US ARMY CORPS
OF ENGINEERS
USACE Learning Center

ULC Pamphlet 350-70

ULC Training Development Guide

USACE LEARNING CENTER (ULC)
PO BOX 1600
HUNTSVILLE, AL 35807-4301
http://ulc.usace.army.mil

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Department of the Army
US Army Corps of Engineers
USACE Learning Center (ULC) Huntsville, AL 35807-4301

ULC Pamphlet 350-70

Training

ULC Training Development Guide

Summary: This pamphlet provides procedures for the management of institutional training and education, and supports the United States Army Training and Doctrine Command (TRADOC) campaign of learning policy and systems

Applicability: This regulation applies to all units and activities conducting institutional training and education and for the Soldiers, Army Civilians, and contractor personnel implementing the instructional design model known as ADDIE (Analysis, Design, Development, and Implementation) for training development of individual and collective training for the United States Army Corps of Engineers (USACE).

Supplementation: Supplementing this regulation is prohibited without prior approval from Chief, United States Army Corp of Engineers Learning Center, ATTN: CEHR-ULC, Huntsville, AL

Suggested Improvements: The proponent of this regulation is the United States Army Corps of Engineers Learning Center. Send comments and suggested improvements on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to the Chief, ULC (CEHR-ULC), 550 Sparkman Dr. Huntsville, AL 35807-4301.

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JOHN E. BARNETT
Chief, USACE Learning Center

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Chapter 1 - Introduction

1-1. Purpose

ER 690-1-414 establishes the Corps of Engineers Systems Approach to Training (COESAT). This systematic instructional design strategy is based on the ADDIE model. This model consists of five phases that aid the instructional design team in identifying what tasks, skills, and knowledge to include in training; who will receive the training; how and where the training will occur; and the process for evaluating the effectiveness of the training event. The ADDIE process determines essential training products and the level of support needed to produce, distribute, implement, and evaluate those products. This pamphlet provides the proponents, training developers, instructors, and facilitators a detailed explanation of this approach and the procedures required for its implementation. Use this guide in conjunction with ER 690-1-414 and TR 350-70, and TP 350-70 (Pamphlet) Series.

1-2. Application

The ADDIE process must be applied to all training materials developed or training conducted by or for the Corps. As training developers revise or update courses, they must ensure that the course and its documentation comply with this systematic instructional design process.

The rapid development of communication and technology requires significant improvement in training, and changes in the way the Corps must educate its employees. Technology is critical to the success of future training. However, instructional designers must focus on learner needs and not a false requirement to keep up with technological capabilities. This pamphlet suggests ways to implement the ADDIE process, but instructional designers and developers must keep students' best interest in mind when making all training-related decisions.

Note that the ADDIE process applies to all training materials, e.g., those for Classroom, Distributed Learning, Web-based, Computer-Based Instruction (CBI), Computer-Based Training (CBT), or Digitized Training.

1-3. Course Manager Responsibilities

1. ULC Course Managers (CMs) are Instructional Systems Specialists (ISSs) (GS 1750's) and provide professional guidance on education principles and theory in the analysis, design, development, implementation, and evaluation of training. ISSs are responsible for the development of efficient and effective education and training programs to include, but not limited to, ensuring that products and programs are educationally sound and adhere to the proven principles of education and training, i.e., adult learning principles. By coordinating with proponents, subject matter experts (SMEs), other designated team members, and management, ISSs ensure continuity and cohesiveness in the training development process.

2. The course manager will accomplish the following:

    a. Establish milestones and schedule and direct all activities as necessary for the completion of course development requirements.

    b. Coordinate with the proponent, the number of subject matter experts (SME) required for each activity.

3. Lead the instructional design/development team consisting of the proponent and the SMEs in the following activities:

    a. Identifying training needs.

    b. Describing the target population.

    c. Describing job functions and tasks.

    d. Performing task analysis.

    e. Designing training, to include task performances measures, objectives, pretest/posttest items, and schedule of instruction.

    f. Developing Training Support Packages (TSPs).

    g. Implementing training.

4. Conduct a task survey, as needed. Proponents and SMEs may provide tasks from existing functional databases, input from the field, or other means as deemed acceptable by the proponent.

5. Approve developmental and educational approaches for all training.

6. Lead the development of training materials.

7. Evaluate training during developmental phases and upon implementation.

1-4. Proponent Responsibilities

The proponent will accomplish the following:

1. Identify/verify the training need, in conjunction with the SMEs.

2. Designate an SME to assume overall technical responsibility for the functions listed in paragraphs 1-5. and 1-6. below.

3. Review training materials for technical accuracy.

1-5. SME Responsibilities

The SMEs will accomplish the following:

1. Describe the target population.

2. Describe the job functions and tasks.

3. Analyze tasks.

4. Assist in the design and development of task performance measures, lesson objectives, pretest/posttest items, and schedule of instruction.

5. Develop support training materials.

1-6. Instructors and Facilitators Responsibilities

Instructors and facilitators will implement training, using approved TSPs, and administer approved assessment instruments.

1-7. References

ER 690-1-414, Proponent-Sponsored Engineer Corps Training (PROSPECT); AR 350-1, Army Training and Education.

1-8. Related Publications

Related publications:

1. TR 350-70, Army Learning Policy and Systems;

2. TP 350-70 (Pamphlet) Series:

    a. TP 350-70-4, SAT-Evaluation

b. TP 350-70-5, SAT-Testing

c. TP 350-70-6, SAT-Analysis

d. TP 350-70-10, SAT-Course and Courseware Validation

e. TP 350-70-12, The Army Distributed Learning (DL) Guide

f. TP 350-70-14, Training and Education Development in Support of the Institutional Domain.

1-9. Explanation of Abbreviations and Terms

See the glossary for explanations of abbreviations/acronyms and special terms used in this handbook.

