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Personnel

INFORMATION FOR DESIGNERS OF INSTRUCTIONAL SYSTEMS

GUIDE TO NEEDS ASSESSMENT

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This volume provides information and guidance for conducting Training Needs Assessment in the Air Force. This handbook is a guide for Air Force personnel who analyze training needs and determine performance requirements.

Chapter 1
GENERAL INFORMATION

Overview

Introduction

Determining the actual need for training is a crucial activity in the instructional system development (ISD) process. Failure to accurately assess the need for training at the beginning of the process can result in time and money being wasted on developing training for non-training-related problems or developing inadequate or unnecessary training to solve training-related problems. Therefore, it is intended that this easy-to-read handbook be used as a guide for conducting **Training Needs Assessment (TNA).** This handbook supplements and expands upon the TNA information currently found in AFMAN 36-2234.

Purpose

The purpose of this handbook is to provide basic guidelines for conducting effective, cost-efficient training needs assessment. It is intended to be used by trainers, instructional developers, and managers to systematically assess training needs while considering essential management issues.

Definition of TNA

TNA is the systematic study of a problem or innovation, incorporating data and opinions from varied sources, in order to make effective decisions or recommendations involving training solutions. Performance discrepancies or **NEEDS** are defined as the difference between the desired performance or knowledge **(optimals)** and the current performance or knowledge **(actuals)**. The goal of the trainer or instructional developer is to reduce or eliminate performance deficiencies (needs).

Goal of TNA

The goal of the TNA process is to effectively analyze problems in order to increase the effectiveness of training and the cost-efficiency of expenditures, thus optimizing the benefits of limited training resources.

Key terms associated with needs assessment

Needs assessment is a method of identifying performance problems. The data is used to identify the knowledge and skills needed for achieving an organizational goal.

To understand needs assessment, instructional designers must know these key terms:

Term	Description
Attitudes	Attitudes are mental states that influence the choices individuals make.
Competencies	Competencies are the knowledge, skills, attitudes, values, motivations, and beliefs that people must have to be successful in their job.
Knowledge	Knowledge is concepts and facts that people need to do their job.
Need or gap	A need or gap is the difference between '*what is'* (actual state) and '*what should be'* (desired state). It is the performance gap that separates what people '*do'* or '*should* know' to perform a job competently. The need or gap should link the knowledge, skills, and attitudes necessary for an individual to perform a job competently and with the desired results.
Needs Assessment	Needs assessment is the process used to identify gaps in performance.

Key terms associated with needs assessment (Continued)

Term	Description
Need Assessment Plan	A needs assessment plan is a blueprint of the collected information about instructional needs. This plan assumes that sufficient justification already exist to solve a human performance problem. A needs assessment plan should address the following key issues: *Objectives*: What results are desired from the needs assessment? *Target audience:* Whose needs will be assessed? *Sampling procedure*: What methods will be used to select a representative group? *Data collection methods:* How will information about needs be gathered? *Specifications for instruments and protocols:* What instruments should be used during needs assessment and how should they be used? What approvals are necessary to conduct the needs assessment and how will the instructional designer interact with members of the organization? *Methods of data analysis:* How will the information collected during needs assessment be analyzed? There are two types of needs assessment planning: comprehensive and situation-specific. Comprehensive planning is used to establish organization's curriculum and instructional plans that cover the basic training for every job category. Situation-specific needs assessment is used to correct specific performance problems.
Skills	Skills are the abilities that people need to possess to perform a job.

Bases of AF TNA

The approach used in this handbook incorporates features of the "purposed-based" TNA model (Rossett, 1987), the TNA handbook developed by the Washington State Department of Transportation (1991), and AFMAN 36-2234.

Characteristics of TNA

Training needs assessment has three essential characteristics:

TNA is a cooperative process.
TNA is conducted for different levels.
TNA is an iterative process.

These characteristics are briefly described below.

TNA is a cooperative process.

Individuals involved in the TNA process include trainers or instructional developers, managers, and executives. While the trainers or instructional developers have the primary responsibility for the mechanics of planning and conducting the TNA, managers and executives are key participants in the process. They normally generate the requirements for a TNA and are the main users of the TNA output. Trainers or instructional developers should plan for and obtain inputs from both the managers and executives whenever possible. If training is the solution to the performance problem, involving managers and executives in the early phases of the ISD process will assure that the resulting programs are accurately oriented to attaining organizational goals, rather than isolated training programs developed by the trainers or instructional developers and "sold" to management.

TNA is conducted for different levels.

The Air Force TNA process serves several different levels:

Headquarters US Air Force (HQ USAF)
Major Command (MAJCOM)
Operational (Base) Unit
Individual

Characteristics of TNA (Continued)

Each assessment is conducted in response to different organizational concerns. However, an integrated approach relating the different types is useful because the training program level may have an impact on other levels.

TNA is an iterative process.

The "real world" necessitates that TNA be an iterative process. Far too often, training needs assessments are accomplished in a crisis environment in reaction to new requirements, policies, or equipment acquisitions. When TNAs are conducted, instructional developers should maintain the results since the constantly changing environment in the Air Force may require the specific training at a later date. Unfortunately, TNAs are often performed, recorded, and forgotten.

Roles and responsibilities

Each organizational level within the Air Force has a specific role and responsibility in the TNA process. The TNA roles and responsibilities for each level are identified below.

HQ USAF
- Manages AF-wide issues.
- Establishes policies and standards.
- Determines strategic goals and objectives.
- Analyzes trends and command priorities.
- Approves directives.
- Develops budget.
- Allocates resources.
- Provides guidance and priority for training programs.
- Defines roles and responsibilities.

AIR EDUCATION AND TRAINING COMMAND (AETC)
- Maintains TNA expertise and assists MAJCOMs and operational units as required.
- Develops and maintains TNA publications.
- Coordinates TNA publications with AF, MAJCOM, and operational (base) units as appropriate.
- Directs, develops, and delivers training courses and programs.

Roles and responsibilities (Continued)

MAJCOM
- Selects methods for achieving strategic goals and objectives.
- Develops and implements operational procedures.
- Articulates standards.
- Allocates and manages resources.
- Determines performance requirements.
- Identifies training needs.
- Directs, develops, and delivers training courses and programs.

OPERATIONAL (BASE) UNIT
- Develops performance units and teams.
- Refines procedures to meet standards.
- Develops and delivers training courses.
- Trains to success level.

INDIVIDUAL (MILITARY/CIVILIAN PERSONNEL)
- Resolves individual issues.
- Communicates training needs.
- Participates actively in learning process.
- Refines procedures.
- Improves productivity.

TRAINER/INSTRUCTIONAL DEVELOPER
- Analyzes AF, MAJCOM, operational (base) unit, and individual training issues.
- Coordinates with appropriate levels to determine purpose of TNA.
- Plans TNA.
- Collects and analyzes TNA data.
- Develops training to reduce or eliminate performance deficiencies (needs).

Need assessment solutions

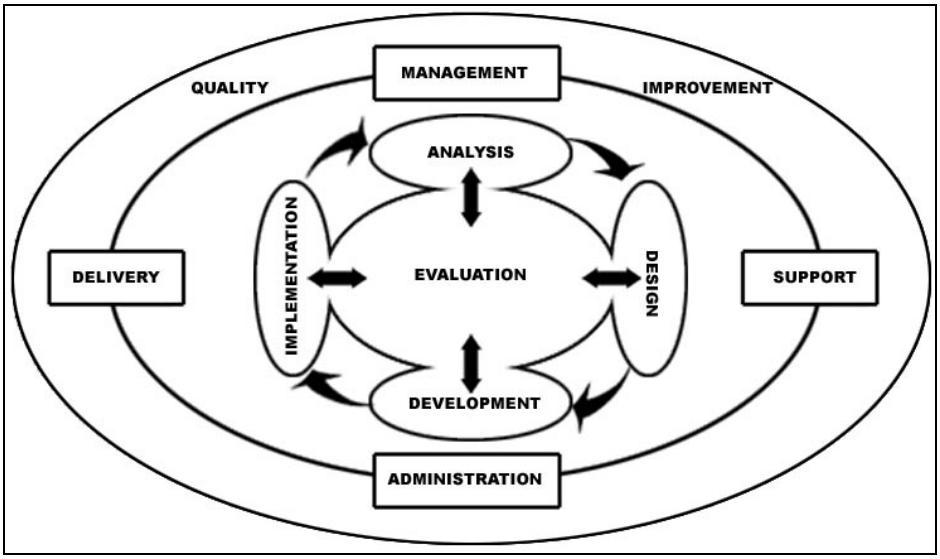
While this handbook generally assumes a training solution, management interventions other than training may be indicated as a solution. Several examples of other management interventions are:
- Team-building sessions
- Policy changes
- Addition of incentive programs
- Environmental climate changes

Need assessment solutions (Continued)	Management intervention is clearly indicated when the data collected during the assessment indicate that employees are capable of performing a given task, but an intervening organizational barrier exists.
Relationship to the ISD process	The context for considering training needs assessment is integrated into the conceptual framework of course and program development. This is one of the first activities considered or performed by trainers or instructional developers. The approach used in the Air Force to develop instruction is the Instructional System Development (ISD) process. The Air Force ISD process is an adaptation of the system engineering process to the problems of designing, developing, implementing, and evaluating instruction. The ISD process assumes that alternative solutions to instructional problems will be more or less cost-efficient depending upon the instructional need and environmental constraints.

AF ISD model

The Air Force ISD Model, illustrated in Figure 1, shows the system functions and the phases of the ISD process embedded within the quality improvement process. This handbook focuses on activities associated with the earliest part of the overall ISD process, with the TNA normally being conducted during the analysis phase of ISD. Completion of an assessment basically begins the ISD process. For a detailed explanation of the ISD model and process, refer to AFMAN 36-2234.

Figure 1 Air Force ISD Model



Chapter 2
TRAINING NEEDS ASSESSMENT PROCESS

Overview

Introduction

The training needs assessment (TNA) process is a continuous, ongoing activity that, if carefully conducted, will provide valuable feedback data to all participants involved in developing and managing training courses or programs. The feedback data resulting from the TNA process enables continuous quality improvements to be made to training courses and programs. This chapter describes in detail the assessment process used in the Air Force and provides additional references to other publications covering training needs assessment

Objectives

The objectives of this chapter are to:

Explain purposed-based TNA.
Discuss performance problems and their causes.
Examine the Air Force TNA model.
Review the various levels of analyses in the Air Force.
Describe the Air Force TNA process.

Where to read about it

This chapter contains five sections.

Additional information

For additional information on the TNA process, see:

AFMAN 36-2234, Instructional System Development.
Kaufman, R., Rojas, A. M. and Mayer, H. (1993). *Needs Assessment: A User's Guide*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Training Needs Assessment Handbook (1991). State of Washington Department of Transportation. Work Force 2000, Work Group 4C.

Section A
Purpose-Based Training Needs Assessment

Introduction

Training needs assessment (TNA) is an umbrella for analysis activities used by instructional developers to examine and understand performance problems. TNA is called by many names. It is often referred to as front-end analysis, needs analysis, problem analysis, and deficiency analysis. It really doesn't matter what it is called as long as it is effectively and cost-efficiently used to identify and solve problems. When looking at purpose-based TNA, consider it as a cyclical process that is periodically used to determine training and non-training needs of organizations and individuals. Conducting needs assessment studies enables instructional developers to obtain the data needed to make informed decisions and recommendations. In this section, purpose-based TNA is explained in detail in order to better understand the overall assessment process.

Results of TNA

Conducting a TNA study results in information that is needed to determine:

Optimal performance or knowledge ("what should be") required
Actual performance or knowledge ("what is") at the present time
Attitudes of managers, instructional developers, and individuals
Causes of the deficiencies or problems
Solutions to the deficiencies or problems

These areas are further explained below in order to enhance understanding of the process.

Determining Optimals

Optimals are what is desired or "what should be" on the job. The emphasis is on what individuals need to know about the job, skills they must have in order to perform the job well, and attitudes that increase quality and productivity on the job.

Results of TNA (Continued)

Determining Actuals
Actuals are the "way it is" on the job. It is what the individuals know about the job, what they can do on the job, and the attitudes they have about the job. The problems can be addressed once it has been determined what the difference is between "what is" and "what should be." This difference or gap between the optimal and actual is called the **deficiency** or **need**, illustrated as follows:

OPTIMAL - ACTUAL = DEFICIENCY or NEED

The instructional developer's job is to reduce or eliminate the discrepancies or needs. This cannot be accomplished until all the details of the discrepancy or problem have been identified. The nature and details of the performance problem are determined by analyzing the optimals and actuals to identify the gap (need) between the two.

Determining Attitudes
Attitudes are feelings or opinions about a problem or competence related to it. Normally, everyone has an opinion or feelings about a performance problem. The challenge of the TNA is to determine what they are. The true nature and understanding of a performance problem is not complete until the attitudes surrounding the problem have been determined.

Determining Causes
Why is there a problem? What is causing it? Usually there are underlying causes for individuals performing the way they do. When determining the causes, try to find out what various individuals think is contributing to the problem. Four possible causes of performance problems are discussed in detail in the next section. Determining the causes of the problem is central to TNA.

Determining Solutions
Solutions are the ways or methods by which the performance problem can be reduced or eliminated. In some instances, instructional developers have little input into the kind of training that will be developed. In most cases, decisions about the

Results of TNA (Continued)

nature of the solution will be based on management preference. However, management preference should be influenced by what the instructional developers find out during the assessment.

What you have and need

To conduct an effective, cost-efficient TNA, an instructional development team requires specific information in order to correctly identify the performance problem and determine the proper solution. The following table shows what the team "must know" and "must have" to conduct a training needs assessment.

If You Know …	Then You Need ...
What the desired performance or knowledge **(optimals)** should be	To determine what the actual performance and knowledge **(actuals)** are.
What the **optimals** and **actuals** are	To determine the individual's **attitude** or feelings about the job or situation.
What the **optimals, actuals,** and **attitudes** are	To identify the **cause(s)** of the problem.
What is **causing** the problem	To develop **solutions** to the training- related problems and recommend sources for solving non-training- related problems.

TNA techniques

Several different analysis techniques are available for use by the instructional development team. The best technique to use is determined by the purpose of the analysis. For example, during a TNA a certain technique may be better for determining the optimals, while another technique may be better for collecting information on the actuals. The following table shows the techniques that can be used for the various purposes.

TNA techniques (Continued)

Purpose	Technique
Optimals	Needs Analysis Subject Matter Analysis Task Analysis
Actuals	Needs Analysis Extant Data Analysis
Attitudes	Needs Analysis
Causes	Needs Analysis
Solutions	Needs Analysis

Additional information

For additional information on the TNA process, see:

AFMAN 36-2234, Instructional System Development.
Deden-Parker, A. (1980). Needs Assessment in Depth. *Journal of Instructional Development*, 1(1), 3-9.
Edwards, B. and Fiore, P. (1984). *Conducting The Training Needs Analysis*. New York: Training By Design.
Kaufman, R. and English, F. W. (1979). *Needs Assessment: Concept and Application*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.

Section B
Performance Problems and Their Causes

Introduction

Identifying the cause of a performance problem is a major concern of the instructional development team. Problems, which can have one or more causes, can only be solved when the cause or causes are known. This section discusses the causes of performance problems and some of the possible solutions.

Causes of performance problems

There are four basic causes of performance problems which the instructional development team will likely encounter. They are as follows and are explained further below:

Lack of Skill or Knowledge
Lack of Incentive or Improper Incentive
Lack of Environmental Support
Lack of Motivation

Lack of skill or knowledge

Individuals often cannot perform the required tasks because they lack the necessary skills or knowledge. Mager and Pipe (1984) stated that some individuals could not perform a task if their life depended on it. A subset of this common cause of performance problems is the lack or absence of prerequisite skills or knowledge.

Lack of incentive or improper incentive

Feedback, appraisals, rewards, and policies have a significant impact on job performance. Performance problems are often caused by "lack of, or improper incentives." Individuals normally perform better if the results of their actions are known to them, and their actual performance is linked or associated to the optimal performance. When a situation exists where individuals could perform better on the job if they wanted to, the lack of improper incentives is often the contributing factor or cause of the problem.

Strong, carefully selected incentives should be known to the individuals and consistently practiced by management. Individuals should also know the consequence of performing or not performing their jobs.

Lack of environmental support

Environmental support is all the things that surround workers as they do their job. Many of the environmental factors that have an impact on job performance are not within the direct control of the individual. For example, many of the problems associated with the lack of training stem from environmental factors. Three basic areas that should be examined when determining if the environment is blocking effective performance are personnel, policies and procedures, and tools. Brief explanations are provided below.

Personnel – When determining if individuals are capable of performing the job, consider if the individuals actually have the physical and mental ability to perform the job. The performance problem may be caused by the individual's inability to do the job.

