what they learned. They may also be asked to identify which course segments or activities they liked best and least, which portions they thought were easiest and most difficult, and which portions they found most and least useful. They are invited to write out specific comments to clarify their ratings or make any other suggestions they think will be helpful.

Consider the following sample items from a participant satisfaction questionnaire:

- ◆◆◆ *Rate today's training by circling the description that best matches your opinion.*

*1. I felt the goals of today's training were:*

<i>too easy</i>	<i>generally easy</i>	<i>generally difficult</i>	<i>too difficult</i>
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*2. Today, the instructor's presentation was:*

<i>well organized</i>	<i>somewhat organized</i>	<i>somewhat disorganized</i>	<i>very disorganized</i>
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*3. The content presented during today's training was:*

<i>very useful</i>	<i>fairly useful</i>	<i>somewhat useful</i>	<i>not at all useful</i>
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These participant ratings, while very popular, generally fail to provide course designers and managers with much usable information. Participants rarely have norms against which to judge training they attend, so most ratings in practice cluster half-way between "average" and "superior" no matter what the course is or how it was presented. Literal interpretations of

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participant ratings, therefore, must be made cautiously. On the other hand, as results from successive deliveries are accumulated, a deviation from those past results generally suggest something very favorable or unfavorable happened on that occasion. Participant ratings can be improved by making them as specific as possible, and by addressing as many dimensions of the training as possible. You also can improve the usefulness of the results with rating scales that have clearly labeled choice points.

Trainee comments can be more revealing than a rating scale, but the source of a complaint or commendation is as likely to be misplaced as not. What you can conclude from numerous complaints over a delivery is that something went wrong.

**Participant performance.** The third approach is to use examination findings and other evidence of improved participant performance to assess the quality of a training program. In many respects, this is the best way. Training is aimed at a number of objectives. How well the objectives are met, then, is a good measure of the effectiveness of training. The more closely examinations and exercises are tied to the task-based objectives, the better they will reflect the success of the training. Participant achievement can be measured through end-of-course performance tests, such as job samples or essay exams, and exercise worksheets. Notetaking by participants during training can also be very revealing in terms of what they considered important and the accuracy of what they recorded. Most participants have no objection to turning in their notes as long as they are returned to them.

As a general principle, any one of these three methods must do more than assess training. It must tell you what is wrong so you can fix it. For this reason, the methods are often used together. Observations, even by the instructor, can complement participant reactions to the delivery or the results obtained by achievement measures. Be cautious, too, in how you interpret the findings. Attending training can be pleasurable even if little learning took place, and significant advances in skills and knowledge can occur even if the training was unenjoyable. The worst of all worlds is when participants dislike the training because it failed to increase their competence and their value in the workplace.

No matter which approaches are used, it is important to collect information that will help you understand any deficiencies. For example, an examination may reveal that participants cannot develop the expected proficiency in adopting a procedure to a range of work settings. They also report disliking this part of their training and being confused by the case studies used in that segment's exercises. Although this suggests a weakness in course design, that may not be the cause at all. Further investigation may reveal that, contrary to the assumptions made in the participant profile, few of the participants had any practical job experience prior to training and therefore did not understand the case studies.

**Post-Delivery Phase.** As described earlier, some time may lapse before the real benefit from training can be assessed. In this case, remember to evaluate your follow-up efforts. These may be crucial to the transition from being a participant to being a performer. Evaluating participants' progress when they return to the worksite also gives you one more opportunity to compare the needs identified at the beginning of training development with those now evident when the participant tries to apply at the job site what he or she has learned through training.

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## Step 3. Diagnose and Remedy Deficiencies

**Explore possible causes for each deficiency uncovered, determine the most likely source, and take remedial action.**

Both process and outcome evaluations have the potential to reveal weaknesses in how the training was planned, prepared, or presented. Typical problems encountered at the outcome level include:

- ◆ situational factors, such as a supervisor's resistance, staff turnover, or lack of organizational support, that prevent a participant from using his or her training
- ◆ inadequate analysis of the tasks to be performed, including the need for additional competencies
- ◆ insufficient or unrealistic practice during training, resulting in inadequate retention or transfer to the participants's worksite
- ◆ participant selection procedures that result in the attendance of many trainees who should not have done so because of background, ability, or opportunity to use the training
- ◆ changing requirements or priorities that render the training obsolete or irrelevant, or when new insights into the original problem yield simpler or less costly solutions than training
- ◆ materials arriving late, an unqualified instructor, one or more disruptive participants or observers, or inadequate accommodations.

Before considering what corrective action to take, assess the magnitude of the problem and how likely it is to recur. Minor deviations from expected results or unusual happenings need no special intervention except continued alertness. On the other hand, serious thought needs to be given when the training fails to produce the intended outcomes. Generally, if the steps in this manual have been followed—including appropriate process checks during each phase—the problem will not be in the training. Either the original need mistakenly suggested training as an appropriate solution, or circumstances have changed so dramatically that training is no longer applicable.