1-10. ADDIE Phases (in context of PROSPECT using ADDIE and forms.

a. ADDIE provides for effectiveness and efficiencies by developing continuous awareness of the relationships among the component parts of training development, rather than a sequential and linear approach. ADDIE is the basis of a systematic, cyclic, iterative approach to conceiving, planning, organizing, and documenting all learning products. Developing products requires awareness that the five ADDIE phases can be repeatedly applied at many levels, on a broad or narrow scope. Each ADDIE phase may be entered individually when needed to revise the product. A developer must determine at what point to enter the process and ensure the learning product is produced efficiently and effectively. Review Figure 1-1
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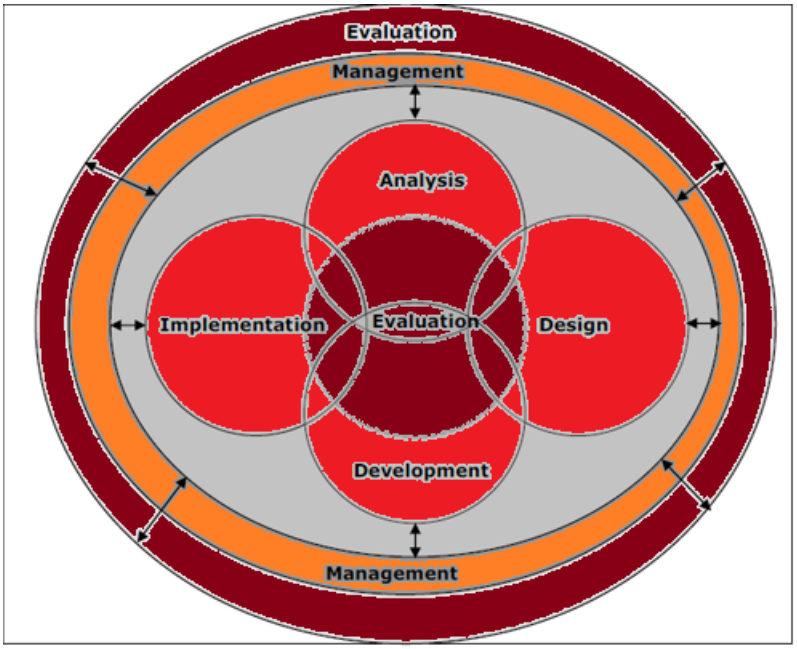


Figure 1-1, Non-linear ADDIE Process

(Note 1: Information extracted from TR 350-70 and TP 350-70-14)

b. The analysis phase is used for defining learning requirements and the ways to measure success. Conducting a thorough analysis is essential for making PROSPECT instruction as relevant as possible. Analysis provides information about what skills or knowledge need to be trained or learned, the conditions under which the skills should be performed or the knowledge used, and the standard of performance that must be achieved. The results of analysis form the basis for creating and/or revising learning products.

During analysis, an ISS primarily focuses on comprehending the expected outcome of the development efforts while determining what information to draw upon. In determining the need for a new or revised learning product, the triggering circumstance may come from a variety of sources in the form of a problem to be resolved. Once the circumstance is provided, the ISS must draw upon relevant information to create a new learning product or revise an existing learning product. The primary analysis processes used to identify the learning products to be designed (revised or created), developed, implemented, and evaluated are needs analysis, mission analysis, target audience analysis, and job analysis. To successfully create a product that meets all requirements at the appropriate level, the developer must maintain focus on the learning objective(s).

c. The ISS moves into the design phase after the problem is analyzed. In the design phase, the ISS must identify the objective(s), which vary according to the type of instruction based on learning content to be implemented. Consider Bloom's Taxonomy of learning domains for this (Cognitive, Affective, and Psychomotor). Once the ISS confirms the learning objectives with the QA/QC or senior ISS, the ISS plans what the training/instruction should look like when it is complete, and the context in which the task or learning will successfully occur. The goal is to create a learning situation that helps people move from what they already know to gaining mastery of the new material. In the design phase, the developer determines learner assessment methods, lesson sequence, methods of instruction, media and/or other criteria needed for learning.

d. The development phase involves translating the previously determined design plan into instruction and instructional products. The developer chooses the structure and methods to form a comprehensive strategy to help the intended audience achieve the learning objectives. The development strategy includes identifying all materials that support the implementation of learning products. All steps for development of new institutional learning products are included in this pamphlet or further illustrated through links to external sources. Once institutional products are identified, designed, and developed, appropriate management processes are needed to implement and evaluate these products.

e. The implementation phase is the execution of the training/education. Training/education is implemented after the learning product has been designed, developed, validated, and formally approved for use.

f. Evaluation is a continuous process that starts during the analysis phase and continues throughout the life cycle of the ADDIE process as well as the life cycle of each learning product. The evaluation phase consists of both formative and summative parts.

(a) Formative evaluation judges the ability of the learning product(s) to achieve the desired outcome/objective. This evaluation process takes place during development to control the quality of learning products.

(b) Summative evaluation usually occurs after completion of the ADDIE process, and determines whether the learning product development and implementation meet established Army and center/school standards on a program level and thereafter on the job itself. Gaps in summative evaluation can be resolved with constructive and corrective feedback.

Note: Evaluation is a function of the Army's Quality Assurance (QA) Program; Army Regulation (AR) 350-1 as well as DA and TRADOC policy memorandums and implementing guidance contain specific policy for the QA Program. QA Program evaluation covers much more than the ADDIE process: Army accreditation standards assess functions that cross all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) domains.

g. Although the ADDIE phases often build upon each other, remember:

(1) The normal training development (TD) process for a new training requirement begins with a perceived training requirement and proceeds with job and critical task analysis, design, and development of the training/education product.

(2) ADDIE phases can be entered individually as needed for revisions, creating an iterative process.

(3) Evaluation permeates all ADDIE phases and ensures all training/education and supporting learning products are effective in producing trained units, organizations, Soldiers, leaders, and DA Civilians.

(4) ADDIE process management overview. Leaders, course managers, training developers, and instructor/ facilitators at all levels must ensure compliance with the ADDIE process to develop learning products and prepare for implementation. All those involved must:

(a) Create and maintain appropriate validation and assessment plans.

(b) Provide supervision of learning product development and provide team assistance when needed to ensure the work at hand flows smoothly and efficiently.