Identify all individuals who interact with the worker identified as having performance problems. It could be that the individuals the worker must depend on are actually causing the problem. For example, the worker's supervisor or manager may not know enough about the job, and thus may be causing the performance problem by not providing the guidance and support needed by the worker to effectively perform the job.

Policies and Procedures – Determine if organizational policies and procedures are causing job performance problems for the worker. For example, the procedures for performing a task may be incorrect, thus causing the worker's job performance to be unsatisfactory.

Tools – Tools are what the worker needs to perform the job effectively and cost-efficiently. When the worker does not have the tools required to perform the job, productivity and quality are often affected. Therefore, when identifying the cause of a performance problem, determine if the worker has the tools required to perform the job. For example, if a worker does not have a particular type of screwdriver that is required to remove a piece of equipment, job performance is adversely affected.

Lack of motivation

Incentives and motivation are often discussed together as possible causes of performance problems. However, recent cognitive studies have differentiated between the two. Keller (1985) illustrates motivation by using the following formula:

VALUE x EXPECTANCY = MOTIVATION

The formula is explained as follows:

Value is the "worth" individuals attach to things or outcomes as evidenced by their choice of options.

Expectancy is the confidence that individuals have that they can successfully perform the task or job.

Motivation is based on the benefit that individuals see in what they need to learn to do the job and the belief that they will be able to perform the job.

For example, if individuals do not want to learn (low value) and doubt they will be able to perform the job (low expectancy), their motivation will be low.

Solutions linked to causes

Training is an appropriate solution to problems caused by the absence of skills, knowledge, or motivation. Training **will not solve** problems attributed to factors such as incentives and environmental support. The following table shows the four basic causes of problems and provides several typical solutions.

Kinds of Causes	Typical Solutions
Lack of Skill or Knowledge	Provide skill or knowledge training. Develop job aids.
Lack of Incentive or Improper Incentive	Provide feedback. Establish new policies. Provide training for supervisors and managers.

Solutions linked to causes (Continued)

Kinds of Causes	Typical Solutions
Lack of Environmental Support	Match individuals to the job. Redesign job. Improve interactivity between workers. Develop new policies and procedures. Provide adequate tools.
Lack of Motivation	Train so individuals can see benefits. Train so individuals believe they have the ability to learn to perform the job.

Solutions to performance problems

There are two broad, common solutions for the four basic causes of performance problems. The solutions are:

Training Training interventions teach individuals to do something through presentations, examples, practice, and feedback which they:

Were never taught.
Never learned.
Forgot how to do.

Reporting and Restructuring This includes options such as:

Adapting new policies.
Developing a new appraisal system.
Changing work schedules.
Providing adequate tools.
Rewarding desired performance.
Implementing other managerial actions deemed as appropriate resolutions to the problem.

It should be noted that job redesign, environmental intervention, and organizational development may lead to solutions which normally have little to do with training. In such cases, non-training solutions should be recommended as indicated by the training needs assessment.

Additional information

For additional information on performance problems and their causes, see:

Harless, J. (1975). *An Ounce of Analysis Is Worth a Pound of Objectives*. Newnan, Georgia: Harless Performance Guild.
Harmon, P. (1979). Beyond Behavioral Performance Analysis: Toward a New Paradigm for Educational Technology. *Educational Technology*, 19(2), 5-26.
Keller, J. M. (1985). Motivation and Instructional Design: A Theoretical Perspective. *Journal of Instructional Development*, 2(4), 26-34.
Mager, R. and Pipe, P. (1984). *Analyzing Performance Problems* (2nd Ed.). Belmont, California: Fearon.

Section C
Air Force TNA Model

Introduction

The Air Force Training Needs Assessment (TNA) model is graphically depicted in Figure 2, shown on the next page. Each section of the model is described in detail in order to enhance understanding of the training needs assessment process. Each type of analysis or assessment is further described below.

Types of analyses: HQ USAF

HQ USAF TNA studies are generated from the fundamental activities of the HQ staff. They focus on AF-wide issues such as:

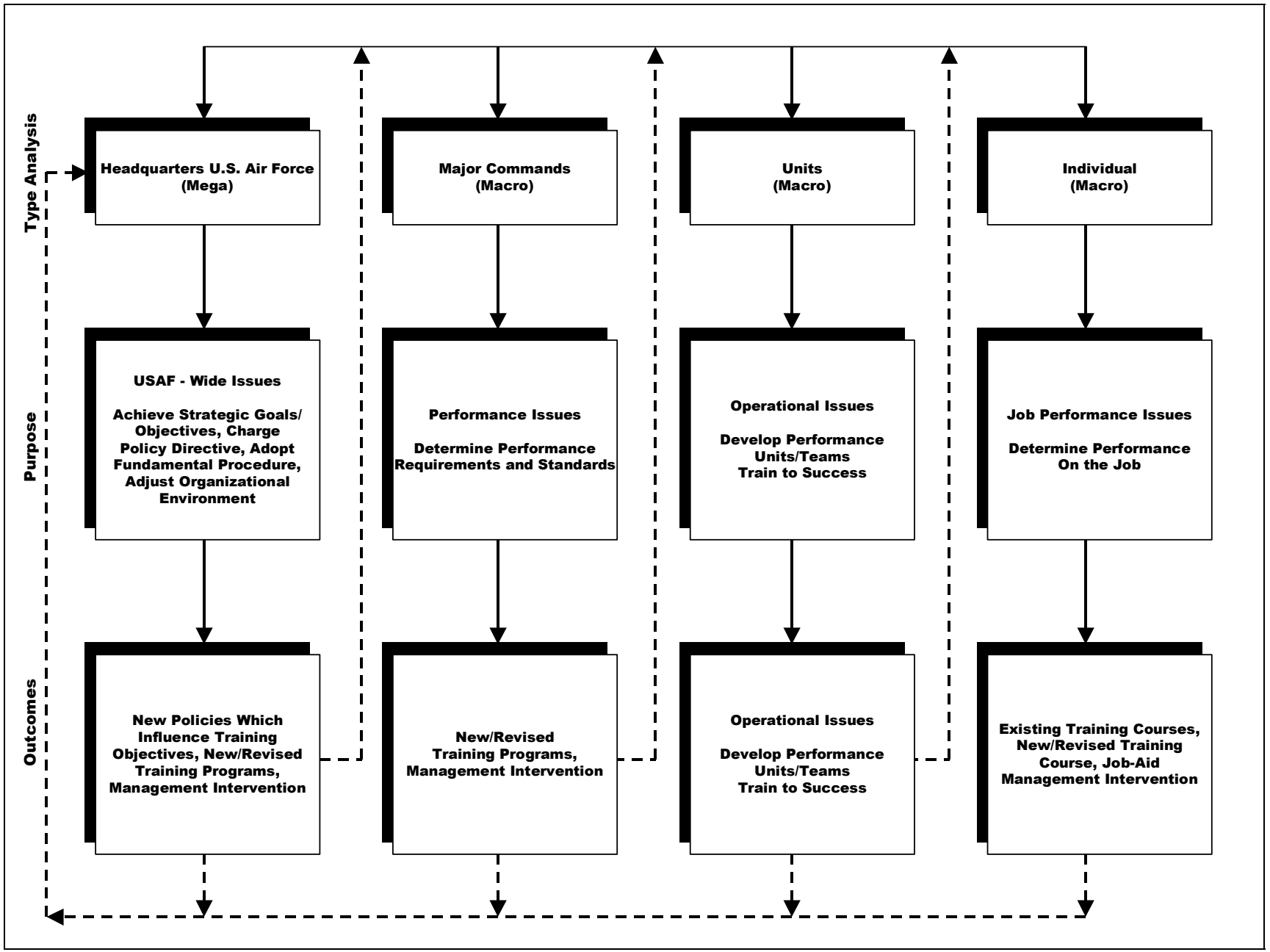
Policy
Goals and objectives
Procedures
Personnel
Environment

Major changes to these areas or the acquisition of new technology or equipment normally result in the need to conduct an assessment. A TNA study may also be conducted as the result of fundamental changes in the Air Force doctrine or mission.

Types of analyses: MAJCOM

MAJCOM TNA studies are generally oriented to performance issues. These studies often stimulate decisions on training resource allocation, operational procedures, and performance requirements.

Figure 2 Air Force Training Needs Assessment (TNA) Model (Next Page)


Type Analysis
Purpose
Outcomes
Headquarters U.S. Air Force (Mega)
Major Commands (Macro)
Units (Macro)
Individual (Macro)
USAF - Wide Issues
Achieve Strategic Goals/ Objectives, Charge Policy Directive, Adopt Fundamental Procedure, Adjust Organizational Environment
Performance Issues
Determine Performance Requirements and Standards
Operational Issues
Develop Performance Units/Teams Train to Success
Job Performance Issues
Determine Performance On the Job
New Policies Which Influence Training Objectives, New/Revised Training Programs, Management Intervention
New/Revised Training Programs, Management Intervention
Operational Issues
Develop Performance Units/Teams Train to Success
Existing Training Courses, New/Revised Training Course, Job-Aid Management Intervention

Types of analyses: Base/Unit

Base or unit TNA studies are generally focused on operational issues. They determine what personnel must be able to do to perform to the stated or required standard. Operational analyses are often needed when new jobs are established or when there are significant changes in jobs. These analyses are usually top-down in direction and involve studying job tasks and performance standards.

Types of analyses: Individual

Individual TNA studies use a micro approach focusing on individual performance. This type of study normally identifies skill or knowledge deficiencies, which result in the development of training to resolve the deficiency. The direction of this type of assessment is from the bottom up and usually involves analyses of performance data such as productivity measures, accident information, and grievance reports.

Purpose

Each type of training needs assessment serves a specific purpose, regardless of whether it is a mega or macro assessment of an organization or a micro assessment of individuals. However, the purposes are often interrelated. For example, a new Air Force policy may have a direct impact on the operation of a MAJCOM, which in turn could impact subordinate units, which could also affect individuals within the units. As can be seen, the changing of an Air Force policy could possibly require that a TNA be conducted at each subordinate level in order to assess the impact of the policy change. The interrelations between the purposes are illustrated in the model by dashed lines.

The purpose of each type of assessment is described below.

Purpose: HQ USAF (Mega)

Training needs assessments at the HQ USAF level assess or analyze AF-wide issues. Conducting this type of a TNA study can result in:

Achievement of strategic objectives
Development of new or revised policies
Revision of directives
Changes in fundamental procedures
Improvements in the environmental conditions

Purpose: MAJCOM (Macro)

At the MAJCOM level, TNA studies focus more on performance issues within a particular command and can serve various purposes. This type of assessment study often results in activities such as:

Development of new requirements
Revisions to existing standards
Changes to current policies and directives

Purpose: Base/Unit (Macro)

TNAs at the base or unit level focus on operational issues. Some of the operational issues addressed during the assessment may result in:

Determination of skill requirements
Allocation of training resources
Improvements in environmental conditions

Purpose: Individual (Micro)

Individual TNA focuses on individual job performance issues and results in determination of the individual's actual performance on the job. The assessment is normally conducted by directly observing job performance, interviewing individuals, or reviewing performance records and information.

Outcomes

The model indicates that TNAs result in various management interventions, which include both training and non-training solutions.

For example, TNAs may determine that training is needed due to:

New strategic initiatives, such as the Air Force becoming the single DoD trainer for basic flight training.
New systems, such as changing the current financial management system to the Defense Business Operations Fund (DBOF) system.
Selecting new methods to meet strategic initiatives, such as Air Logistic Centers (ALC) competing for aircraft maintenance repair contracts.
Development of new operational procedures due to basing changes, such as force bed-down.

Outcomes (Continued)

Differing performance requirements due to consolidated wings changing maintenance organization manning.
New policies on flying tactics that require new skills to be learned.
New flightline equipment that requires an increase in the crew chief's skills and knowledge.
Severe climate locations that require personnel to learn different fueling techniques.
Specialists being required to perform different jobs (cross-utilization).
Individuals being promoted and having to learn new skills and knowledge in order to perform their new jobs.

Also, TNAs may determine that non-training management intervention may be the appropriate solution to an identified problem. Non-training management interventions may include:

New facilities
Additional personnel
Improved working conditions
Changes in policies, directives, or procedures
New or better incentives
Improved management and supervision

While the outcome of a needs assessment may indicate either the need for training or other non-training management intervention, a combination of training and non-training interventions is often indicated.

Additional information

For additional information on the TNA model, see:

Kaufman, R., Rojas, A. M. and Mayer, H. (1993). *Needs Assessment: A User's Guide*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Mager, R. and Pipe, P. (1984). *Analyzing Performance Problems* (2nd Ed.). Belmont, California: Lake Publishing Company: Fearon.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Training Needs Assessment Handbook (1991). State of Washington Department of Transportation. Work Force 2000, Work Group 4C. (1991).

Section D
TNA Process

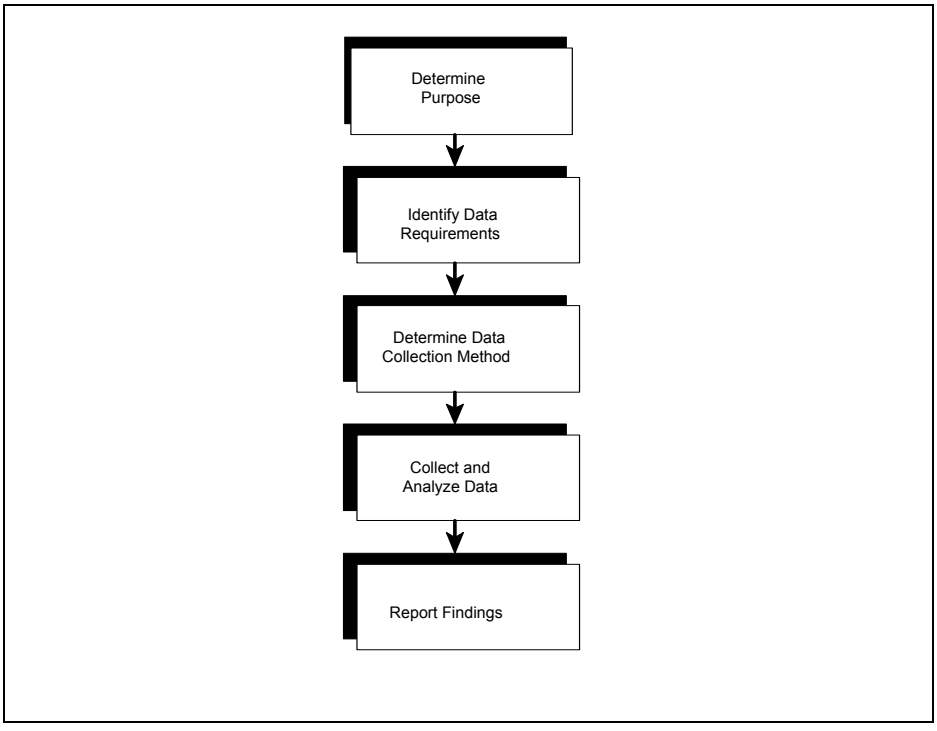
Introduction

The training needs assessment (TNA) process used in the Air Force is a "generic" process that is applicable to all four types of analyses previously discussed in this chapter. Instructional development teams following this generic TNA process are able to effectively and cost-efficiently identify problems and determine the appropriate solutions to these problems. This approach emphasizes the common aspects of methodology; that is, each assessment has an overall purpose, a set of data that responds to the purpose, and a method of obtaining and analyzing the data.

TNA process flow diagram

The generic process used to conduct TNA in the Air Force is illustrated in Figure 3.

Figure 3 Air Force TNA Process



Steps of the TNA process

Following the steps of the Air Force TNA process will ensure that the assessment is conducted in an orderly process resulting in identification of the problem with recommended solutions. Each of the five steps of the process is described below.

Step	Process
1	Determine purpose.
2	Identify data requirements.
3	Determine data collection methods.
4	Collect and analyze data.
5	Report findings.

Step 1: Determine purpose

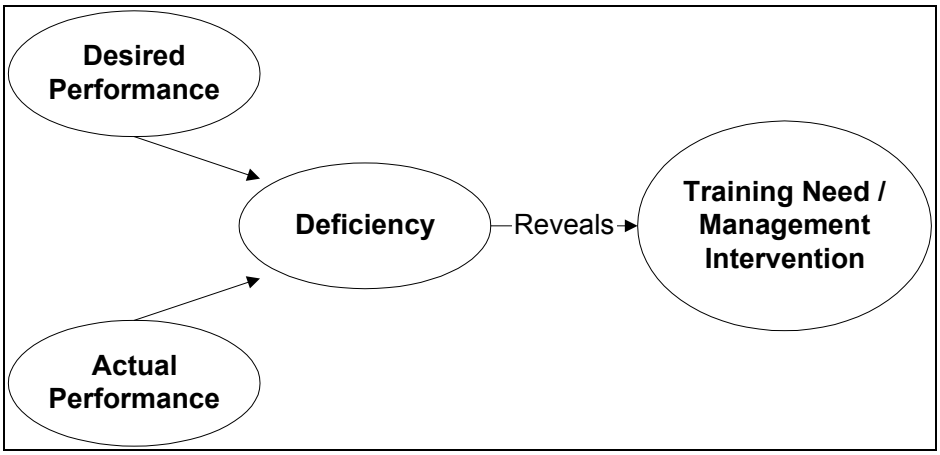
The overall purpose of the TNA study is addressed in the first step of the assessment process. The instructional development team determines the purpose of TNA dynamics in the workplace, proposed management action, publication, or other stimulus that indicates that a training or other intervention is needed. The purpose of conducting a TNA is determined by the type of analysis or assessment performed, as previously discussed in this chapter. The assessment sets the stage for detailed determination of methods and data sources. By first determining the purpose of the TNA, the type of analysis to be done and the objectives of the assessment are identified. Some of the purposes for conducting a TNA are discussed in the previous section of this handbook.