Other shortfalls in training impact usually result from poor course design or development. Traditional, lecture-style training, or a course that includes much participant activity but little relevant practice will not produce the desired outcomes. At best, a few participants may have been able to learn on their own.

Process deficiencies are much easier to diagnose and remedy. Except for weaknesses not identified until the course has been delivered, the checks recommended for each phase should call your attention to what has to be fixed. Ideally, your material development efforts should begin as minimally as possible. Tryouts will help identify where additional practice, guidance, or feedback is needed. Removing superfluous content is much more difficult. It is hard to determine and delete what is unnecessary. Your only clue may be that participants find the training boring, but that does not tell you where to cut and how much.

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Finally, keep in mind that evaluation is part of the process and not a way to keep score. Like everyone else, you need frequent, corrective feedback to make your task performance successful. The goal is quality training that will accomplish your objectives. You can be sure to achieve those outcomes by compiling quality assurance data as you proceed and then using it to improve the training program at each step.

## Step 4. Prepare Report on Evaluation Findings

**Assemble the data needed to document training processes and outcomes, analyze the information, and report on training achievements.**

Documenting evaluation results, particularly as they relate to outcomes, is desirable. You want to be able to draw conclusions regarding the impact of the training and its contribution to organizational functioning. Outcome measures should be easily understood and meaningful to officials, managers, and participants. Knowledge tests, attitude scales, and opinion surveys carry less weight than more objective, openly observable events such as number of clients served, rate of employment turnover, or decreases in inventory losses.

Try to compile and report outcome evidence using several different measures if the training is expected to impact organizational functioning in multiple ways. Be careful, however, not to stray too far from outcomes where training could have clearly contributed. National prosperity may increase as a function of better health which, in turn, may be improved by more effective rural clinics that were helped by your course on quality assurance in health delivery. Few readers, however, would accept that an increase in national income is attributable to quality assurance training. For the most part, it is desirable to focus on the impacts you targeted in the Need and Analyze Phases.

Mounting concerns about costs around the world underline the usefulness of collecting cost data as part of your documentation effort. Divide training costs into two categories: fixed costs that are required to plan and prepare the training, including costs associated with the Need, Analyze, Design, Develop, and Produce Phases. Variable costs include instructor and material costs, participant stipends, fees for scheduling deliveries, and managing the training program. Revisions should be included in fixed costs as they are made.

To analyze the expense data, divide the total of fixed costs by the number of participants expected to attend the training over its life. Then add to that the average cost per participant based on the variable costs. This will provide you with a base training cost per participant. This figure does not include the wages paid to participants while attending the course, and many analysts will argue that their wages should be considered. You may have to calculate training costs both ways. Do not be surprised to learn that training is expensive, that the cost per participant is much higher than you expected.

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Calculating the value of the benefits your training produced is difficult for several reasons. First, many of the outcomes cannot easily be expressed in monetary amounts. The “value” of reduced in-hospital infection rates or fewer errors in identifying problem pregnancies is nearly always controversial. Second, it is hard to project the length of time over which the benefits will accrue. Teaching clinic workers how to change client nutritional habits may continue to have impact for generations to come. And, third, training rarely works in isolation. For example, to what should most credit be given for quicker and more accurate diagnoses—the new device that automatically analyzes blood samples, or your program that trained the technicians to operate the device?

The complexities of establishing cost-benefit ratios, like the complexities of performing statistical analyses on outcome measures, suggests the simpler approach of presenting data and allowing readers to draw their own conclusions. A bar graph or two may be all you need to summarize your findings in a way that others will understand.

## Summary

A systematic evaluation is vital to assuring the quality of a training program as it develops and to demonstrating its contribution to organizational functioning. Both process and outcome evaluations should be planned and conducted as part of a training program. Outcome evaluations that focus on organizational benefits are difficult to design, but necessary to verify the need was met and the cost justified. Process evaluation provides you information you need to keep your efforts on track at each step in the process of designing, developing, and delivering training. Deficiencies detected during process evaluation should be corrected immediately to prevent further complications. Finally, documenting both your activities and your evaluation findings will give you the insights you need to become an increasingly better training professional.

Consider these questions as you proceed with your evaluation:

- ◆ Have you developed an outcome evaluation plan that will allow you to demonstrate the benefits of your training on organizational functioning? Are these outcomes consistent with your expectations?
- ◆ Have you conducted process evaluations at each step of the training development process? Have any problems in quality arisen that might have been avoided with appropriate information?
- ◆ Were you able to use the information you collected to diagnose and remedy problems? What changes would you make in how you design, develop, or deliver another training program?
- ◆ Were the participants satisfied with the training? Were the instructors? The program officials? You?