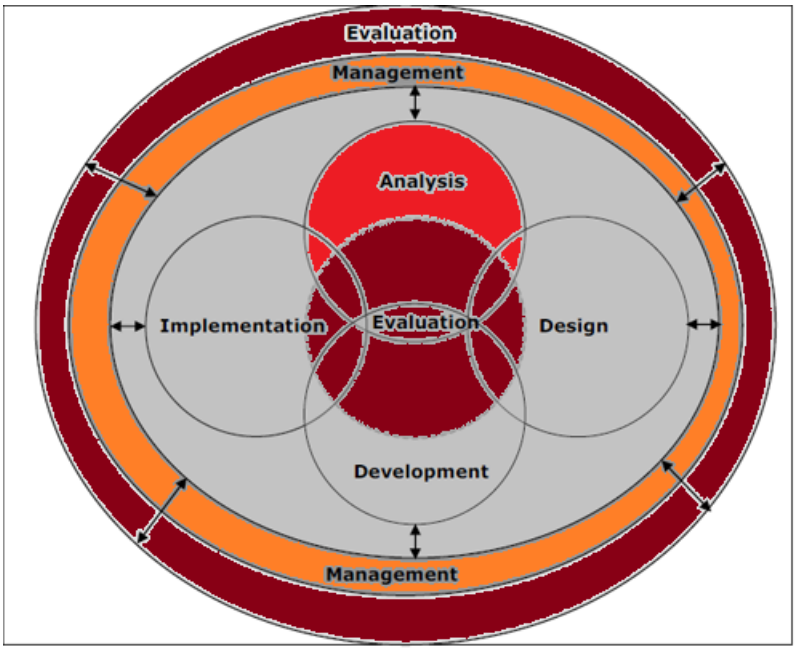
(c) Meet timelines and milestones of the project while maintaining quality.

(d) Ensure the entire ADDIE process operates within a given set of resources. The analysis phase of ADDIE determines availability of, constraints on, and allocation of resources for the courses and learning products being developed.

(e) Maintain quality; establish internal quality controls throughout the ADDIE process.

Chapter 2 – Analysis

Figure 2-1 Analysis Phase



2-1. Analysis: Basic Requirements

Job performance requirements serve as the basis for training. To define these requirements fully and establish the foundation of all subsequent training development, trainers and Subject Matter Experts should perform an analysis for each course. During the analysis phase (Figure 2-1), developers/trainers determine first if there is a training need. If a Needs Analysis reveals a training need, then developers/trainers define job performance requirements, examine actual employee performance, and determine training needs through a comparison of the actual job performance with desired job performance. Note that there is a difference between a Needs Analysis and a Task Analysis. A Needs Analysis provides training developers with a complete understanding of the shortcomings of a system and looks not only at the job performed, but also at other parts of the system that might indicate clues for improvement. A Task Analysis looks strictly at the tasks performed on the job. Normally, the ADDIE process calls for a Task Analysis for the development of a course since the need is most often already established.

See the following list for activities essential to the analysis process:

1. Identify the training need. (ENG Form 4713)

2. Describe the target population. (ULC Form 829)

3. List the major functions of the job. (ULC Form 830)

4. List all the tasks performed by a successful job incumbent. (ULC Form 832)

5. Conduct a Task Analysis. In a traditional Task Analysis, the analyst generates a list of tasks. This list becomes a survey for completion by job incumbents, subject matter experts, and supervisory personnel. There are several task selection models available, e.g., Difficulty-Importance-Frequency (DIF) Model, and Training Emphasis Model. The analyst then compiles the survey results, and members of the team discuss and approve the tasks.

   For many jobs, the Traditional Task Analysis works well. For others, different tools may prove more beneficial than the Survey. See Section 2.9 for additional methods to using a survey. Keep in mind that you will have to provide and maintain documentation for whatever method of Task Analysis you use, e.g., duty list, task inventory, target population description, and a detailed description of your Task Analysis Method and procedures you followed.

6. Analyze each task selected for training to include detailed information about how to perform the task and the standards for satisfactory performance.

2-2. Identification of the Training Need

A performance discrepancy indicates a difference between the actual job performance and the performance expected in either the present or in the future. A trainer can attribute discrepancies to skills, knowledge, environmental, or motivational deficiencies. Training will be of no benefit if the deficiency is environmental (e.g., facilities or equipment inadequate, work load increasing) or motivational (no feedback, lack of recognition). Remember, the Needs Analysis identifies whether a training need exists. Training would be an appropriate solution to performance problems traced directly to a skills or knowledge, or ability deficiency. Some situations that might suggest a training need based on a deficiency in skills or knowledge are:

1. The employee consistently performs the task incorrectly, even when knowingly being observed.

2. Task completion requires knowledge and application of concepts, rules, and principles.

3. The task is new.

2-3. ENG Form 4713-R

ENG Form 4713-R, Evaluation of Proposed Training Course, documents the assessment/identification and analysis of Corps training needs/requirements.

1. ENG Form 4713-R is available on ULC website, “HOW DO I…” “Propose a Course”

2. Any USACE employee may identify a training need by initiating Engineer Form 4713-R, completing and signing Part I, and forwarding the form to the Community of Practice (CoP) Leader/functional proponent. The Form contains instructions to help originator determine the appropriate CoP/functional proponent to forward to.

3. The CoP Leader/functional proponent evaluates proposed training by completing and signing ENG Form 4713-R Part II, to indicate approval or disapproval as a training requirement.

a. If the CoP Leader/functional proponent disapproves proposed training, he/she returns the signed ENG Form 4713-R to the originator of the Form with no further action.

b. If the CoP Leader/functional proponent approves proposed training, he/she identifies a course proponent and forwards the signed ENG Form 4713-R to the course proponent for review. **Note:** Proponent provides funding for new courses.

4. The course proponent reviews approved training requirement by completing and signing ENG Form 4713-R Part III, and forwards it to USACE Learning Center (ULC). (Note: Using the 'Send to ULC' button in Part III automatically emails the Form to ULC Training Division Chiefs and QA/QC.)

5. On receipt of ENG Form 4713, ULC CMs review training requirement, conduct market research for training that may already exist, and assesses/recommends method of delivery (resident, distributed learning, or blended (combination of both). ULC completes and signs ENG Form 4713-R Part IV, and forwards it to HQ CEHR-D.

a. ULC Annex/SOP 500, provides procedures for processing ENG Forms 4713.

b. ULC Annex/SOP 505, provides procedures for performing market research.

6. HQ CEHR-D performs final review/approval as PROSPECT course requirement by completing and signing ENG Form 4713-R Part V, and returns the Form to ULC to collaborate with course proponent to design, develop, and implement PROSPECT course.