Step 2: Identify data requirements

Once the type of analysis has been determined, the diagnostic information to be gathered is identified. Normally, this information will document some type of performance deficiency or problem. Remember, a performance deficiency is defined as the difference between the desired performance and the actual performance. The deficiency reveals a training need or other management intervention. Figure 4 illustrates this principle.

Step 2: Identify data requirements (Continued)

Figure 4 Skill/Knowledge Deficiency



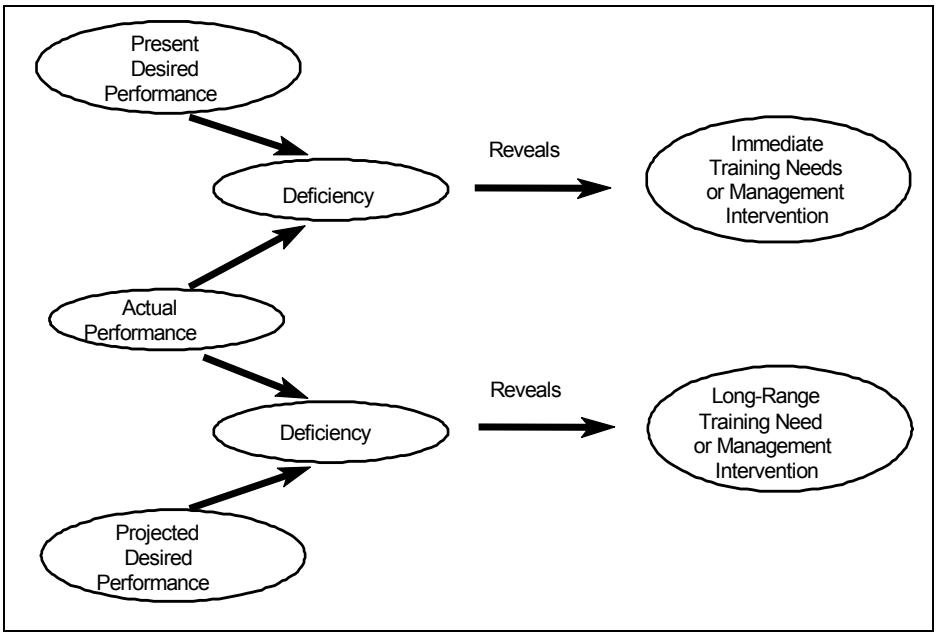
For example, a flightline supervisor is concerned about the lack of skills and knowledge of the ground refueling personnel. A baseline would be compiled on the actual performance, using data such as certification information, and then comparing it to the desired performance, which is based on the ground refueling technical order (TO). The difference between the desired performance and the actual performance defines or reveals the training need.

Existence of a deficiency does not necessarily indicate that a training problem exists or that the solution automatically involves training. The problem may relate to motivation, job design, lack of performance feedback, or other organizational barriers. As suggested in Figure 2, other types of management interventions are indicated in these cases. Interventions may range from team-building exercises to changes in communications or incentives.

When conducting a TNA, the time dimension should be taken into consideration. While instructional developers and managers tend to think in terms of immediate solutions, larger and more complex objectives, such as changes in the organizational environment, introduction of new procedures, or shifts in technologies, require a focus on long-range needs. This dimension is graphically illustrated in Figure 5.

Step 2: Identify data requirements (Continued)

Figure 5 Immediate and Long-Range Time Dimension



Step 3: Determine data collection method

Once the data requirements have been determined and a source for data has been identified, the next step is for instructional developers or a development team to determine the best method of collecting the necessary data in view of the data requirements. Appropriate data sources and data collection methods, as well as other key information needed to conduct the various types of analyses or assessments, are shown in the following four tables.

Headquarters Air Force Training Needs Assessment
Major Command Training Needs Assessment
Base/Unit Training Needs Assessment
Individual Training Needs Assessment

Step 3: Determine data collection method (Continued)

Headquarters Air Force Training Needs Assessment	
Management Decision Level	Air Staff
Direction of Analysis	Top Down
Focus	Strategic Goals and Objectives Policy/Directives Fundamental Procedures New Technologies Organizational Environment
Primary Source of Data	Strategic Goals and Objectives New Missions, Products, Equipment, or Policies Reports and Trends HQ Staff
Output	New Policies Training Objectives New or Revised Training Management Interventions
Methods or Techniques	Consultation with Focus Group Interview Survey Questionnaire Records Reports
Data Source	HQ Goals and Objectives Organizational Environment Indices Efficiency Indices System Changes Management Work Plans and Schedules Resource Consumption Reports

Step 3: Determine data collection method (Continued)

Major Command Training Needs Assessment	
Management Decision Level	MAJCOM Staff
Direction of Analysis	Top Down
Focus	Strategic Goals and Objectives Performance Issues New or Revised Training New Technologies Management Interventions
Primary Source of Data	Strategic Goals and Objectives Operational Procedures Resource Allocation Reports MAJCOM Staff
Output	New or Revised Training Management Intervention
Method or Technique	Focus Group Meeting Interviews/Observations Survey Questionnaire Extant Data Analysis
Data Source	Command Goals and Objectives Operational Procedures Reports Skill Inventories Organizational Environment Indices Efficiency/Productivity Indices

Step 3: Determine data collection method (Continued)

Base/Unit Training Needs Assessment	
Management Decision Level	Organizational Staff
Direction of Analysis	Top Down (Standards) Bottom Up (Tasks)
Focus	Operational Issues Analysis of Specific Job or Group of Jobs
Primary Source of Data	Task Analysis Job Description Managers, Supervisors, and Individuals
Output	New or Revised Training Management Interventions
Methods or Techniques	Task/Job Analysis Consultation with SME or Focus Group Survey Questionnaire Interview/Observation Work Sample
Data Source	Job Description/Specification Performance Standards Task Analysis Reports Work Samples Job Literature Training Reports Operating Problem Analysis and Report Occupational Data

Step 3: Determine data collection method (Continued)

Individual Training Needs Assessment	
Management Decision Level	Immediate Supervisor Trainer
Direction of Analysis	Bottom Up
Focus	Job Performance Issues
Primary Source of Data	Records and Reports Performance Measurements Supervisor Trainer Individual
Output	New or Revised Training Job Aids Management Intervention
Method or Technique	Interviews/Observations Survey Questionnaire Focus Group Testing Work Sample
Data Source	Performance Appraisals Work Samples Interviews/Observations Survey Questionnaire Test Program/Training Reports Occupational Data

Additional information on the advantages and disadvantages of various methods of data collection is provided in the tables starting on page 37. This information is an adaptation from Steadham (1980).

Step 4: Collect and analyze data

Once the instructional developers or development teams have chosen the best method for collecting data, the actual data collection process begins using the selected method. Before starting the actual data collection, consider:

- Obtaining commander's, manager's, or supervisor's support for the project, as applicable.

Step 4: Collect and analyze data (Continued)

Making sure everyone involved in the data collection process understands the purpose.
Letting those involved in the process know the benefit of the TNA study and the resulting training or management intervention.

The advantages and disadvantages of the following assessment methods will be discussed.

Observation
Surveys/Questionnaires
Panel of Experts
Print Media
Interviews
Problem Solving / Group Discussion
Tests
Extant Data, Records, Reports
Work Samples

Observation

Method	Advantages	Disadvantages
Can be as technical as time-motion studies or as functionally or behaviorally specific as observing a new staff member interacting during a meeting. May be as unstructured as walking through an office on the lookout for evidence of communication barriers. Can be used normatively to distinguish between effective and ineffective behaviors, organizational structures, and/or process.	Minimizes interruption of routine work flow or group activity. Generates in situ data, highly relevant to the situation where response to identified training needs/interests will impact. When combined with a feedback step, provides for important comparison checks between inferences of the observer and the respondent.	Requires a highly skilled observer with both process and content knowledge (unlike an interviewer who needs, for the most part, only process skills). Carries limitations that derive from being able to collect first advantage listed in the preceding column. Holds potential for respondents to perceive the observation activity as "spying."

Surveys / Questionnaires

Method	Advantages	Disadvantages
May be in the form of surveys or questionnaires of a random or stratified sample of respondents, or an enumeration of an entire "population." Can use a variety of question formats: open-ended, projective, forced-choice, priority-ranking. Can take alternative forms such as Q-sorts, slip-sorts, or rating scales, either pre-designed or self-generated by respondents. May be self-administered (by mail) under controlled or uncontrolled conditions, or may require the presence of an interpreter or assistant.	Can reach large numbers of people in a short time. Are relatively inexpensive. Give opportunity of expression without fear of embarrassment. Yield data easily summarized and reported.	Make little provision for free expression of unanticipated responses. Require substantial time (and technical skills, especially in survey mode) for development of effective instruments. Are of limited utility in getting at causes of problems or possible solutions. Suffer low return rates (mailed), grudging responses, or unintended and/or inappropriate respondents.

Panel of Experts

Method	Advantages	Disadvantages
Secures information from those persons who, by virtue of their formal or informal standing, are in a good position to know the training needs of a particular group: Commander Managers Supervisors Subject Matter Experts Once identified, data can be gathered from these individuals by using techniques such as interviews, group discussions, and questionnaires.	Is relatively simple and inexpensive to conduct. Permits input and interaction of a number of individuals, each with their own perspectives of the needs of the area, discipline, group, etc. Establishes and strengthens lines of communication between participants in the process.	Carries a built-in bias, since it is based on views of those who tend to see training needs from their own individual or organizational perspective. May result in only a partial picture of training needs due to the typically non-representative nature (in a statistical sense) of a key informant group.

Print Media

Method	Advantages	Disadvantages
Can include professional journals, handbooks, manuals, directives, user's guides, vendor and specifications.	Is an excellent source of information for uncovering and clarifying normative needs. Provides information that is current, if not forward-looking. Is readily available and is apt to have already been reviewed by the client group.	Can be a problem when it comes to data analysis and synthesis into a usable form (use of clipping service or key consultants can make this type of data more usable).

Interviews

Method	Advantages	Disadvantages
Can be formal or casual, structured or unstructured, or somewhere in between. May be used with a sample of a particular group or conducted with everyone concerned. Can be done in person, by phone, at the work site, or away from it.	Are adept at revealing feelings, causes of and possible solutions to problems which the client is facing (or anticipates); provide maximum opportunity for clients to represent themselves spontaneously on their own terms (especially when conducted in a open-ended, non-directive manner).	Are usually time-consuming. Can be difficult to analyze and quantify results (especially from unstructured formats). Unless the interviewer is skillful, interviewee can easily be made to feel self-conscious. Relies for success on a skillful interviewer who can generate data without making interviewee feel self-conscious, suspicious, etc.

Problem Solving / Group Discussion

Method	Advantages	Disadvantages
Resembles face-to-face interview technique, e.g., structured or unstructured, formal or informal, or somewhere in between. Can be focused on job (role) analysis, group problem analysis, group goal setting, or any number of group tasks or themes, e.g., "leadership training needs of the command." Uses one or several of the familiar group-facilitating force-fields, consensus rankings, organizational mirroring, and simulation.	Permits on-the-spot synthesis of different viewpoints. Builds support for the particular service response that is ultimately decided on. Decreases participant's "dependence response" toward the provider since data analysis is (or can be) a shared function. Helps participants to become better problem analysts, better listeners, etc.	Is time-consuming (therefore initially expensive). Can produce data that is difficult to synthesize and quantify (more a problem with the less structured techniques).

Tests

Method	Advantages	Disadvantages
Are a hybridized form of questionnaire. Can be very functionally oriented (like observations) to test an individual's proficiency. May be used to sample learned ideas and facts. Can be administered with or without the presence of an assistant.	Can be especially helpful in determining whether the cause of a recognized problem is a deficiency in skill or knowledge or, by elimination, attitude. Results are easily quantifiable and comparable.	Availability of a relatively small number of tests that are validated for a specific situation. Do not indicate if measured skills and knowledge are actually being used in on-the-job or "back home" group situation.

Extant Data, Records, Reports

Method	Advantages	Disadvantages
Can consist of organizational charts, planning documents, policy manuals, audits, and budget reports. Individual records (grievance, turnover, accidents, etc.). Include minutes of meetings, weekly / monthly progress reports, memoranda, program evaluation reports.	Provide excellent clues to trouble spots. Provide objective evidence of the results of problems within the agency or group. Can be collected with a minimum of effort and interruption of workflow since it already exists at the work site.	Causes of problems or possible solutions often do not show up. Carry perspective that generally reflects the past situation rather than the current one (or recent changes). Need a skilled data analyst if clear patterns and trends are to emerge from such technical and diffuse raw data.

Work Samples

Method	Advantages	Disadvantages
Are similar to observation, but in written form. Can be products generated in the course of the organization's work, e.g., reports, program proposals, records, forms, letters, training designs. Written responses to a hypothetical but relevant case study provided by the analyst.	Carry most of the advantages of records and reports data. Are the organization's data (its own input).	Case study method will take time away from actual work of the organization. Need specialized content analysis. Analyst's assessment of strengths/weaknesses disclosed by samples can be challenged as "too subjective."

When sufficient data has been collected, the instructional developer or development team analyzes the information to determine the problem and its cause, and a solution is selected.

Step 5: Report findings

Results of a needs assessment may vary. During this process, you may be required to prepare both an interim report and final report. The method for presenting the findings will depend on the organization. A brief executive summary may be adequate for some organizations and other organizations may require in-depth reports.

Report data gathering findings on a regular basis to the organization. You do not want to wait until the end of the process to report controversial or unpleasant findings.

The items included in a formal needs assessment report are:

- Executive summary
- Objectives
- Methodology
- Findings
- Conclusions

Step 5: Report findings (Continued)

Recommendations
Supporting data

After the cause of the problem has been determined, the instructional developer or development team reports or documents the findings. This report may contain information such as:

Why the TNA study was conducted
Method of data collection
Who proved in the data
What is the problem
What is causing the problem
Recommended solution to the problem

Additional information

For additional information on the TNA process, see:

Steadham, S. (1980). Learning To Select a Needs Assessment Strategy. *Training and Development Journal*, January, 56-61.
Training Needs Assessment Handbook (1991). State of Washington Department of Transportation. Work Force 2000, Work Group 4C.

Section E
Integration of TNA Model and Process

Introduction

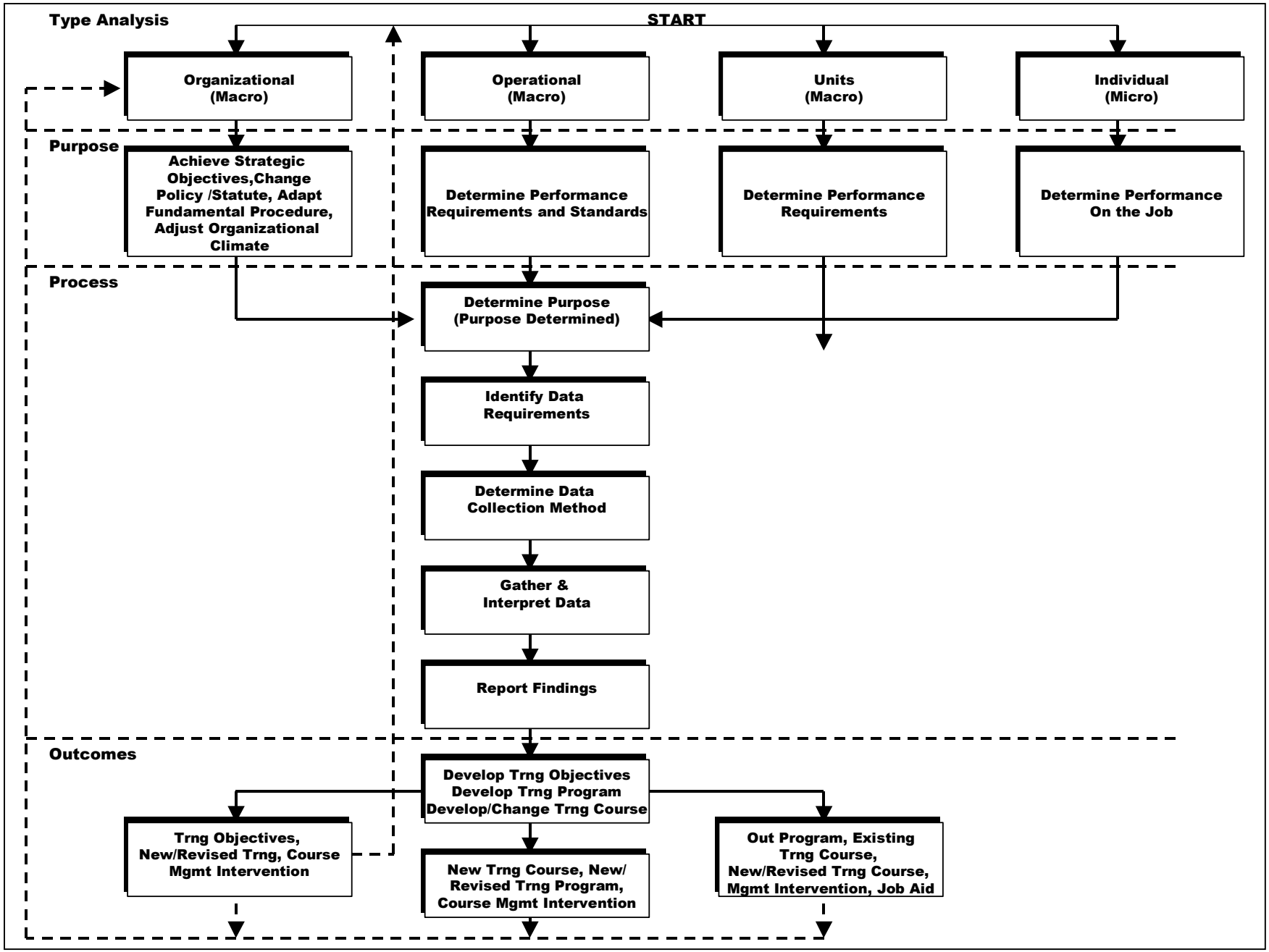
In order for the instructional developer or development team to identify a problem and determine an effective, cost-efficient solution to the problem, the training needs assessment (TNA) model and the assessment process should be thoroughly understood as being one entity.

TNA model and process integration

Figure 6 illustrates the TNA model and the flow of the assessment process. This flow diagram is a graphic picture of a TNA study. It can be used as a quick reference by instructional developers or development teams.

Figure 6 TNA Integrated Flow Diagram

(Next Page)


Type Analysis
START
Organizational (Macro)
Operational (Macro)
Units (Macro)
Individual (Micro)
Purpose
Achieve Strategic Objectives,Change Policy /Statute, Adapt Fundamental Procedure, Adjust Organizational Climate
Determine Performance Requirements and Standards
Determine Performance Requirements
Determine Performance On the Job
Process
Determine Purpose (Purpose Determined)
Identify Data Requirements
Determine Data Collection Method
Gather & Interpret Data
Report Findings
Outcomes
Develop Trng Objectives
Develop Trng Program
Develop/Change Trng Course
Trng Objectives, New/Revised Trng, Course Mgmt Intervention
New Trng Course, New/ Revised Trng Program, Course Mgmt Intervention
Out Program, Existing Trng Course, New/Revised Trng Course, Mgmt Intervention, Job Aid

Additional information

For additional information on integration of the TNA model and process, see:

Training Needs Assessment Handbook (1991). State of Washington Department of Transportation. Work Force 2000. Work Group 4C.

Chapter 3
HOW TO CONDUCT A TRAINING NEEDS ASSESSMENT

Overview

Introduction

Previous chapters in this handbook have provided the basic information necessary for understanding the purposes, types, principles, and process of training needs assessment (TNA). This chapter will focus on **how to** actually conduct a TNA study.

Objectives

The objectives of this chapter are to:

Describe how to plan for a TNA study.
Explain how to implement the plan.
Discuss reporting the TNA findings.
Integrate the TNA model and process into a descriptive explanation of how to conduct a TNA study.

Where to read about it

This chapter contains three sections.

Additional information

For additional information on conducting a training needs assessment, see:

AFMAN 36-2234, Instructional System Development.
Kaufman, R., Rojas, A. M. and Mayer, H. (1993). *Needs Assessment: A User's Guide*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Training Needs Assessment Handbook (1991). State of Washington Department of Transportation. Work Force 2000, Work Group 4C.

Section A
Develop TNA Plan

Introduction

It is unlikely that an effective, cost-efficient training needs assessment (TNA) study can be conducted without adequate planning on the part of those involved in the study. This includes all levels of management, instructional developers, subject matter experts, and development teams, as well as other individuals as applicable. Adequate planning is essential. This section describes the necessary planning activities for conducting a TNA study.

Needs assessment planning

Instructional designers should be able to substantiate why an assessment is needed. They should know the problem, the number of people affected by it, and when they will propose a solution for the problem.

Analysis of organizational charts, strategic business plans, job categories, and human performance problems documents can assist an instructional designer in the development of the needs assessment plan.

Before developing the needs assessment plan, the instructional designer should first validate what is known such as:

Needs assessment planning (Continued)

Situation-Specific Questions	Probing the Issues
What is happening now?	Determine how people are currently performing. Identify the levels of outputs and results that are currently being done.
What should be happening?	Identify the relevant work standards or performance objectives. Inquiry about the relationship that exist between the organization's strategic business plan and employee performance. Determine the results that must be achieved.
How wide is the performance gap?	Determine how the gap can be measured. Research the historical trends of the performance. Determine if the performance gap continues to increase over time.
How important is the performance gap?	Identify the effects of the gap on the organization. Determine how the gap affects individuals inside and outside the targeted group.
How much of the performance gap is caused by deficiencies in knowledge, skills, or attitudes?	Determine if the problem can be broken into parts. Verify if part of the problem is caused by deficiencies in knowledge, skills, attitudes, or environment.

Needs assessment planning (Continued)

Situation – Specific Questions	Probing the Issues
What solutions are cost effective and feasible?	Determine how to solve environmental deficiency problems. How should problems caused by deficiencies in knowledge, skills, or attitudes be solved?
What unintended side effects of taking corrective action can be predicted?	Validate if the target audience (performers) has altered their behaviors during the needs assessment process? Validate if decision-makers (management) interpreted findings of the needs assessment in conformity with logical conclusions reached. Also, validate if will they impose their own personal interpretations on results.

Next, the instructional designer should:

Establish the objectives
Identify the target audience
Select sampling procedures
Identify appropriate data collection methods
Specify instruments and protocols, and
Choose methods of data analysis.

Why plan?

Successful assessments are based on careful planning. This is planning which keeps the activities focused on the purpose for conducting the TNA study. Planning should take into consideration that there is always the possibility that the study will be constrained in some manner, such as by environmental conditions or management's reluctance to support the study. Regardless of the constraints that may be encountered, adequate planning before starting an assessment will result in an effective, cost-efficient study being conducted.

Steps in TNA planning

To develop an effective TNA plan, the instructional developers or the development team will need to follow a logical process. The following steps provide procedures that can be followed during the TNA planning phase.

Step	Procedure
1	Assess the Context
2	Determine Purpose of TNA
3	Determine Data Collection Method
4	Document TNA Plan

Specifying instruments

Instructional designers should specify what instruments they will use in the needs assessment. These instruments may be commercial-off-the-shelf (COTS) or custom-made products such as questionnaires, interview guides, or observation guides.

Protocol

In conducting a needs assessment, instructional designer and the organization should establish what is the business protocol.

Protocol means etiquette and it must be considered in planning the needs assessment. It is the rule that guides organizational behavior. Business protocol should provide guidance to instructional designers how to:

Carry out the needs assessment
Interact with the client
Interpret the results
Deliver the results, and
Plan actions based on the results

During the process of establishing the business protocol, instructional designers should also seek answers to these questions:

1. Who should I interact with during the needs assessment?
2. Whose approval is needed to collect information?
3. Who should receive the needs assessment results?
4. Who should receive periodic process reports?

Step 1: Assess the context

In order to conduct a TNA study the developers or development team should be aware of the organization's context. If its context is not clearly understood, a study can **cause** more problems than it **solves**. The first step in TNA planning is to assess the context in which the assessment will be conducted. This can be accomplished by thinking about and finding answers to questions such as:

Who wants the problem solved or a new technology introduced and why?
Who does not want the problem solved? Is there anyone who prefers that things stay the way they are? Why do they want it to stay the same?
Is this a performance problem or an innovation? If it is perceived that there is a performance problem, who might fear or attempt to block efforts to find the cause? If it is a new system, technology, or innovation, who might not support the change?
Who are the key sources of information for the TNA study? Will they be accessible? Will you be able to go back to them as you need more information?
What records might provide useful information? Are the records available?
How much support does the TNA study have? Does the TNA have support or will it be a problem to get the needed resources such as money, personnel, and time to conduct the study?
Who will need to be informed on the status of the TNA study? Who needs to know and who does not need to know (at least at first)?

Asking these types of questions will not solve all the problems, but it will allow for a clear understanding of the nature or context of the TNA. This knowledge can be used to establish resource requirements and identify constraints.

This step enables the instructional developers to gain a clear picture of the organizational context and a detailed listing of the sources who can contribute to the TNA study.

Step 2: Determine purpose of TNA

As discussed in Chapter 2 of this handbook, the Air Force TNA model shows that there are four different purposes or entry points in the TNA process. In this planning step, the **purpose** or type (**level**) of assessment should be determined. Each purpose can have various outcomes; some are similar, while others are completely different. The entry points correlate to one mega and two macro assessments (HQ USAF, MAJCOM, and Base/Unit) and one micro assessment (individual). The model is presented in this manner because in one instance an individual may have a training need, while in other cases a base or an entire command may require training or other management intervention.

Once the purpose and type (level) of the assessment have been determined, the instructional developers or development team can then think about finding answers to questions such as:

What is the desired performance (optimals)?
What are the individuals currently doing (actuals)?
What are the individual attitudes about the problem (attitudes/feelings)?
What might be causing the problem (causes)?
What solutions are preferred (solutions)?

Finding tentative answers to questions such as these will enable the purpose of the TNA to be more clearly defined.

Step 3: Determine data collection method

In order to determine the data collection method, the techniques and tools to be used will need to be selected. TNA techniques and tools are only briefly discussed in this step, with more detailed information being provided in the next section of this chapter. There are two important rules of thumb that should be considered:

The TNA **purpose** influences the **techniques** selected and questions asked.
The **context** influences the **tools** employed and the sources contacted.

TNA techniques

When determining the data collection method, there are three basic TNA techniques that should be considered:

Extant data analysis
Needs analysis
Subject matter and task analysis

These techniques, which will be discussed in detail later in this handbook, are described below.

Extant data analysis

Extant data is the data that organizations collect which represents the results of personnel performance. It includes information such as:

Audits or productivity figures
Accident reports
Grievances
Absentee figures
Budget reports
Personnel records
Program evaluation reports

When using the extant data analysis technique, what individuals do is not being analyzed; rather, the **effects** of their performance are being analyzed. Using the effects of performance information and then inferring back from those results, the instructional developers or development team can draw a clear picture of the actual performance. The outcomes of an individual's actions are being sought in light of the current performance goals.

Extant data analysis identifies the **actuals** by providing a clear picture of what is actually happening in the work environment, but it does not tell **why** there is a problem or **what** the individual's attitudes or feelings are about the problem.

To collect and review extant data, access to information that already exists is needed. This may include:

Extant data analysis (Continued)

Files and records kept within the organization
Computer printouts
Contract award data
Certification data
Performance appraisals
Requests for transfer
Reports and records

Problems may often be encountered trying to gain access to this type of information. Key actions are:

Determine what information is needed.
Find out where the information is located.
Gain access to it.

The steps for conducting an extant data analysis are given on page 62.

Needs analysis

Needs analysis is the technique that fulfills the entire range of TNA purposes. It is used to seek opinions on:

Actuals
Optimals
Attitudes
Causes
Solutions

While extant data analysis is about inferences based on results, needs analysis is about opinions. Unlike information for extant data analysis, which is already in existence, **needs analysis** involves contact with sources to seek new information and perspectives on why things are the way they are. Specific steps for conducting a needs analysis are given on page 64

Subject matter and task analysis

Subject matter and task analyses yield information on optimal performance and knowledge requirements. By analyzing documents and interacting with subject matter experts (SME), the instructional developers or development team will be able to develop a clear statement of the desired skills and knowledge of

Subject matter and task analysis (Continued)

the job performer. Specific steps for conducting subject matter and task analyses are given on page 71

TNA tools

There are four basic TNA tools or methods that can be used to carry out the TNA techniques. The four tools, which will be described in detail in the next section, are listed below.

Interviews are the most widely used TNA tool for collecting data. Interviews can be used with most sources and they can be effective either in person or over the telephone.

Observations are normally used to gather information about actual performance and are most often linked to the task analysis technique.

Focus Group Meetings are often effective, cost-efficient methods of getting and disseminating information and gaining the much-needed support for TNA studies. The use of focus groups as a data collection method is based on the belief that a group of individuals working together can produce a better product than individuals working separately. Groups are often used as a jury of experts to derive a consensus opinion on optimals.

Surveys and Questionnaires allow the instructional developers or development team to collect data anonymously from large numbers of individuals. Effectively constructed survey questionnaires lend themselves to rapid analysis of the results.

Step 4: Document TNA plan

In the first three steps of the TNA planning process, the instructional developers have been **thinking** or **planning** how the TNA study is to be conducted. During this planning period the developers have thought about the context in which the TNA study will be conducted, the purpose of the study, and the options for data collection techniques and tools. At this point, it is time to **write** or **document** the basic plan for the TNA study.

An example of a simple TNA planner job aid is provided in Figure 7.

Step 4: Document TNA plan (Continued)

A planner, such as this, can be used by developers to organize and document the TNA context, purpose, and data collection options. However, the key is to use a job aid planner that satisfies the documentation needs.

Remember, document ONLY what is necessary to have a usable, effective plan.

Figure 7 TNA Planner Job Aid

TRAINING NEEDS ASSESSMENT PLANNER JOB AID			
CONTEXT			
Resources		**Constraints**	
Managers First Time Supervisors SMEs Extant Data		Time and Money	
PURPOSES			
Description	**Status**	**Sources**	
Optimals Actuals Attitudes Causes Solutions	On Hand Need Need Need Urgently N/A	Master Task List Supervisors / Standards SMEs Supervisors Determine After Cause Identified	
TECHNIQUES AND TOOLS			
Stage	**Technique**	**Tool**	**Source**
1	Subject Matter Analysis	Review	Directives
2	TNA	Group Meeting	Managers/ Supervisors
3	TNA	Interview	SMEs
4	Task Analysis	Review	Master Task List

Step 4: Document TNA plan (Continued)

Figure 8 Strengths and Weaknesses of Selected Data Collection Methods

Methods	Incumbent Involvement	Management Involvement	Time Required	Cost	Relevant Quantifiable Data
Interviews	High	Low	High	High	Moderate
Focus Groups	High	Moderate	Moderate	Moderate	Moderate
Observations	Moderate	Low	High	High	Moderate
Questionnaires and Surveys	High	High	Moderate	Moderate	High

Additional information

For additional information on planning a TNA study, see:

Be a Better Needs Analyst. (1985). Alexandria, Virginia: American Society For Training and Development.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.

Section B
Implement TNA Plan

Introduction

Once the training needs assessment (TNA) plan has been sufficiently documented, it is time for the instructional developers or the development team members to collect and analyze the assessment data. This section provides information on how to use the various TNA techniques, describes the TNA tools that are available for collecting information, and discusses the use of automation in the TNA process.

Where to read about it

This section covers three main topics.

Additional information

For additional information on conducting a training needs assessment, see:

AFMAN 36-2234, Instructional System Development.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.

TNA Techniques

Introduction

In the first part of this section, the three **techniques** that are most often used to conduct TNA studies are described in detail. The three techniques are:

Extant data analysis
Needs analysis
Subject matter and/or task analysis

How to perform extant data analysis

The first TNA technique to be described is **extant data analysis**. There are five basic steps involved in using this technique and are described in detail below.

Step	Process
1	Examine the job and its outcome.
2	Identify quantitative results of the job.
3	Identify qualitative results of the job
4	Determine how to get data and eliminate obstacles.
5	Analyze the data.

Step 1: Examine the job and its outcome

When examining the job and its outcome, the instructional developers or team members should be looking at what the individuals do or might do, and the challenges with which they are confronted. The focus should be on areas that have been identified as problematic.

Step 2: Identify quantitative results of the job

This step begins by listing the tangible and possible quantitative outcomes of the portion of the job identified as problematic. The focus of this step is on results that can be identified and measured objectively, such as the number of forms initiated to order parts or the number of parts failing diagnostic tests. When seeking subjective information, such as the kinds of aggregate feelings that might appear on a survey, the developer is dealing with the qualitative effects of individual performance.