2-4. Description of the Target Population

1. Training products must meet the needs of the intended user. The target population description (TPD) tells the designer what the job performers, who will ultimately be the students, are really like. The TPD provides the designer with an assessment of the skills and knowledge already possessed by these job performers. The instructional designer can use this information to establish the entry level for the training and then design training that will bring job performers up to a certain level of mastery.

2. Use ULC Form 829, Target Population Description (see FORMS), to describe the TPD and include the following information:

   a. SERIES: Job series of those considered for training, who will perform the tasks.

   b. GRADES: Grades of the job performers who will receive the training. Confine the grades to those that knowledge and skills will increase significantly by the proposed training. Effective training rarely is appropriate when personnel in grades (i.e., 7 through 13) are combined because of the varying levels of competency involved. Training is ineffective that bores the student either because training is too complex or too simple for their background.

   c. POSITIONS: Any positions or functional responsibilities the job performer has held in the past, presently holds, or anticipates holding in the future.

   d. RESPONSIBILITIES: Pertinent responsibilities that the job performer has at the present or has had in the past.

   e. EXPERIENCE: Types of experience, past or present that job performers should possess. Include any minimum time requirements, e.g., two years' experience in contract negotiation.

   f. TRAINING: Any education or training that incumbents have previously acquired.

   g. KNOWLEDGE: Is job related information analyzed to provide meaning, value and understanding to the performance of the job.

   h. SKILLS: Ability to perform a job related activity that contribute to the effective performance of a job. There are two types of skills physical and mental.

2-5. Listing of the Major Job Functions

1. Once you have described the target audience, you may begin the process of defining job performance. Identifying the major job functions or duties performed by a successful jobholder or incumbent is the first step. Duty: (1) one of the main functions of a job or (2) one of the major

subdivisions of work performed by an individual. A duty consists of a group of related tasks. See Listing of Tasks paragraph 2-5.

2. Job descriptions, qualification standards, and previous analyses will help in formulating this list.

2-6. CEHR-P Form 830 (Duty List)

Use ULC Form 830, Duty List / Task Inventory, (FORMS), to list duties:

1. State a duty using the "ing" form of an action verb with an object, i.e., tuning engines, evaluating requests, performing flight maneuvers, planning work activities.

2. Where applicable, list supervisory duties first.

3. Number each duty. Use this number later to assign task numbers.

4. The course manager will provide a three-digit course control number.

2-7. Listing of Tasks

The duty list describes the job in very broad terms. To define successful job performance accurately, break the duties down to tasks.

1. Task: a unit of work that forms a significant part of a duty. A task results in a meaningful product, even though the product is not always tangible. For example, a correct decision is a meaningful product. A task should meet the following criteria:

    a. Highly specific.

    b. Observable or measurable - You must either be able to see or hear a task being done or be able to measure the output.

    c. Definite beginning and end.

    d. Performed in short periods of time.

    e. Independent action - A task is done for its own sake and has a usable result. It is not a component of a procedure.

2. Task statement: the description of a task. Consider the following rules when writing task statements:

a. Use a present tense action verb and an object. The subject "you" is understood/implied. Examples: operate multi-meter, write objectives, clean typewriter, and load computer software.

b. Each statement should deal with only one specific task; i.e., "inspect exhaust" NOT "inspect and repair exhaust."

c. Statements should be brief. Try to confine each statement to two typewritten lines.

d. Use clear and easy-to-understand statements.” Write production and control reports" is much better than "Accomplish necessary reports involved in the process of maintaining production and control procedures."

e. Avoid the use of ambiguous words. Make sure you have no misunderstanding when using words such as check, assist, coordinate, recommend, determine, and assure.

f. Be definitive. For example, "interpret visual photographs" could apply to several job incumbents, while "interpret radarscope photos" would confine the task to a particular jobholder. If there is more than one way to do a task, add a condition statement such as "using a QSM3-80 multi-meter."

g. Use current terminology common to the career field.

h. Use abbreviations/acronyms cautiously. Spell out a term the first time you use it and follow with the abbreviation in parenthesis.

i. Do not state qualifications as tasks. An incumbent's intelligence, aptitude, knowledge, education, skill, training, and experience are not tasks.

g. Do not include items such as receiving instruction unless the jobholder performs some actual work. "Attend Lecture" does not indicate work performance.

2-8. Task Inventory

Combine the task statements for each task performed by the job incumbent to form the task inventory. Use ULC Form 830, Duty List/Task Inventory, (FORMS), to list the task inventory.

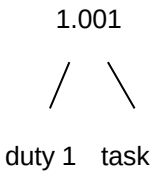
1. Group the task statements by duty. Sequence the tasks for each duty in a logical order, e.g., alphabetical arrangement or the order performed. This shortens reading time, aids in recalling unlisted tasks, and helps eliminate duplicate tasks.

2. Assign task numbers to each task.

a. For automation and survey purposes, number tasks consecutively. List the number under "Task Number." If you conduct a survey, respondents will use this number to code their responses in the Task Analysis Data Booklet.

b. Assign the second number according to the duty. Number each duty. The first number for each task is the duty number, followed by a period and a three-digit number to indicate the task number.

For example: 1.001 indicates Duty 1, Task 1; 3.027 indicates Duty 3, Task 27. Place this number in parenthesis at the end of the task statement. Since the computer tabulation of the survey only lists the results by consecutive numbers, this second number is assigned to correlate duties and task statements. For example, the computer printout only shows task number and the task statement with no duty statement shown. However, the course manager can ascertain the specific duty statement from the duty list. See FORMS.



2-9. Additional Methods for Conducting Task Analysis

A wide variety of methods for performing task analysis exists. Choose the method that suits your particular need and that of the course you are developing. Decide which method to use in conjunction with your proponent and SMEs. Keep in mind that you should maintain documentation that describes the activities of the analysis phase. Task lists and a record of the participants provide adequate documentation in most cases. Make reference to existing task lists, guides to good practices, and similar sources of information when such sources form the basis of tasks selected for training.

2-9a. Surveying the Target Population

To ensure that task inventory represents the largest population, you may conduct a task survey. If you do conduct a survey, observe the following procedures:

1. Survey each division and district unless you know the organization has no personnel performing the tasks. When you know a lab has personnel who perform the tasks, survey the lab. Reasons for not including any of these organizations should become a part of the official files.