Step 3: Identify qualitative results of the job

In this step, instructional developers should list any reports of qualitative impact of personnel performance. For example, what are customers or users saying? Have there been any complaints or letters of appreciation? Instructional developers are seeking the recorded and natural collection of opinions and responses. Developers are not just counting comments; serious analysis is required of recurring and subjectively derived themes within extant data.

Step 4: Determine how to get data and eliminate obstacles

Once the developers have the lists of quantitative and qualitative results of the job, they will need to determine where to get supporting information. There may be some resistance to developers examining files or looking at computer printouts. To examine the required data, developers may have to justify their need to gain access to the information. Knowing what is needed and how it will contribute to the TNA study will more than likely present a compelling case for gaining access to the data.

Step 5: Analyze the data

Analysis of extant data provides information on what individuals are actually doing on the job. As the data is analyzed, instructional developers should consider the implications of what has been discovered and scrutinize the results to understand an individual's behavior. Developers may find outcomes that reveal why there is a particular trend in behavior.

While extant data might not provide a complete picture of what is going on in the work environment, it does provide a snapshot of the results of what is actually and naturally happening in the organization. The challenge is to determine if the extant data is indicative of larger truths about what individuals are or are not doing on the job. The larger truths become the basis for developing questions for the latter stages of the TNA study.

Once the extant data has been analyzed and the developers are conducting the assessment, they should periodically refer to the results of the analysis, which will help keep the TNA focused and on track.

How to perform needs analysis

As previously noted, **needs analysis** is a systematic process of collecting opinions and ideas from a variety of sources on performance problems, new systems, or technologies. Needs analysis is the most comprehensive TNA technique. It is the primary vehicle for collecting crucial information in order to get a better understanding of the affected source's opinion or idea on the problem, system, or technology.

When using the needs analysis technique, instructional developers or development team members are interested in each source's opinions about optimals, actuals, feelings, causes, and solutions. On the other hand, during extant data analysis, the developers' focus is on results and inferences about actual performance from those results. Needs analysis is normally conducted using one or more of the TNA tools, which are interviews, observations, survey questionnaires, or focus group interactions.

There are four basic steps involved in conducting a needs analysis and are described in detail below.

Step	Process
1	Determine sources for needs analysis.
2	Select and use TNA tools.
3	Develop items.
4	Consider critical incident analysis.

Step 1: Determine sources for needs analysis

In order to perform this first step, instructional developers or development team members will probably need to consult with a wide range of **sources** during the TNA process and before beginning to develop training or recommend other management interventions. Some of the sources that can be used by developers during the needs analysis are:

Potential trainees and their supervisors or trainers
Various levels of management
Customers or users
Civilian or military personnel
Subject matter experts (SME)

Step 1: Determine sources for needs analysis (Continued)

Once the sources have been identified, the developers then determine how many individuals should be involved in the TNA study. The number depends on two factors:

Whether the needed information is being obtained from contacts with small numbers.
How much information and confirmation is needed to feel **confident** and to convince others. Confidence refers to the reliability of the data collected. That is, how likely is it that the findings are due to the treatment or variables in questions rather than an error in the survey or assessment method?

Developers should use confidence percentages (e.g., developers are 95% certain that the data collected reflects aircraft maintenance personnel's attitude toward the use of automated systems for stripping paint from an aircraft) only if subjects are **randomly** selected to interview or survey.

Developers should consider the amount of resources such as time, money and personnel required to achieve the response rate needed to employ inferential statistics in the TNA report. The use of inferential statistics depends on a large response rate upon which to make generalizations. Specific skills are needed to employ and interpret inferential statistics; therefore, using inferential statistics will probably require that a statistician be on the development team.

Step 2: Select and use TNA tools

There are several **tool options** available to the developer that can be used to conduct a TNA. These tools are listed below and are categorized in one of two areas with some tools listed in both.

Individual or small number needs assessment
- Person to person
- Telephone surveys
- Questionnaires
- Focus group meetings

Large number inquiries
- Telephone survey
- Questionnaires
- Automated process

Step 2: Select and use TNA tools (Continued)

Decisions about which tool to use to conduct the TNA study are influenced by:

Purpose of study
Tool use factors

The influence of each area on tool selection is explained below.

Purposes of study

The purposes or reasons for conducting the assessment will influence how developers approach the sources. There are no hard and fast rules. The choices depend on the purposes of the TNA study and the particular situation. Some of the possible purposes for conducting an assessment are to:

Determine Optimals. When determining optimals there is normally no need to worry about anonymity when trying to get information on what an optimal performer knows and does. More often than not this is speculative. Therefore, interviews and focus group meetings are appropriate. The problem with relying on survey information about optimals is that responses rarely provide sufficient detail. Also, optimals for an organization are normally set by individuals in upper management.

Determine Actuals. Actuals are more difficult to determine than optimals. Individuals may not want to provide information on what is actually happening on the job. Developers may want to use anonymous surveys and observations and inferences from extant data to get a clear picture of what is really going on.

Determine Attitudes. If respondents believe that what they say will be used without attribution, interviews and focus group meetings can be used. If respondents are not trusting, the developer will probably have to rely upon anonymous surveys to solicit their attitudes, priorities, and confidence surrounding the situation.

Determine Causes of the Problem. In order to get reliable information about causes of problems, the instructional developers or the development team will probably need to either establish a trusting relationship with the interviewees or convince survey respondents that their responses are truly anonymous.

Purposes of study (Continued)

Involve Large Numbers. The developers solicit support or "buy in" from a large number of individuals at various levels within an organization or unit. In this situation, focus group meetings and surveys may be a cost-efficient tool to use to achieve "buy-in." If a few individuals resist, individual meetings with them would be appropriate.

Tool use factors

Each tool has different characteristics that affect its appropriateness for conducting a TNA study. When selecting the proper tool for the situation, consider the following factors.

Anonymity of Sources. Surveys and questionnaires allow anonymity of the source, while interviews and focus groups do not.

Cost/Time. The cost and time factor is determined by such items as the number of interviewees, size of groups, location of the participants, and length of interviews and meetings.

Opportunity to Follow Up. This is probably the greatest strength of the interview and focus group meeting. Once the instructional developers or the development team members have asked a question and it has been answered, the developers can pursue it further at a later time, if necessary. Questionnaires do not allow the follow-up flexibility.

Response Rate. Rates are normally higher with the more personal tools such as the interview or focus group meeting. Survey response rates are often very low; however, the rates can be affected by certain techniques such as management requiring that individuals respond to the survey.

Ease of Analysis. The ease of data analysis is a factor to be considered when selecting the data collection tool. All tools can cause data analysis problems if the appropriate tool is not used to collect data. A good tool now being used for data collection and analysis is the automated (computer) system, which allows large amounts of data input, more forced-choice questions, and greater flexibility.

Risk. When selecting the appropriate tool, developers should consider the risk to those in the TNA study, especially to professionals who may be involved in the focus groups.

The tool use factors are summarized by Rossett (1987) in the table below.

Tool use factors (Continued)

NEEDS ASSESSMENT TOOLS					
	Interviews			Print Survey	
Factors	In Person		Telephone	Small n	Large n
	Individual	Small Groups			
Anonymity of sources	None	None	None	Some	High
Cost	Depends on number, distance, length	Depends on number, distance, length	Depends on length, number, and cost of calls	Low	Usually high, especially in development of instrument
Follow-up Questions	Good oppor-tunity	Fair oppor-tunity	Good oppor-tunity	Some or none	None
Response Rate	High	High	Usually high	Depends on quality of questions and anonymity	Usually low
Ease of Analysis	Depends	Depends	Depends	Easy with preparation	Depends on quality of questions and data analysis preparation
Risk	Some	High, need group skills	Some	Some, print endures	High, many people receive, and print endures

Step 3: Develop items

The success of TNA studies depends, to a larger degree, on the quality of the items or questions developed to collect data. The approach shown here is from Rossett's (1982) work on item typology. Item typology is based on the purposes for conducting the assessment. Typology solves the problem of "what to ask." Every item, whether used in an interview, focus group, telephone survey, or questionnaire, should show a relationship to one type of question or another. The table below describes the types of questions and the table on the next page provides a quick summary of item typology.

Types of Questions	
Type	**Used to ...**
1	Seek general information about the problem. Describe situation that led to initiation of TNA. Ask what is **needed**.
2	Seek details of the situation. Describe the problem in detail. Ask for **details**.
3	Determine what job incumbents know. Find out if they can do the job. Provide **proof**.
4	Seek individual attitudes. Determine how individuals feel about situation, which is grouped into four areas: Feelings about the topic, skills, and knowledge. Feelings about training related to the topic. Perception of the topic as a priority in relation to other topics. Confidence related to the topic. Ask for **attitudes** and **motivation**.
5	Seek causes of problems. Determine what is creating or contributing to the problem.
6	Seek basic information about respondents. Gain information about respondents that can be used in light of their opinion or performance.

Step 3: Develop items (Continued)

Selecting Item Types	
Use Type …	**To Acquire Information On ...**
1	What the problems are. Who thinks there are problems. Who doubts these problems. What should be happening, in general terms. What is actually happening, in general terms.
2	What should be happening, in detail. What is actually happening, in detail. Who has opinions on the details. Where attention should be focused during the TNA and training program.
3	Whether or not potential trainees know what they need to know. Whether or not trainees are truthful.
4	How people feel about the job, task, system, skill, etc. How they feel about training on it. What priority this has to the sources. Whether or not trainees feel they are able to learn it.
5	What sources think is causing the problem. Which of the possible causes of problems is causing this problem.
6	Who the respondents are. Whether demography or situation influences answers to items.

Step 4: Consider critical incident analysis

Critical incident analysis is a type of questioning, which also takes the instructional developer from general to specific details of performance problems. Critical incident analysis (Flanagan, 1954) is a systematic search for the proverbial "war stories." It is based on interacting with sources to extract details of an individual's experiences. With critical incident analysis, developers identify the details of successful and unsuccessful on-the-job performance. By requiring people to think back on real interactions, thoughts, challenges, successes and failures, the descriptions of actuals and optimals improve in quality, depth, and detail. Critical incident analysis contributes to effective quality training development.

How to perform subject matter / task analysis

Subject matter analysis and **task analysis** are similar techniques for identifying skills and knowledge. Their major difference is the focus or emphases of the analysis. When conducting the analysis, instructional developers should not only focus on the behavioral aspect of job performance, but also on what individuals must know to perform the task. Subject matter and task analysis consist of two basic parts:

Search for details of skills and knowledge of the master performer.
Representation of the information so that elements, structures, and relationships are clearly depicted.

There are four basic steps involved in performing a subject matter or task analysis. These basic steps are described below:

Step	Process
1	Determine data sources.
2	Select tools and collect data.
3	Analyze and organize data.
4	Document TNA results.

Step 1: Determine data sources

The first of the basic steps in performing a subject matter/task analysis is to determine the appropriate data sources for the TNA study. Data sources can be categorized into two broad areas:

Subject matter experts (SME) or subject matter specialist (SMS)
Documentation such as technical orders (TO), reports, checklist, and job aids

If effectively used, both of these sources will contribute significantly to the data collection process. However, instructional developers should select the sources very carefully to ensure that the most knowledgeable SMEs are selected and that the documents chosen as informational sources accurately describe the performance and knowledge requirements or environmental situation. When possible, instructional developers use both sources and compare the information gathered in order to validate the results.

Step 2: Select tools and collect data

Initially, in the TNA planning stage, the purpose of the study was determined, and in the first step of the subject matter or task analysis process, the sources of data were determined.

Once the data sources have been determined, the TNA tools to be used in the data collection process should be determined. Tools that can be used to collect data are interviews, observations, surveys and questionnaires, and focus group meetings, which are described in the next part of this section. If the situation allows, it is normally better to use more than one tool to collect data. This enables developers to use the data collected with one tool to be validated against data collected using another tool.

When the type of tools to be used in the data collection process has been determined, instructional developers begin the data collection process by making necessary preparations. For example, if a survey or questionnaire is to be used to collect data, some of the required preparations are:

Develop the instrument to be used.
Decide who will receive the instrument.

Step 2: Select tools and collect data (Continued)

Determine how many individuals will need to be surveyed.
Set the schedule for data collection.

Regardless of how the data is to be collected, instructional developers or development team members will need to make adequate preparations to ensure that the necessary data is collected in an effective, cost-efficient manner.

Step 3: Analyze and organize data

In this step the collected data is analyzed to determine:

What is the **desired** job performance?
What is the **actual** job performance?
What is the **attitude** of the individuals?
What is the **problem**?
What is **causing** the problem?
What are the recommended **solutions**?

During the data analysis process, developers should also be concerned with organization of the data. By organizing the data, the developers can see how the information goes together and add structure to the job or situation that is being analyzed. Organizing and structuring the data during the analysis process will provide the overall framework for what needs to be done and provide a "roadmap" for getting it done.

Step 4: Document TNA results

During the data collection and analysis process, developers have been writing down information. Now, in this step, they document the results of the TNA study. It is important that the report communicates what was found out during the study. The information in the report can be documented in any one of various methods. For example, it can be presented in an outlined narrative text or it can be graphically presented using graphs and charts.

Either of these formats can be presented using print-based material or computers.

Step 4: Document TNA results (Continued)

The key to documenting the findings is to ensure that the information is communicated effectively to the various sources that will be using the information in the report to make decisions and take corrective actions.

Remember, document only what is necessary and keep it simple.

Additional information

For additional information on the techniques for conducting a TNA study, see:

AFMAN 36-2234, Instructional System Development.

Kaufman, R., Rojas, A.M. and Mayer, H. (1993). *Needs Assessment: A User's Guide*. Englewood Cliffs, New Jersey: Educational Technology Publications.

Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.

Zemke, R. and Kramlinger, T. (1982). *Figuring Things Out: A Trainer's Guide to Needs and Task Analysis*. Reading, Massachusetts: Addison-Wesley.

TNA Tools

Introduction

In this part of the section, the four most often used **tools** to conduct TNA studies are described in detail. The tools are:

Interviews
Observations
Focus group meetings
Surveys and questionnaires

Interviews

Interviews are one of the easiest tools for gathering information about organizational or performance problems. Interviews can be conducted one-on-one or by telephones. The benefits of each method are listed below:

Benefits	One-on-one Method	Telephone Method*
Human interaction	✔	✔
Observe facial gestures and non-verbal cues	✔	
Can be conducted in a structured environment (e.g., objectives and questions)	✔	✔
Can be conducted in an unstructured environment (e.g., objectives but no questions)	✔	✔
Individuals who cannot be easily accessed		✔
Effective in gathering small amount of information		✔
Use of a script** (e.g., questions)	✔	✔

* When conducting a telephone interview use a moderate tone, avoid speaking to rapidly, and keep the discussion focused.

** A script combined with an interview protocol maintains the accuracy and consistency of the data. Script interviews inhibit spontaneity.

How to conduct an interview

Interviews are active interchanges between the developer and the sources. This interchange can be in person or it can be accomplished by telephone. Interviews can also be conducted with one individual or a group of individuals. They may be formal, highly structured interchanges with prepared questions, or they may be very casual with a great deal of flexibility. There are four basic steps in conducting an interview. An explanation of each step follows:

Step	Title
1	Prepare for the interview.
2	Begin the interview.
3	Conduct the interview.
4	Conclude the interview.

Step 1: Prepare for the interview

Before conducting an interview, instructional developers should make adequate preparations. Some of the activities that will help get ready for the interview are as follows.

Know why the interview is being conducted. Developers need to know the purpose for conducting the interview. That is, they need to understand what they are looking for and what they expect to gain by conducting the interview.

Have a plan or guide for conducting the interview. Having a plan or guide will help keep the interview on track. It will ensure that the purpose of the interview is achieved and that the needed information is gained from each source being interviewed.

Know the subject or task to be discussed in the interview. Developers should know something about the subject, task, or problem to be addressed in the interview to ensure that the time spent conducting the interview is effective.

Choose the time and place of the interview wisely. The time and place chosen for the interview can have a significant impact on the information collected during the interview. To achieve the best results, the place should be quiet and comfortable, with no distractions. If possible, the time and location of the interview should be acceptable to the interviewee.

Step 2: Begin the interview

There are a number of important points that the developer should observe when beginning the interview. Some of these items are:

Be on time for the interview. Regardless of whether the interview is being conducted in person or by telephone, start on time. The interviewee's first impression of the interview and interviewer is often a lasting impression. Therefore, the first moments are critical to the overall success of the interview.

Ensure that the interviewee knows the purpose and intent of the interview. The developers should explain who they are, find out personal information about the interviewee, explain why the interview is being conducted, and discuss the intent of the interview.

Make sure the interviewee is comfortable and relaxed. Ensure that the environmental conditions are appropriate for the interview. To help the interviewee relax, start the interview by making "small-talk" and getting to know the interviewee. This will enhance the interviewee's willingness to provide needed information.

Ask simple, non-controversial questions at first. Asking difficult and controversial questions at the beginning of the interview can make the interviewee apprehensive and reluctant to provide needed information.

Allow and encourage interviewees to do most of the talking during the main part of the interview. The interviewer will likely do most of the talking during the initial stage of the interview and when summarizing at the end of the interview. However, during the main part of the interview the interviewer should let the interviewee do most of the talking. During this time the interviewer should guide the interview to keep it on track.

Step 3: Conduct the interview

Success of the interview will depend, to a great degree, on how well the first two steps of the process are accomplished. In this step, success of the interview depends on:

Asking the right questions. Each question should seek information that is focused on the purpose of the interview.

Hearing how the interviewee answers the questions. Active listening is very important during interviews. The interviewer should clearly understand what is being said and meant by the interviewee.

Documenting how the interviewee answers each question. The interviewer should not try to remember what is said during the interview. The interviewee's responses to questions should be documented. This can be done by taking notes or using a tape recorder.

Step 4: Conclude the interview

The manner in which the interview is concluded will change for each interview since it depends on what happens during the interview. However, there are several items to considered when concluding an interview:

Give the interviewee time to ask questions.
Summarize what has been said during the interview.
Explain how the information will be used in the needs assessment process.
Inform the interviewee that additional data may be needed at a later date.
Thank the interviewee for participating in the interview.

How to observe job performance

Observation is a method used to collect data during a needs assessment. When used systematically, this method can provide meaningful results. Observational data can be collected in a structured or unstructured fashion. The structured observations reduce the potential for bias, increase the reliability of observations, and provide an accurate way to report data. You should use unstructured method of observation to obtain an initial feel for a situation then follow-up with a structured observation.

How to observe job performance (Continued)

Observation is an effective method of gathering information for the TNA study. Information is obtained by directly observing behavior and interacting with individuals on the job. When using this tool, developers use their senses to perceive what is actually going on in the work environment at the time of individual performance. During the period of observation, developers will want to determine:

How **exemplary** performers do their job.
How **average** performers do their job.
What **problems** performers have on the job that are different from the others.
What is **causing** the problem.

There are four basic steps that developers should follow in order to effectively observe job performance. An explanation of each step follows:

Step	Title
1	Prepare for observation.
2	Notify individuals who will be observed.
3	Conduct observation.
4	Follow up observation.

Step 1: Prepare for observation

In the first step, instructional developers or development team members should make the necessary preparations for observing job performance. The developers should:

Clearly understand the **purpose** of the observation.
Select the **method** of observation that will provided the desired information.
Develop a **checklist** or **guide** to structure the observation process.

Step 2: Notify individuals who will be observed

Make sure that everyone (workers, supervisors, and management) directly or indirectly involved in the observation is informed of the process. Ensure they know:

The purpose of the observation.
The scope of the observation.
How long the observation will last.
That it is **not** an evaluation of personnel.
That all personnel should perform their jobs normally.

Step 3: Conduct observation

Once the developers have made preparations for the observation period and everyone involved in the process has been informed; the next step is to conduct the observation.

Zemke and Kramlinger (1982) suggest that the observation process should be done in two stages. The **first stage** is a holistic look at the overall situation. It is intended to get the "big picture" or a "broad-brush" look at the tasks involved. The **second stage** of the observation process, which is conducted after the first look has been completed, focuses on the details of the tasks.

Step 4: Follow up observation

Normally, during the observation period, questions or situations will require the developer to make a follow-up to the observation period. For example, developers may find it necessary to follow up in order to find answers to questions about how a task is performed, to get a better understanding as to why a task is performed in a specific manner, and to resolve conflicts in the way different individuals perform the same task.

How to conduct focus group meetings

The **focus group meeting** is an effective TNA tool. Through meetings, information can be gathered and dispensed quickly, and rapport can be established between the instructional developers and personnel within an organization or unit. Focus group meetings are used to:

Solicit opinions about actuals, optimals, attitudes, causes and solutions.
Determine options and range of alternatives.
Prioritize and make decisions.
Make individuals aware of what is happening.
Build rapport and solicit support.

There are five basic steps that instructional developers should follow to conduct an effective focus group meeting. An explanation of each step follows:

Step	Title
1	Prepare for the meeting.
2	Start the meeting.
3	Conduct the meeting.
4	Conclude the meeting.
5	Follow up as required.

Step 1: Prepare for the meeting

Normally, preparing for a focus group meeting is similar to preparing for interviews and observations. Preparation for group meetings usually involves activities such as:

Determining why the meeting is being conducted. The developers need to be clear on the purpose of conducting the meeting. For example, is the purpose of the meeting to determine the optimals of the job or is it to isolate the causes of the problem?

Developing a plan or guide for conducting the group meeting. A plan or guide is essential for conducting an effective meeting that produces the desired results. The guide should identify the purpose of the meeting, establish the roles and responsibilities of the participants in the meeting, and set the procedures for conducting the meeting.

Step 1: Prepare for the meeting (Continued)

Identifying participants and assigning roles. There are four key roles that should be filled in order to have a successful group meeting. These roles or positions are:

Planner. This person, who is normally an instructional developer or member of the development team, is responsible for planning the meeting, selecting the participants, and assigning roles to the participants.

Facilitator. The facilitator carries out the established plan or agenda by working with the group to achieve the desired goals of the meeting. This requires the facilitator to be supportive and responsive to the group, while keeping the group focused and moving toward the goal.

Recorder. The individual selected to be the recorder documents what happens during the meeting. This individual should record what is said and not editorialize.

Participants. These are the individuals who are brought together to express their opinions, share ideas, and ask questions to ensure that the purpose of the meeting is achieved.

Preparing the meeting place. When planning the meeting, the developers should try to select a meeting place that is adequate and convenient to the participants. The meeting facility should be set up or arranged prior to the meeting to ensure that everything is conducive to a successful group meeting.

Step 2: Start the meeting

Getting started on the "right foot" is critical to the success of any group meeting. There are several things developers can do initially that will help ensure that the meeting accomplishes the desired goals, such as the following:

Introduce the participants. It helps to "break the ice." Groups normally work together better and productivity is higher when individuals know something about the other participants in the group.

Step 2: Start the meeting (Continued)

Inform group participants of the plan or agenda for the meeting. Individuals and groups perform better when they are informed about what is planned and how it is going to be accomplished.

State the purpose of the group meeting. If individuals participating in the group meeting know the purpose of the meeting, it helps the facilitator keep the meeting on track and moving toward the expected goals or outcomes.

Ensure that the participants understand the rules or process by which the group meeting will be conducted. If individuals know the rules, they are likely to be more productive and achieve the desired goals more readily.

Step 3: Conduct the meeting

Once the initial activities of starting the meeting have been completed, the next step is to conduct the meeting. In order to conduct an effective group meeting, two things must happen.

Progress toward the goal or purpose must be maintained. Progress of the meeting should always be focused on the purpose of the meeting. This is to ensure that the information being generated during the meeting will enable the developers to complete the TNA study.

Participation by each individual is essential in the group process. Ensure that the outcome of the meeting is a group effort. However, remember that individual ideas and attitudes are important to the group process. All individuals should be encouraged to actively participate in the group effort; this helps them "buy in" to the final output and makes them feel like a part of the team.

Step 4: Conclude the meeting

Before concluding the meeting, instructional developers or members of the development team should:

Determine if the purpose of the meeting has been achieved.
Decide if the information collected is sufficient to complete the TNA study.
Summarize what has been discussed.
Thank the members for participating in the group effort.

Step 5: Follow up as required

In the last step of conducting a group meeting, developers take the required follow-up actions to complete activities resulting from the meeting. For example, it may be necessary to brief management, send copies of the meeting to the participants, or find answers to questions remaining unanswered from the meeting. It is also a good idea to officially (through channels) thank each participant. This shows the individuals and management that the developers appreciate their efforts in the study.

How to develop surveys and questionnaires

Developing good **surveys and questionnaires** is not an easy task. Following a systematic process, you can achieve the desired results. The steps involved in preparing and implementing surveys and questionnaires are:

Step	Title
1	Preparing
2	Designing
3	Developing Questions
4	Writing Cover Letters
5	Piloting Testing

Step 1: Preparing

Before constructing a survey or questionnaire:

Establish a goal. Identify the purpose of the survey or questionnaire.
Familiarize yourself with difficult terms. Use a subject matter expert (SME) to explain technical jargon in layman terms.
Observe people in their work environment. Watch how people actually perform job tasks.
Review reports. Analyze the data in reports to identify trends.

Step 2: Designing

It is important to consider the following factors when designing a survey or questionnaire:

The size of the survey: For large groups use closed-ended quantitative questions. These can be scored and tabulated easily by a computer.

Step 2: Designing (Continued)

Conduct separate interviews or focus group, if qualitative information also needs to be collected.

How data will be analyzed: Consider using external agencies to assist in analyzing the data. Large universities with data processing departments can provide this service for a nominal fee.

Using color schemes: Use a color-coding system if a large number of surveys are being sent to different sources. This technique allows surveys to be pre-sorted and distributed easily.

Step 3: Developing questions

Nothing is more frustrating than sending out surveys and finding out later that the respondents misinterpreted the question(s). Following a few basic guidelines, you can avoid this situation.

Most surveys and questionnaires use two types of questions: open-ended and closed-ended.

Open-ended questions

Open-ended questions require respondents to answer in their own words. This type of question encourages in-depth responses as opposed to limited responses.

Sequence: The sequencing of questions is important. Begin survey or questionnaire with simple and interesting questions. Potentially sensitive questions should be located near the end of the survey or questionnaire.

Length: A question should seek information about only one item. Questions asking for multiple items of information should be avoided. Respondents usually overlook the second portion of multiple item questions.

Complexity: Always word questions so they can be answered easily. Avoid asking questions that require extensive calculations.

Closed-ended questions

Closed-ended questions allow respondents to choose from defined options. Respondents cannot elaborate on their answers for closed-ended questions. These types of closed-ended questions are:

Multiple choice: Multiple choice is the most common type of closed-ended question. This question lists three or more potential answers from which the respondent must choose.

Forced Choice: You can only make one choice with forced-choice questions (e.g., yes or no and true or false).

Nominal Scale: Questions with no prescribed order use nominal scales. For example:

Which of the following departments do you work with most closely?

a. Technology
b. Information Services
c. Human Resources
d. Marketing

Likert Scale: Questions that ask respondents to rank, rate values, or attitudes use Likert scales. When using the Likert scales, assign the most positive value at the high end of the scale.

Closed-ended questions (Continued)

For example:

1 = strongly disagree
2 = disagree
3 = somewhat agree
4 = agree
5 = strongly agree

Interval Scales: Use an interval scale question to collect demographic data. This type of question is useful in obtaining information about a range of possibilities. For example:

How many times have you attended training classes about your computer system within the last 3 years?

Under 4
4
5
6
Over 6

Questions must be clear and concise to be effective. Use simple words and avoid leading and negatively phrased questions. Below is a chart that identifies when to use specific questions:

Step 4: Writing cover letters

The cover letter should provide the purpose of the survey or questionnaire and explain how to complete it. It should describe how respondents will benefit from the study.

Include in the letter an endorsement from a senior staff person stating the importance of the study. Also, communicate whether the information will remain confidential or not.

The letter should provide instructions explaining how to use the survey or questionnaire. The instructions should:

Describe if the respondents should circle or check the correct answer or answer the question with a comment

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Step 4: Writing cover letters (Continued)

State how long it takes to complete the survey or questionnaire
Identify when to complete and where to return the survey or questionnaire

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Step 5: Piloting testing

You should pilot test the survey or questionnaire before distributing it to the entire population. A pilot test can identify problems such as:

Are the instructions clear and concise?
Can respondents understand the questions?

Can respondents answer questions easily?
Do respondents have enough space to record comments?

The pilot testing process consists of several steps. If diverse groups will be surveyed, select a few people from each group or subgroup. In a private setting:

Distribute the form and ask respondents to complete it while you wait and remain onsite.
Observe the group's reactions closely and watch facial expressions for reactions. This will indicate if the survey or questionnaire causes confusion or frustration.
Encourage respondents to express problems they have with the survey or questionnaire.
Summarize the results of the pilot test.
Make the appropriate changes to the survey or questionnaire.

How to develop surveys and questionnaires

Surveys and questionnaires are widely used assessment tools. They are normally an effective, cost-efficient method of collecting information from large numbers of individuals. The process is as follows:

Surveys or questionnaires are prepared for a specific purpose.
Surveys or questionnaires are randomly sent to individuals in the field.
Individuals respond to the sender.
Data is analyzed.
Results are documented.

How to develop surveys and questionnaires (Continued)

There are five basic steps involved in developing an effective survey or questionnaire. An explanation of each step follows:

Step	Title
1	Determine what is needed and from whom.
2	Develop effective items.
3	Write clear directions.
4	Develop cover letter.
5	Check survey or questionnaire.

Step 1: Determine what is needed and from whom

In the first step, it is necessary to determine what is actually needed and the source of information. Determining what is needed is a very important step in survey or questionnaire as to whether everyone will be surveyed or a random sample of the population will provide adequate information. If the population is too large for everyone to receive a survey or questionnaire, a sampling of the population should be surveyed. To ensure that the sampling represents the entire population, randomization should be used.

Randomization is the process by which developers ensure that all members of the population have an equal and fair chance of being selected to receive the survey or questionnaire. The number of individuals selected for the randomly drawn sample depends on the total population size. Statistics books present tables of the minimum number of individuals who must be sampled to make generalizations about the larger population. The following is a portion of the National Education Association table that illustrates sample sizes required for a given population.

Sample Size Requirements	
Population Size	**Sample Size**
100	79
200	132
500	217
1000	278
3000	341
8000	367
15000	375

Step 1: Determine what is needed and from whom (Continued)

When conducting a random sample, some control of the sampling may be required. For example, developers must ensure that the sample is not focused in one MAJCOM, which could easily skew the data collected.

Step 2: Develop effective items

The type of questions to be asked on surveys or questionnaires is determined by the purpose of the survey and what information is needed. An item topology, which provides information on the various types of questions to ask, is found on page 85.

When developing surveys and questionnaires, the **format** and **wording** of the items or questions is also important. There are two basic question formats that can be used. They are:

Forced-choice
Open-ended

These question formats are described below.

Forced-Choice Questions. A forced-choice item provides respondents with a fixed set of options from which to choose. For example, the item will say "which of the following" or "rank the following" or "rate the following according to ..."

Forced-Choice Question Example:

What types of training are used in the organization? Estimate the percentage of training for each method.

1. On-the-Job ____%	6. Simulators ____%
2. Computer-Based ____%	7. Maintenance Trainer ____%
3. Self-Study Packages ____%	8. Actual Equipment ____%
4. Classroom ____%	9. Weapon System ____%
5. Part-Task Trainer ____%	10. Other (What Kind?) ____%

Step 2: Develop effective items (Continued)

There are several ways to develop forced-choice items. The choices are nominal, ordinal, and interval. Each type of forced-choice question has implications for data analysis. For example:

Nominal scales name or describe who the respondent is.

Nominal Example:

Check the block that applies to you:

____ Male
____ Female

Ordinal scales ask respondents to select a category, which reflects some type of ranking.

Ordinal Example*:*

Which best describes your confidence in your ability to operate the new computer?

_____ Very confident
_____ Confident
_____ Somewhat confident
_____ Not at all confident

Interval scales provide options in which the difference between units is equal and predictable. These are often used to gather demographic data.

Interval Example:

How many times have you attended training classes on your computer system in the last five years?

____ 0
____ 1-3
____ 4-6
____ 7-9
____ more than 9

Step 2: Develop effective items (Continued)

Open-Ended Questions. An open-ended item allows the respondent to make a personal answer. The range of responses is wide. Often a combination of forced-choice and open-ended questions is appropriate.

Open-Ended Question Example:

How well does the instructional system development (ISD) process support development of training for the ten methods listed in the previous question?

When developing items, **wording** is equally as important as the format. Select words that are familiar, and not loaded with controversial meanings. The characteristics of the population will influence the search for the right words to use. There are several rules that will help developers choose the right word when developing an item. Some of the rules are:

Keep the reading grade level at the appropriate level for the population.
Use standard English.
Avoid multi-syllable words when possible.
Use short sentences.
Don't use jargon unless it is necessary to understand the item.

Step 3: Write clear directions

Write clear directions so the respondent will understand the survey or questionnaire. Include explanations, definitions, acronyms, and abbreviations. Information such as this will improve the survey, make it easier for the respondent, and improve the probability that the necessary data is collected. Good directions will tell the respondents what they will be expected to do and how.

Step 4: Develop cover letter

The cover letter is an important part of the survey or questionnaire; it is the first thing the respondent sees. The cover letter should be clear and to the point, and provide the necessary information about the survey or questionnaire. An effective cover letter includes information such as:

Step 4: Develop cover letter (Continued)

States why the respondent has received the survey or questionnaire.
Identifies the purpose of the survey or questionnaire.
Explains why the survey or questionnaire should be completed and returned.
Provides directions on how and when to respond.
Expresses appreciation to the respondent for participating in the survey.