2. To encourage participation, send the survey documents under a cover memorandum to the applicable functional division chief at each division/ district/lab for distribution. See FORMS.

3. For the survey to be valid, you must have sufficient responses from personnel in applicable series or grades. The course manager determines the number of responses requested from each division, district, or lab according to the density of the series or grades within each organization.

4. The survey responses of the task inventory provide certain demographical data to verify the target population description and their personal experience it relates to difficulty, importance, and frequency (DIF model) or training emphasis (TE model) of performance of each task. The Task Analysis Report shows a compilation of responses. See FORMS.

2-9b. Table Top Analysis

Using a facilitator, normally a course manager, a small group of 3 to 10 subject matter experts convene to identify the various tasks incumbents must perform. You need a minimum of one job incumbent and one supervisor to discuss the tasks. The facilitator conducts the session and documents the information. Through brainstorming and consensus, the team develops a sequential list of tasks. After this process, the team determines which tasks to train. Base task selection on frequency, difficulty, criticality, and the consequences of error or poor performance. For consistency, the team of experts should remain the same throughout the process. Remember to document all the details of the Table Top method for your audit trail. The Table Top Method of job analysis typically consists of the following:

1. Organizing the team.

2. Reviewing the job.

3. Identifying the duty area associated with the job.

4. Identifying the tasks performed in each duty area and write task statements.

5. Sequencing the duty areas and task statements.

6. Selecting tasks for training.

7. Document and maintain all documentation for the analysis phase.

2-9c. Hybrid Method

This method involves both a quantitative analysis and consensus building. Using job task documents, compile a list of tasks. Through an iterative process involving consensus building, have the SMEs, job incumbents, and supervisors assess the validity of the task list. Through discussions, members rate each task's difficulty, importance, and frequency, and come to a consensus. Once the group identifies the

tasks, the group identifies and validates the knowledge, skills, and abilities required to perform each task. Remember to document all the details of the Hybrid Method for your audit trail.

2-9d. Observing the Expert Analysis

This method uses an observer to record an expert performing a task. The observer is a person who aspires to be an expert in a similar job. The trainer's role is to set the analysis in motion by briefing the observer and the expert regarding the intended outcome of the observation. This method works best when three aspiring observers observe three similar experts. After the observations, the observers become a task force who meet with the trainers, proponent, and SMEs to determine the tasks for training. Remember to document all the details of this method for your audit trail.

2-9e. Document Analysis

This technique is especially valuable when accurate procedures and other job-related documents are available. Document analysis is a simplified technique for determining required knowledge and skills directly from operating procedures, administrative procedures, and other job-related documents. An SME and a trainer review each section and step of the procedure or document to determine training program content. Document analysis consists of the following steps:

1. Review the procedure or document and list the knowledge and skills required by a worker.

2. Verify the accuracy of the results.

3. Record activities accomplished and maintain them for your audit trail.

2-9f. Functional Analysis

When you are analyzing a position that performs a large number of tasks, e.g., management or engineering, you can use a technique called Functional Analysis. Rather than conducting a job analysis to identify specific tasks, you identify major functions within the positions. After you identify the competencies necessary to perform the major functions, you analyze those competencies to determine objectives for training. For example, a manager might make many plans such as production planning, facility and equipment requirements, and budget formulation. The training objectives needed to perform these objectives might read as (1) Create a Gantt Chart or (2) Build a Capacity Requirement. As with all methods, remember to document all the details of this method for your audit trail.

2-9g. Other Methods for Conducting Task Analysis

Other methods might include Interviews, Group Discussions, or Focus Groups. The methods listed here are not exclusive. You may use any one of the methods described in this Guide, a combination of methods, or another viable method of Task Analysis. However, you must ensure that you DOCUMENT what you do and maintain the documentation files for your records.

2-10. Selection of Tasks for Training

1. The task inventory identifies all the tasks required by a particular job. Confine training to those tasks essential to mission accomplishment. Time and financial constraints limit the number of tasks selected for training.

2. The Task Analysis Report, (FORMS), contains composite demographical data on the target population and recommendations as to the necessity for training. The report provides an objective basis for selecting those tasks that require training.

3. The recommendations in the Task Analysis Report are results of numerical values assigned to the responses on the difficulty, importance, and frequency of the tasks on the survey. The numerical values and resulting recommendations result from the criteria discussed below.

4. Do not train tasks that the jobholder could:

    a. Perform without training.

    b. Learn through manuals or job aids, given time.

    c. Learn on the job or seldom perform.

    d. Fail to perform or perform incorrectly with minimal job degradation.

5. Some tasks will be priority candidates for training because they are:

    a. Complex in nature.

    b. Critical to successful job performance.

    c. Critical for safety reasons.

6. Training may or may not be necessary for tasks of average difficulty and importance. Evaluate the frequency of performance on the job carefully to determine whether the jobholder needs formal training or if on-the-job or other types of training will suffice. Considerations should include the following:

a. Does the incumbent perform the task frequently enough to allow on-the-job training before performance is required?

b. Will the frequency of performance on the job provide the required level of training?

c. Even though you base the recommendations on objective criteria with a survey, the course manager, proponent, and SME should review all recommendations to ensure they are valid for each particular task. Consider the case where the survey results indicate no training for a task because jobholders do not perform the task. However, the proponent and SME know for a fact that the task is a new requirement, required by regulation, not performed because the jobholders do not know how to perform the task. In such a case, the survey has identified or verified a performance deficiency, and trainers should consider training the task, provided the deficiency is the result of a lack of skills or knowledge.

As stated previously, if the performance deficiency results from environmental or motivational factors, training would be inappropriate. Ensure you document decisions made (e.g., train, no train) and rationale for those decisions.

2-11. Task Analysis

1. For each task selected for training, perform a task analysis to provide detailed information about how to perform the task in the actual work situation. This information facilitates the job of the designer and developer in developing effective training materials.