Step 5: Check survey or questionnaire

In order to develop an effective, cost-efficient survey or questionnaire, developers should make sure each part is reviewed or checked before it is finalized. It is often easy to overlook a vital part of a survey during the development process. A good method for ensuring that nothing is left out of the survey or questionnaire is to develop a simple job aid to ensure that nothing is overlooked. An example of a job aid that can be used is included below.

Step 5: Check survey or questionnaire (Continued)

Survey/Questionnaire Development Checklist Job Aid
Survey/Questionnaire Cover Is the survey/questionnaire addressed directly to the respondent? Is the purpose of the survey/questionnaire clearly stated? Does it include appropriate introductory comments? Does it explain how the respondent was selected to receive the survey/questionnaire? Is the importance of responding explained? Does it explain how and when to respond? Is the respondent "thanked" for participating? **Survey/Questionnaire Directions** Are the directions clear? Are they brief? Are they written for the appropriate audience? Do they include all of the information needed to respond to the survey/questionnaire? **Survey/Questionnaire Items** Are the items and pages numbered? Are the items written to the appropriate reading and interest level of the respondent? Are bolding, highlighting, underlining and white space used appropriately? Is there only one purpose per item? Is each item linked to a specific item type? Are the items clustered or grouped according to the parts of the job or task? Are the items primarily forced-choice items?

Additional information

For additional information on TNA techniques and tools, see:

AFMAN 36-2234, Instructional System Development.
Mager, R., and Pipe, P. (1984). *Analyzing Performance Problems* (2nd Ed.). Belmont, California: Fearon.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Zemke, R. and Kramlinger, T. (1982). *Figuring Things Out: A Trainer's Guide to Needs and Task Analysis*. Reading, Massachusetts: Addison-Wesley.

Using Automation in TNA

Introduction

Traditionally, TNA studies were conducted with tools that required paper and pencil to gather and document the information. However, most tools that require paper and pencil are also adaptable to an automated process. This is especially true for large TNA studies that use the survey or questionnaire as the instrument for gathering the information.

When to use automated systems

When making the determination to use an automated system to conduct a needs assessment, instructional developers or development team members should consider several key factors:

Sample Size. If the assessment requires information to be gathered from a large number of individuals or the amount of information to be collected from each individual is significant, then it is likely that automation would eliminate much of the labor-intensive activities of entering and analyzing the data.

Cost. The cost associated with an automated study will normally be less than a manual study if the population for the TNA study is large (over 100).

Extensive Analysis. If the collected data requires extensive analysis, then it is likely that once the database is developed, analysis will be easier and can be done more quickly.

Automatic Report Generation. If the goal is to have some of the TNA reports automatically generated from the analysis, instructional developers should consider automating the process.

Statistical Studies. When it is necessary to conduct a statistical study to assure reliability and validity of the data, then automation is probably the best way to conduct the analysis.

Application of automated systems

Automated systems are applicable to all stages of the TNA process. For example, automation can be used in:

Administration of TNA Data. There are several options for inputing data. Some of the options include optical imaging, Profs system, or computer modem.

Analysis of TNA Data. Options include standard database packages such as Statistical Package for the Social Sciences (SPSS) and Statistical Analysis System (SAS), custom-built software for specific task, or authoring software to build instruments and analyze data.

Reporting TNA Data. Most software is designed to provide summaries of the database analysis and many have structured reports to meet diverse user needs.

Section C
Report TNA Results

Introduction

The training needs assessment (TNA) study concludes when the results of the study have been communicated to those who require the information. The information can be reported by various methods; however, the **key to good reporting** is to keep it simple and report only what is necessary.

What should be reported?

Reporting the results of a study should focus on several key areas. Providing information in these areas is essential. Individuals reading the report should obtain a clear understanding of:

Why the TNA study was conducted.
How the data was gathered.
What was found during the study.
What are the implications of the findings.

How should it be reported?

Another key aspect of reporting the results of a TNA study is to determine how to present the information in the report. As previously mentioned, a key to good reporting is to keep it simple and report only what is required. However, there are other factors that play a part in good reporting and should be considered when reporting the results of a study. Some factors to be considered are:

Use purpose of the TNA study as the organizing theme to present outcomes.
Select what is essential to include in the report and what can be omitted.
Keep narratives brief by placing details in appendices.
Use tables and charts to simplify information.
Use percentages and other descriptive data to present information.
Use standard English.

How to report TNA results

Once the study has been completed, it is time to report the findings or results. As with any activity, in the TNA process there are specific steps that should be considered when reporting results of a study. The following prescribed steps will ensure that findings are reported in a clear, organized manner. These steps are described below.

Step	Title
1	Decide who should know the results.
2	Determine why the report is being prepared.
3	Decide how to report the findings.
4	Report the results of the study.
5	Communicate effectively.

Step 1: Decide who should know the results

Before starting the process of reporting the results of a TNA study, the developers should decide who needs to be informed of the results of the study. It is likely that the individuals who need to know the results of the study will be similar to the individuals that were identified during the planning stages of the assessment. Once it has been determined who needs to be informed, the developers should decide why the individuals were selected. Knowing why individuals were selected will help focus the content of the report on their needs.

Step 2: Determine why the report is being prepared

In order to develop an effective, comprehensive report of the TNA findings, developers should determine the reasons or purposes for the report. Once the reasons have been determined, developers can build the report around those reasons. There are many different reasons for reporting the results to various individuals at different organizational or unit levels. For example, some of the reasons are to:

Provide information on optimals, actuals, and attitudes.
Identify the problems and causes.
Report details surrounding the issues.
Recommend solutions.

Knowing why the report is being prepared will help keep it focused on the purpose.

Step 3: Decide how to report the findings

In this step, developers should decide on the most effective method of communicating the TNA results. The results of a study can be effectively communicated orally, in writing, or by automated methods. The most effective method will depend on the nature and scope of the results and to whom the information is being provided. Another consideration is how management, at the various levels, wants to receive the information.

When deciding the most effective method of reporting the results, developers should also consider whether the report should be formal or informal. This will be determined, to a great degree, by to whom the information is being provided, and how it will be used.

Step 4: Report the results of the study

When developing a report, developers or team members should provide specific information on:

Why the training needs assessment study was conducted.
How the information was gathered.
Findings of the study.
Implications of the study.

Effectiveness and acceptability of the report will depend on how well the above information is documented.

Remember, keep it simple and report only the necessary information.

Job aids for TNA reporting

Job aids can help develop and report results of TNA studies. An example of a simple job aid that can help develop and report TNA results is provided below. It should be remembered that this job aid is only an example and can be expanded or changed as necessary.

Job aids for TNA reporting (Continued)

Job Aid For Checking TNA Report Content and Format			
Yes	**No**	**N/A**	**Report Content and Format**
			Is the report being provided to those who need to know the information?
			Does the report explain the purpose of the TNA study?
			Does the report explain how the TNA information was gathered?
			Are the results of the TNA study explained?
			Are the implications of the TNA study addressed?
			Does the report include recommendations?
			If the report is lengthy, is the content summarized?
			Are applicable appendices and references included in the report?
			Was the reporting method (oral, written, or automated) selected based on purpose and need?
			Was the formality selected based on purpose and need?
			Is the report format clear, brief, and to the point?
			Is the content of the report well organized?
			Is the report of high quality?
			How does the report look? Is it professional?
			Is the report easily duplicated, if necessary?

Additional information

For additional information on reporting the results of TNA studies, see:

Kaufman, R., Rojas, A. M. and Mayer, H. (1993). Needs Assessment: A User's Guide. Englewood Cliffs, New Jersey: Educational Technology Publications.
Rossett, A. (1987). Training Needs Assessment. Englewood Cliffs, New Jersey: Educational Technology Publications.
Zemke, R. and Kramlinger, T. (1982). Figuring Things Out: A Trainer's Guide to Needs and Task Analysis. Reading, Massachusetts: Addison-Wesley.

Chapter 4
TRAINING NEEDS ASSESSMENT SCENARIOS

Overview

Introduction

In this chapter, sample training needs assessment (TNA) scenarios are provided. Scenarios are provided for the types of TNA studies as outlined in Figure 2 (page 22), which include Headquarters United States Air Force (HQ USAF), Major Command (MAJCOM), Base/Unit, and individual. A scenario for an automated TNA study is also included. While realistic scenarios have been used, there is no suggestion that these examples outline the only way to conduct a TNA. The examples are intended to serve as guides for instructional developers or development team members in applying the principles and procedures contained in this handbook.

Where to read about it

This chapter contains five sections.

Additional information

For additional information on TNA scenarios, see:

AFMAN 36-2234, Instructional System Development.
Rossett, A. (1987). *Training Needs Assessment*. Englewood Cliffs, New Jersey: Educational Technology Publications.
Training Needs Assessment Handbook (1991). State of Washington Department of Transportation. Work Force 2000, Work Group 4C.

Section A
Headquarters United States Air Force (USAF) TNA Scenario

Introduction

In the organizational hierarchy, the highest type or level of training needs assessment (TNA) within the organization is at the HQ USAF level. A scenario for this type of assessment is provided below as an example. While this is a realistic scenario, it by no means suggests that this is the only way to conduct a TNA at the Headquarters level. This example is provided only as a guide for conducting assessments.

Issue

Change Air Force financial management procedures.

Situation

The HQ USAF staff must change the financial management procedures to operate the Air Force in a "business-like" manner. The change in policy and directives is necessary to comply with the Department of Defense (DoD) initiative to conduct all financial management operations like a business. While the magnitude of the task is known to be large, the total impact on current Air Force-level resource management policies and procedures is not exactly clear.

Action

To address this problem, the HQ staff has decided to develop a strategic plan for implementing new financial management policies in an effective, timely manner in the Air Force. First, the staff established overall objectives and goals for implementing the new policies and procedures. Second, once the objectives and goals were established, the staff "scoped" the tasks involved in implementing new policies and procedures to determine the magnitude of the job. After the tasks were "scoped," the staff developed a long-range plan for implementing the new Air Force policies and procedures.

TNA process

Using Figure 3 (page 28) in this handbook, instructional development personnel in conjunction with other HQ staff members make up a team to accomplish the following steps.

TNA process (Continued)

Step	Title
1	Determine Purpose
2	Identify Data Requirements
3	Determine Data Collection Method
4	Collect and Analyze Data
5	Report Findings

Step 1: Determine purpose

The first step in conducting a TNA is to determine the purpose of the study. Using Figure 2 (page 23) in this handbook, and the scenario above, a HQ USAF-type analysis is suggested since this is an Air Force-wide issue that touches every organizational level. The assessment is a mega, organizational-type assessment. The HQ staff establishes the goals and objectives for operating Air Force financial management functions in a "business-like" manner. Achievement of the goals and objectives involves new polices and procedures. Anticipated outcomes are new policies and procedures, new financial accounting systems, and personnel training courses. Other management interventions may also be indicated as the TNA study continues.

Step 2: Identify data requirements

The scenario identifies a new financial management procedure to be used in the Air Force to fund its day-to-day operations. Since the new procedures affect all areas of financial management, data requirements will need to be identified in the various areas of financial management and from the different organizational levels from the DoD level down to the base or unit level. The basic task in this step is to identify data that will show what the current process is and how it will need to be changed to meet the new DoD requirement.

Step 3: Determine data collection method

To begin this step, the instructional developers should review the table starting on page 32 of this handbook in order to determine the best method for data collection. Since the basic problem relates to new financial management procedures compared to current procedures, there are several methods that can be used to collect data. A review of the table indicates that a panel of experts is probably a good method for collecting data since they

Step 3: Determine data collection method (Continued)	can provide the much- needed expertise on both the current and new financial management procedures. Print media and problem solving/group discussion methods might also be used to collect the needed data.
Step 4: Collect and analyze data	Once developers have determined the data collection method, in this case a panel of experts, they begin the process of collecting the needed data from the panel of experts. This can be accomplished by discussion groups, interviews, or surveys. The panel of experts provides the developers with the much-needed data on the details of the new DoD policy, current financial management procedures, and existing financial management systems, as well as problem areas that will be encountered. When the developers have collected adequate data, they organize and analyze the data. Analysis of the data will enable the developers and the HQ staff to formulate conclusions about what needs to be done to implement the new DoD policies and procedures.
Step 5: Report findings	Based on the findings of the data analysis, the developers or development team members report their findings and recommendations to the appropriate management level. Management then uses the reported findings to develop the plan for implementing the new DoD policy. The plan identifies tasks that must be performed in order to implement the new policy, describes how the tasks will be performed, and identifies who is responsible for performing the tasks and when the tasks will be performed.

Section B
Major Command TNA Scenario

Introduction

The second type or level of training needs assessment (TNA) is that of the Major Command (MAJCOM). The MAJCOM assessment is very similar to the HQ USAF assessment. They are both organizational assessment; the basic difference is in their purpose. The same scenario that was used for the HQ USAF assessment is used again for this type of assessment. Although this is a realistic scenario, it by no means suggests that this is the only way to conduct a TNA at the MAJCOM level. The example below is to be used only as a guide for conducting an assessment.

Issue

Change Headquarters Air Force Materiel Command (HQ AFMC) financial management procedures to comply with new Air Force procedures.

Situation

The AFMC staff must change the Command's financial management procedures in order to operate the command in a "business-like" manner. The change in procedures is necessary to comply with new Air Force policy. The Command will be required to develop and implement a plan to change the resource management policies and procedures, and establish new standards within AFMC.

Action

In order to address this problem, HQ AFMC has decided to develop a plan to implement the new resource management procedures in an effective, timely manner. First, the Command's instructional developers and staff, who make up the development team, must establish the necessary goals and objectives for implementing the new procedures at the Command and base/unit level. Once the goals and objectives have been determined, the team must identify the tasks involved in implementing the Command procedures. Finally, once the tasks have been identified, the team develops a plan for implementing the new procedures and setting milestones for implementing each phase of the plan.

TNA process

Using Figure 3 (page 28 in this handbook, the development team, at the headquarters, accomplishes the following steps.

Step	Title
1	Determine Purpose
2	Identify Data Requirements
3	Determine Data Collection Method
4	Collect and Analyze Data
5	Report Findings

Step 1: Determine purpose

The first step in conducting a TNA is to determine the purpose of the assessment. Using the scenario above and Figure 2 (page 23) in this handbook, one can see that a MAJCOM-type analysis is suggested since the focus of the assessment is on performance issues. The MAJCOM-level assessment is a macro, organizational-type assessment. When the team has determined that the Headquarters-type assessment (in this case HQ AFMC) is appropriate, the team develops goals and objectives for implementing the new financial management procedures and standards within the Command. Anticipated outcomes of the assessment are new Command policies and procedures, new operating standards, training courses for personnel, and possible new financial management systems.

Step 2: Identify data requirements

The scenario identifies new Command policies and procedures that will need to be developed in order to address the new performance requirements and standards resulting from new financial management policies and procedures that will be used by the Air Force to fund the day-to-day operations within the Command. The new policies and procedures will affect almost every area of financial management, and therefore, data requirements will need to be identified in the various areas of financial management at the Command level. Also, it will be necessary to identify data sources at both the HQ USAF and base/unit level in order to have a complete picture of the current financial management policies and procedures. In this step, the task will be to identify data that describes the current financial management procedures as well as the new DoD and Air Force requirements. There will be a variety of data sources that can be

Step 2: Identify data requirements (Continued)	used by the development team to determine current financial management procedures. Also, the DoD and AF will have data that describes the new financial management requirements.
Step 3: Determine data collection method	In this step, the instructional developers start by reviewing the table beginning on page 32 of this handbook. This table helps identify the best data collection methods for a MAJCOM-type assessment. In this case, since the methods for collecting data are numerous, the development team will use a panel of experts, problem solving/group discussion, interviews, and print media. Having a combination of data collection methods will allow the development team to use a wide variety of data from various sources and in different formats. Using data from different sources will allow the team to conduct a better analysis by the data comparison technique.
Step 4: Collect and analyze data	Once the developers select the data collection methods to be used, they develop the necessary data collection instruments such as checklists and interview guides. After the instruments have been developed, the team schedules interviews, problem solving/group discussions, and interviews. Using the data collection instruments, the team conducts meetings and interviews at the various organizational levels in order to collect data on current and new procedures. The team also collects all related print media such as directives, manuals, pamphlets, and user's guides that describe the current financial management procedures, as well as data on the new policies and procedures being directed by DoD and the Air Force. After collecting sufficient data on current and future financial management procedures, the team organizes the data from the various sources into a logical order that describes the current procedures as well as the new requirements. When the data has been organized, the team analyzes the data to determine what changes should be made in the Command in order to implement the Air Force's new financial management policies and procedures.

Step 5: Report findings

Based on the data analysis, the team reports their findings to the appropriate management level. The report includes information such as the purpose of the study, how the assessment was conducted, what the results of the TNA were, and the team's recommendations for implementing new financial management policies and procedures.

Section C
Base/Unit TNA Scenario

Introduction

The third type of training needs assessment (TNA) is the base/unit assessment. This assessment is at the operational level and is macro in scope. At this level, the assessment focuses on operational issues such as performance requirements and standards. The same scenario that was used for the Headquarters USAF and MAJCOM assessments is also used for the base/unit assessment. This is a realistic scenario; but it by no means suggests that this is the only way to conduct a TNA at the base/unit level. The example below is to be used only as a guide for conducting an assessment.

Issue

Change Air Logistic Center (ALC) financial management procedures to comply with new Headquarters Air Force Materiel Command (HQ AFMC) financial management policies and procedures.

Situation

HQ AFMC must change its financial management policies and procedures to comply with new DoD and HQ USAF directives. The directives require AFMC's financial management activities to be conducted in a "business-like" manner. The ALC's Financial Management staff, along with instructional developers, must assess the new policies and procedures and develop a plan for implementing these policies and procedures at the operational level. The plan must be implemented in an effective, timely manner to ensure that the day-to-day financial management activities of the ALC are impacted as little as possible during the transition period.

Action

To ensure that the ALC is prepared to implement the new financial management policies and procedures, the development team assesses the requirements so an orderly and logical plan can be developed to implement the new policies and procedures in an effective, timely manner. The team first establishes goals and objectives for the TNA study. The goals and objectives provide the necessary framework for conducting the study. Once the goals

Action (Continued)

and objectives have been determined, the team begins the study by following the steps for conducting a TNA study. During the study, the team identifies the jobs and tasks that must be trained in order for the work force to be able to meet new performance requirements and standards.

TNA process

Using Figure 3 (page 28) in this handbook, the development team at the ALC accomplishes the following steps.

Step	Title
1	Determine Purpose
2	Identify Data Requirements
3	Determine Data Collection Method
4	Collect and Analyze Data
5	Report Findings

Step 1: Determine purpose

As with any TNA, the first step of the process is to determine the purpose of the assessment. Using the scenario above and Figure 2 (page 23) in this handbook, it can be seen that the base/unit type assessment is appropriate since it is a macro assessment that focuses on operational issues. This type of assessment is the only assessment that focuses on operational issues. Once the purpose has been determined, the goals and objectives are established. Achievement of the goals and objectives involves new policies and procedures for conducting financial management activities such as new and revised financial management systems to support the new procedures, new jobs and task requirements, new standards, personnel training, and other management interventions.

Step 2: Identify data requirements

New policies and procedures are required in order to conduct the ALC's day-to-day financial management activities in a "business-like" manner. Since the new policies and procedures will affect every aspect of the ALC's daily operation, the development team will need to identify data requirements from every level within the ALC. Data needed from the MAJCOM will also need to be identified. In this case, data requirements focus on obtaining data from subject matter experts (SME) on the current procedures and systems. Also, HQ AFMC data on the new policies and procedures is identified as a data requirement.

Step 3: Determine data collection method

The development team, referring to the table starting on page 32 of this handbook, selects a combination of data collection methods. They decide on a job/task analysis of each function in both the financial management and product directorate. The team will conduct on-site observations and interviews, and send questionnaires to SMEs to collect the necessary data on jobs and tasks in the current financial management process. Also, the team will use print media such as directives to collect the information on the new financial management policies and procedures from HQ USAF and HQ AFMC.

Step 4: Collect and analyze data

Using the selected data collection methods, the team observes SMEs performing the various financial management jobs and tasks. The team also interviews selected SMEs and sends questionnaires to others to obtain additional information about how the current financial management process works. In order to obtain information on the new policies and procedures, the team requests from HQ USAF, HQ AFMC, and the ALC all available data on the new financial management policies and procedures. Once adequate data has been collected, the team formats and organizes the data in order to describe how the current financial management process works as compared to the way the new process will work. This process allows the development team to analyze the data and determine the differences in the old and new processes and make recommendations as to what must be done at the ALC to implement the new policies and procedures.

Step 5: Report findings

Once the data has been collected and analyzed, the team reports its findings to the appropriate management levels in the ALC. The report includes an explanation of why the study was conducted, describes how the assessment was conducted, provides management with the results of the study, and makes recommendations for implementing the new financial management policies and procedures at the ALC.

Section D
Individual TNA Scenario

Introduction

The fourth type of training needs assessment (TNA) is the individual assessment. This assessment is at the individual, micro level. During this type of assessment the focus is on determining individual job performance requirements and standards. Again, the same scenario has been used to show the continuity of the various types or levels of assessments. This realistic scenario, however, by no means suggests that this is the only way to conduct an individual-type assessment. The example below is provided only as a guide for performing a TNA at the individual level.

Issue

Productivity has decreased significantly in the operations and maintenance (O&M) Division of Financial Management, and worker dissatisfaction has increased.

Situation

The ALC implemented new financial management policies and procedures to comply with HQ AFMC directives. This change required all workers in the Financial Management and Product Directorates to be trained in the new financial management procedures. After the new procedures were implemented and the workers were trained, productivity in the O&M Division of Financial Management has declined significantly.

Action

In order to determine why worker productivity and job satisfaction in the O&M area have declined, the O&M Team Leader and instructional developers decide that a TNA is needed. Since the number of individuals working in the O&M division is small and the problem is limited to this one area, the instructional developers select the individual-type assessment as the appropriate level. The TNA will provide the necessary insight into what is causing the problem in the O&M area and will allow instructional developers to develop training to solve the problem or recommend other management interventions, as appropriate.

TNA process

Using Figure 3 (page 28) in this handbook, the development team at the ALC accomplishes the following steps.

Step	Title
1	Determine Purpose
2	Identify Data Requirements
3	Determine Data Collection Method
4	Collect and Analyze Data
5	Report Findings

Step 1: Determine purpose

Each TNA study begins by defining the purpose of the assessment. The scenario above and Figure 2 (page 23) in this handbook indicate that the individual micro level assessment is appropriate since only a few individuals in one specific area of Financial Management are having problems.

Step 2: Identify data requirements

In this case, the decline in productivity may be identified through both internal (performance evaluations, error rates, job dissatisfaction) and external (complaints) methods. The data requirement will focus on job, task, and skill requirements and standards in the O&M Division.

Step 3: Determine data collection method

Using the table starting on page 32 of this handbook, the developer team selects a combination of data collection methods. The developers decided to collect extant data about the workers' performance and standards, conduct direct observations and interviews with the workers, and use print media such as handbooks and job aids. Using these methods, the developers will be able to determine the optimals and actuals of job performance and what is causing the poor performance.

Step 4: Collect and analyze data

Data collection is accomplished by : (a) observing and making notes on each worker's job performance, (b) interviewing each worker using an interview guide, and (c) collecting extant data on worker performance since the implementation of the new procedures and collecting of print media such as directives, manuals, and handbooks that describe how each job and task are to be performed.

Step 4: Collect and analyze data (Continued)	The developers organize and analyze the collected data to assess what is actually happening on the job, and to determine what should be happening on the job and what is causing the performance problems. Analysis of the data enables the developer to propose corrective actions and make recommendations to solve training- and non-training-related problems.
Step 5: Report findings	At this point, the development team reports the assessment findings to the appropriate management level in the ALC. The report includes the purpose of the assessment, describes how the assessment was conducted, reports the results or findings, and makes recommendations for solving the performance problem. The recommendations may include both training and non-training solutions to the problem.

Section E
Automated TNA Scenario

Introduction

The automated training needs assessment (TNA) study is the last scenario to be discussed in this handbook. Automated TNAs can be used with any of the four types or levels of assessment that have been discussed in this handbook. However, the benefits of the automated assessment process are greater when large amounts of data must be collected and analyzed quickly. For example, using an automated TNA process would probably not be effective or cost-efficient when the assessment only requires the instructional developer to interview a few workers and collect extant data resulting from previous performance. Automated assessments can aid instructional developers in collecting, organizing, analyzing and reporting the results of the TNA.

The automated TNA scenario is realistic; however, it by no means suggests that this is the only way to conduct a study. The example below is to be used only as a guide for conducting an automated assessment.

Issue

Improve engineering staff capabilities.

Situation

The Director of Engineering Services has determined that the engineering staff needs additional and periodic training in order for the Command to remain a competitive leader in military-industrial engineering. While the training requirements are not exactly clear, the Director has noticed a constantly increasing number of problems in the various engineering departments. It also appears to the Director that the engineering staff is not keeping up with technological advances in their specific field of engineering.

Action

The director decided to form a team of instructional developers and engineers to look into the existing problem with the engineering staff. The team has been tasked to conduct a training needs assessment and to develop any required training programs or recommend any other management interventions that might be indicated by the assessment.

TNA process

Using Figure 3 (page 28) in this handbook, the Command's team accomplishes the following steps.

Step	Title
1	Determine Purpose
2	Identify Data Requirements
3	Determine Data Collection Method
4	Collect and Analyze Data
5	Report Findings

Step 1: Determine purpose

Regardless of whether the TNA process is automated or not, the first step is always to determine the purpose of the assessment. Using the scenario above and Figure 2 (page 23) in this handbook, the team sees that the focus of the assessment is on performance issues and standards for a larger number of engineers located at various centers throughout the Command. This indicates that the Major Command (MAJCOM) level is the appropriate assessment level.

Once the team has determined the purpose of the assessment, the goals and objectives of the TNA are established. Achievement of the goals and objectives involves determining how engineers in the various engineering departments are currently performing, how they should be performing, and what is causing the problem. The anticipated outcome is new training programs for the engineers. Other management interventions may also be indicated as a result of the assessment.

Step 2: Identify data requirements

The scenario identifies that the Command's engineering departments are having performance problems that must be resolved in order for the Command to remain a competitive leader in military-industrial engineering. In this step, since the problem appears to be Command-wide, it will be necessary to identify data that indicates what engineers are currently doing (actuals) throughout the Command and what they should be doing (optimals).

Step 3: Determine data collection method

In this step, the team should review the table starting on page 32 of this handbook to determine the best method to collect the data from the engineers. A review of the table indicates that the best data collection to use is the survey/questionnaire since it can be used to collect data from a large target audience. However, the team is faced with several other issues relative to collecting data from such a large, diverse audience scattered throughout the command. In order to effectively conduct the assessment, the team decides to use an automated process as much as possible since a number of software programs are already available to assist in automating the process. Using automation allows the team to develop a survey/questionnaire that can be sent and responded to electronically by each engineer in the command since each engineer is "networked" with the command's computer system. Using an automated survey/questionnaire also adds needed flexibility by allowing each engineer to "branch" to their specific field of engineering, as appropriate. Also, automated surveys/questionnaires can be easily changed, if necessary, and the developer can be innovative in designing the survey/questionnaire.

Step 4: Collect and analyze data

Once the team has decided to use an automated survey/questionnaire to collect the data, the team must select the appropriate software to use for data collection and analysis. The survey/questionnaire can be developed using a standard word processing program and data analysis can be accomplished by using an "off-the-shelf" generic statistical analysis package. When the software has been selected, the team develops the survey/questionnaire using subject matter experts (SME) to develop the content. When the survey/questionnaire is complete it is electronically transmitted to engineers at the various centers, who in turn complete the parts that specifically apply to them. The survey/ questionnaires are then electronically returned to the Command for analysis. Automated surveys/questionnaires allow the Command to survey all of its engineers in an effective, cost-efficient manner. Once the surveys/ questionnaires are returned, the team creates a single master file from the response files received from the centers. The output is then imported through a computer program into a spreadsheet program. The optimals are then input into a spreadsheet program. Analysis of the spreadsheets allows the team to determine the training needs or other management interventions.

Step 5: Report findings

The automated assessment process allows the data already in the computer to be organized and presented to management as a computer-generated report with the necessary graphs and tables. Also included in the report is the purpose of the assessment, how the TNA was conducted, and the recommended solutions to any problems identified during the assessment.

RICHARD E. BROWN III, Lt General, USAF
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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

AFPD 36-22	Military Training
AFI 36-2201	Developing, Managing and Conducting Military Training
AFI 36-2301	Professional Military Education
AFMAN 36-2234	Instructional System Development
AFMAN 36-2236	Handbook for Air Force Instructors
AFH 36-2235	Information for Designers of Instructional Systems (12 Volumes)
Vol 1	ISD Executive Summary for Commanders and Managers
Vol 2	ISD Automated Tools/What Works
Vol 3	Application to Acquisition
Vol 4	Manager's Guide to New Education and Training Technologies
Vol 5	Advanced Distributed Learning: Instructional Technology and Distance Learning
Vol 6	Guide to Needs Assessment
Vol 7	Design Guide for Device-based Aircrew Training
Vol 8	Application to Aircrew Training
Vol 9	Application to Technical Training
Vol 10	Application to Education
Vol 11	Application to Unit Training
Vol 12	Test and Measurement Handbook

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Abbreviations and Acronyms

AETC	Air Education and Training Command
AF	Air Force
AFH	Air Force Handbook
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFMC	Air Force Materiel Command
AFPAM	Air Force Pamphlet
AFPD	Air Force Policy Directive
ALC	Air Logistic Center
DBOF	Defense Business Operations Fund
DoD	Department of Defense
HQ	Headquarters
HQ USAF	Headquarters United States Air Force
ISD	Instructional System Development
JPR	Job Performance Requirements
MAJCOM	Major Command
O&M	Operations and Maintenance
SAS	Statistical Analysis System
SME	Subject Matter Expert
SMS	Subject Matter Specialist
SPSS	Statistical Package for the Social Sciences
TNA	Training Needs Assessment
TO	Technical Order
USAF	United States Air Force

Terms

The following list of definitions includes those terms commonly used in the application of needs assessment in instructional system development and as used in this handbook. The list is not to be considered all-inclusive.

Actuals. The actual job performance or knowledge.

Attitude. (a) The emotions or feelings that influence a learner's desire or choice to perform a particular task. (b) A positive alteration in personal and professional beliefs, values, and feelings that will enable the learner to use skills and knowledge to implement positive change in the work environment. Also see **Knowledge** and **Skill.**

Deficiency. The difference or "gap" between desired performance or knowledge and the actual performance or knowledge. Also called "need."

Expectancy. An individual's perception or confidence that they can perform or succeed at a given task.

Instructional System. An integrated combination of resources (students, instructors, materials, equipment, and facilities), techniques, and procedures performing effectively and efficiently the functions required to achieve specified learning objectives.

Instructional System Developer. A person who is knowledgeable of the instructional system development (ISD) process and is involved in the analysis, design, development, implementation, and evaluation of instructional systems. Also called Instructional Designer, Instructional Developer, Curriculum Developer, and other terms.

Instructional System Development (ISD). A deliberate and orderly, but flexible, process for planning, developing, implementing, and managing instructional systems. ISD ensures that personnel are taught in a cost-efficient way the skills, knowledge, and attitudes essential for successful job performance.

Job Aid. A checklist, procedural guide, decision table, worksheet, algorithm, or other device used by a job incumbent to aid in task performance. Job aids reduce the amount of information that personnel must recall or retain.

Job Performance Requirements (JPR). The tasks required of the human component of a system, the conditions under which these tasks must be performed, and the quality standards for acceptable performance. JPRs describe what people must do to perform their jobs.

Knowledge. Use of the mental processes which enable an individual to recall facts, identify concepts, apply rules or principles, solve problems, and think creatively. Knowledge is not directly observable. A person manifests knowledge through performing associated overt activities. Also see **Attitude** and **Skill.**

Motivation. An individual's belief or value about a thing or situation, combined with their expectancy.

Need. The measurable deficiency or "gap" between the desired or optimal performance and the actual performance.

Optimals. The desired job performance or knowledge.

Skill. The ability to perform a job-related activity that contributes to the effective performance of a task. Skills involve physical or manipulative activities, often requiring knowledge for their execution. All skills are actions having specific requirements for speed, accuracy, or coordination. Also see **Attitude** and **Knowledge.**

Subject Matter Expert (SME). (a) An individual who has thorough knowledge of a job, duties/tasks, or a particular topic, which qualifies him/her to assist in the training development process (for example, to consult, review, analyze, advise, or critique). (b) A person who has high-level knowledge and skill in the performance of a job.

Task. A unit of work activity or operation which forms a significant part of a duty. A task usually has clear beginning and ending points and directly observable or otherwise measurable processes, frequently but not always resulting in a product that can be evaluated for quantity, quality, accuracy, or fitness in the work environment. A task is performed for its own sake; that is, it is not dependent upon other tasks, although it may fall in a sequence with other tasks in a duty or job array.

Task Analysis. The process of describing job tasks in terms of job performance requirements (JPR) and the processing of analyzing these JPRs to determine the training requirements. Also see **Job Performance Requirements.**

Training Needs Assessment (TNA). A systematic study of job performance and the environment that influences it in order to make effective, cost-efficient decisions or recommendations about how to solve a problem or innovation. It is the process of identifying the difference between the desired performance or outcome and the actual performance or outcome.

Value. The worth assigned by an individual to a thing or outcome.