2. Complete a separate ULC Form 832, Task Analysis/Objective Analysis Worksheet (FORMS) for each task selected for training.

   a. Conditions. Identify any special conditions, instructions, precautions, facilities, equipment, or procedures that are necessary to perform the task (e.g., tools, test equipment, forms, references, resources, emergency conditions, environmental settings, unusual weather conditions).

   b. Standards. Standards define acceptable performance of a task. Express them in terms of time limits, units of work, degree of accuracy, errors permitted, production rate, tolerances, etc. State how well the incumbent must perform the task, e.g., 95% correct; steps performed in order; with only one mistake; within 15 minutes; two out of three correctly within 10 minutes; according to procedure). See Job Aid 2.

   c. Elements. Elements are step-by-step directions about how to perform the task. The elements in some tasks are not as easily defined as others. For example, the task "Install air-conditioning units" is much easier to break into steps than "Prepare general investigative reports." In describing

the elements for these more abstract tasks, consider these questions: What specific actions, reports, or studies must the incumbent complete to accomplish the task? How does the incumbent complete steps/elements or sub elements and in what order?

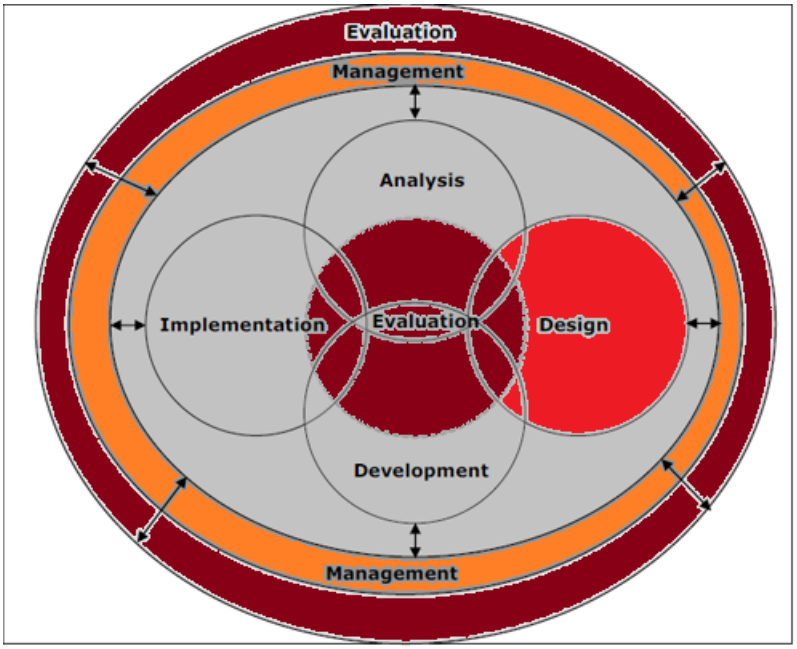
(1) Begin each element statement with an action verb.

(2) Use singular statements - do not combine steps.

(3) State the elements in the sequence in order of performance.

Chapter 3 – Design

Figure 3-1. Design Phase



3-1. Design: Basic Requirements

The analysis phase reveals what needs to be trained. Products of the analysis phase drive the design process, which ultimately ends with a model or blueprint of the training program. The design phase includes development of the following:

1. Learning Objectives/outcomes.

2. Task performance measures (TPM).

3. Pretest/posttest items,

4. Schedule of instruction (SOI)

3-2. Development of Training Objectives

1. In the Design phase, writing clear learning objectives will answer the question, “What will the learners be able to do when they finish the training program?” Without well-constructed objectives, instructors can over-/under-teach and (adult) learners can have difficulty following the direction and scope of a given lesson. Objectives prescribe the behavior (action), conditions, and standard of task performance

for the training. An objective tells the student the exact expectations upon completion of training. Objectives must meet the following criteria:

a. Measurable by written or performance exercise/test within the learning or the testing environment. (This is the Task Performance Measure (TPM)).

b. Contain a statement of student behavior that serves as evidence that the student has accomplished the TPM. Write the statement, using an action verb, in terms of what the student must perform, not what the instructor will do or say, e.g., type a letter or lift a load.

c. Contain a standard to measure the student's performance against. The standard must specify exactly how well the student must perform the objective, e.g., within ten minutes or without error.

d. State specifically the conditions under which the student must perform the task. Include any limits placed on student performance, description of performance environment, starting point, and what the student has to work with (tools, equipment, manuals, notes, etc.), e.g., without reference to a manual or using a word processor.

2. Formulate a minimum of one objective for each task identified for training. Use a ULC Form 832, Task Analysis / Objective Analysis Worksheet, for each objective. See FORMS.

3. Sequence and group the objectives to provide a smooth flow from one task to another. For those objectives where mastery of one is necessary to master another or where mastery of one would make learning the other easier, transition from the simple or less complex to the more complex within a group and when moving from one group to another. Arrange the ULC Form 832 Worksheets in the order determined and note the sequence position on the Worksheet. Later in Design, you will consolidate all LOs and Learning Step Activities (LSAs) onto ULC Form 833, LO/LSA sequence/allotted times. See "Schedule of Instruction".

3-3. Establishment of Task Performance Measure (TPM)

The TPM is that measurable or observable action performed in training that indicates the student will adequately and appropriately perform the task when returning to the job.

1. The ideal training situation exists when the student can perform the actual task under the same conditions and to the same standards required on the job. In this case, the TPM will duplicate the task statement, to include the action, condition, and standard developed in the task analysis.

2. In some cases, the trainer cannot create the actual conditions of job performance. This necessitates development of a TPM that has high fidelity in predicting that students who successfully achieve the TPM will be able to perform the task successfully. Consider testing constraints such as time,

manpower, costs, facilities, and equipment in developing the TPM. Decide whether a product, process, or both will be the basis of measuring accomplishment of the task. Further, make decisions about whether to test all or part of the task. Consider various ways of testing your objectives, e.g., practical exercises or group projects in addition to or in conjunction with written tests.

3-4. Design of Test Items

1. Design test items to test the student's mastery of the objectives.

a. Pretest:

(1) Distributed Learning (DL): (optional): The pretest identifies students who can already perform the desired behaviors. Use the pretest for this purpose in Distributed Learning training: students who pass the pretest for a particular module or sub-module have no need to study that unit and can move on to a module where the training is necessary.

(2) Classroom: (optional):

(a) Because of the uniqueness of a classroom-training program, you cannot use the pretest in the traditional manner since students are already present for training when you administer the pretest. However, you can use the pretest to provide feedback as to the accuracy of the target population description and to adjust the presentation of the course material. If a significant number of students consistently pass the pretest, evaluate the suitability of the target population description and level of instruction. Also, the pretest results could enable instructors to make immediate adjustments in presenting the course material if the pretest shows the students are either above or below the expected entry level.

b. Posttest: (required for DL and classroom training)

(1) The posttest determines if students have accomplished the learning objectives successfully and if instruction has been implemented effectively.

(2) Students that do not show mastery of learning objective by receiving a 70% score on the posttest has not satisfied course requirements and will not receive a training certificate.

(3) The pretest/posttest will be either a performance or performance-based written test. Tests must meet the following criteria:

(a) Test items must assess mastery of the learning objectives.

(b) Develop a minimum of one test item for each terminal learning objective. Courses with multiple terminal learning objectives and complex learning objectives will require more than one test item to determine mastery of the course objectives.

(6) Items used as check on learning or other formative assessments will not be used as posttest items.

c. Construct written test items in multiple-choice format.

(1) Each item will have at least four answer choices.

(2) The correct answer should be unquestionably correct.

(3) Use the distracters to identify students, who are uncertain of the correct answer. Distracters should be plausible, incorporating the common misconceptions or errors of the students. Ensure length of distracters are roughly the same as the correct answer.

(4) Do not include "all of the above" or "none of the above" as distracters.

(5) Each test item must be independent, i.e., achieving the correct answer must not be based on achieving the correct answer in another question.

(6) Arrange distracters in ascending or descending order.

d. Three versions of an assessment will be designed if using a Pretest. Two versions will be designed if no Pretest is administered. The versions will be entitled Version A, Version B, and Version C, respectively. One of the three versions may be used as a Pretest if used and the other two versions can be used as Posttests in the same session. One version will be used for initial testing the other version will be used for retesting. Test items will be similar in context to measure the same learning objectives. Test items will NOT be worded exactly the same or have distracters in the same order between versions, to help prevent students from remembering an answer from a question from another test version.

Course managers will make sure that versions are implemented equally to validate each version of the assessment.

3. Write test version items for each objective on the corresponding ULC Form 832, Task Analysis/ Objective Analysis Worksheet. See FORMS.

3-5. Schedule of Instruction

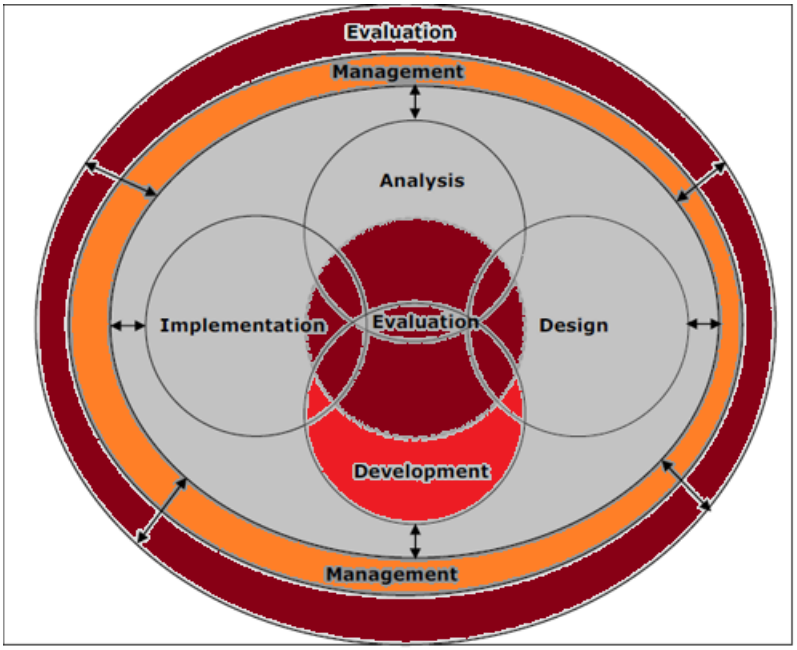
1. For classroom courses, determine the amount of time required to teach each objective. Developers must pay close attention to the time allotted to use the time effectively, with neither too little nor too much material to teach. Prepare a Schedule of Instruction (SOI) on ULC Form 676, to place in the student manual to serve as a course map. See FORMS.

2. Use ULC Form 833, PROSPECT Course Learning Objectives to document all LOs and supporting learning step activities (LSAs) from ULC Forms 832, in sequence order within proposed time allotted. ULC Form 833 provides a single document to facilitate viewing/working with LOs and proposed times See FORMS.

Chapter 4 –Development

Section I - Development - Basic Requirements

Figure 4-1. Development Phase



4.1. Development

Building on the learning objectives produced during the design phase, developers diagram and outline the necessary learning activities to assist students in mastering course objectives. The development phase produces the following:

1. Delivery methods, such as: lecture, simulation, computer based training, virtual, and. distributed learning.

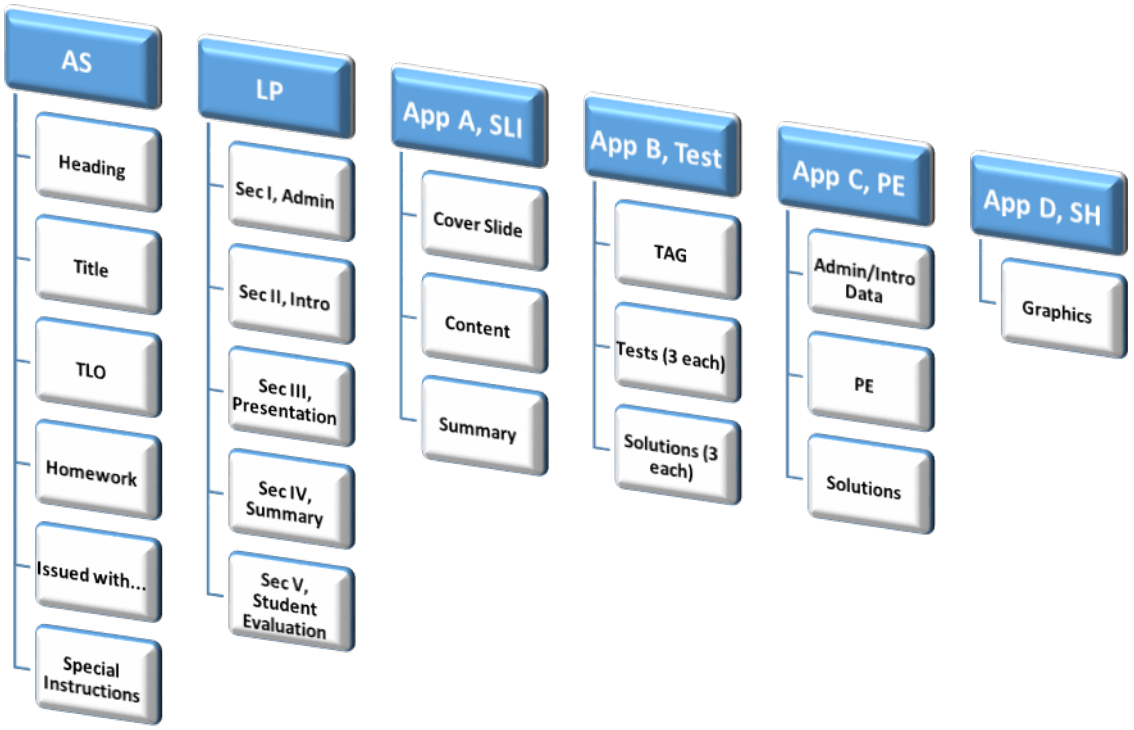
2. A review of existing material. Review any existing materials to determine if you can use them or redesign them. Avoid duplication of materials to save resources.

3. Training Support Packages or instructional courseware. (Student Manuals, handouts, etc.) Remember the cost factor, e.g., cut costs by putting basic concepts/ideas/information on CDs or on the web to avoid reviewing basics on the first day of a course. Send CDs for prerequisite reading to potential students and shorten course length, if at all possible. Additionally, you might furnish students with hyperlinks to relevant websites for selected advance reading materials.

Section II – Training Materials

4-2. Training Support Packages (TSPs)

Instructors will need a guide to ensure they teach the learning objectives, provide continuity of core learning material among sessions, and avoid redundancy of course material within the course and between pother courses. Lesson Plans and support materials become that guide for the instructors. For each course, The TSP include the following:



1. Advanced Sheet
2. Lesson Plan
3. Approved Instructor Lesson Plans include:
    a. Annex A, Slide Presentations
    b. Annex B. Test
        i. Test Administration Guide
        ii. Three Versions of Test
        iii. Solutions
    c. Appendix C. Practical Exercise
        i. Administrative Introduction
        ii. PE
        iii. Solutions
    d. Appendix D. Student Handouts.

2. Approved Support Materials.

4.3 Lesson Plans

The Lesson Plan includes the materials and equipment the instructors need to teach a class. The training developers or Course Managers prepare the lesson plans for each segment of training, using ULC Form 675, or equivalent format. See FORMS. The proponent approves the lesson plan for technical accuracy. The course manager approves the educational strategy. Approvals must occur prior to implementation of training. Any significant changes to approved lesson plans also require submission to the proponent and course manager for approval prior to implementation. Minimum lesson plan requirements and descriptions of their contents follow:

1. Subject. Title of major segment.

2. Time Period (Total). Length of time required to teach the material, including any student activity time, unless covered by another lesson plan.

3. Type of Lesson. State the lesson type, e.g., conference, lecture, computer- aided instruction (CAI), and lecture with questions, demonstration, practical exercise, case study.

4. Instructor. Name of preparer.

5. File No. Course control number.

6. Course. Course short title.

7. Training aids. Any equipment and aids (e.g., PowerPoint slides, computer, laptop, power cords, audio, audiovisuals, books, manuals) necessary to conduct the lesson.

8. Objectives. Should be identical to those documented in ULC Form 832, Task Analysis / Objective Analysis Worksheets, and ULC Form 833, and included in the student manual.

9. Instructor references. List of source documents by title, page, and paragraph numbers.

10. Student references and homework. List of references used by the student by title and page number. Include a listing of homework assignments, as needed. If you need more space, list the homework assignments as the last item in the lesson outline.

11. Time. The amount of time allotted for presentation of topics.

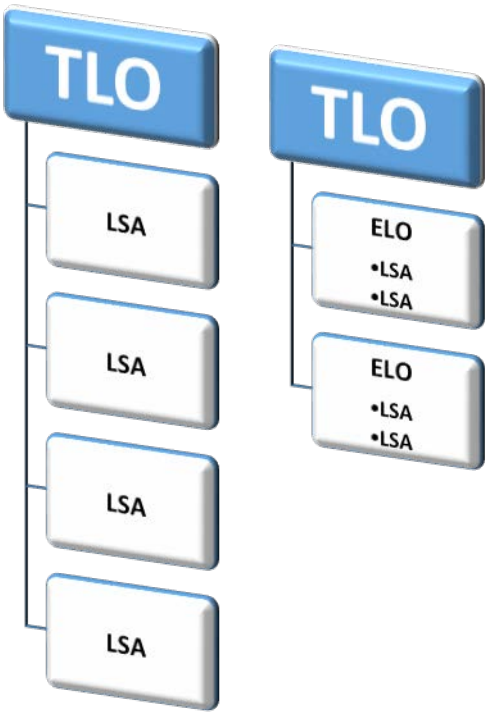
12. Lesson outline. Detailed outline of planned lesson content, to include introduction, detailed presentation, summary, and evaluation.

a. Details should be sufficient to allow a person knowledgeable in the subject matter to conduct the class with minimum research or preparation time.

b. Develop lesson content to teach each objective.

(1). A Lesson Plan (LP) can have only one Terminal Learning Objective (TLO), but it may contain several Enabling Learning Objectives (ELOs). It should never have one ELO.
Usually, if you are only teaching one individual task, Option One TLO supported by Learning Step Activities is used; if teaching two individual tasks or more, Option Two, One TLO supported by ELOs with supporting LSAs is used. This is a guide and sometimes option 1 is used for two tasks; training developer and Subject Matter Expert determined. LPs can contain as many ELOs as needed and can contain as many Learning Steps/Activities (LSAs) as needed.

Option One **Option Two**



(2) Select content on the basis of what the student must do to achieve the objective.

(3) Select procedures and support materials to convey the content.

Sequencing should provide for smooth flow from one objective to another as determined in the design phase on the ULC Form 832, Task Analysis / Objective Analysis Worksheets, i.e., simple to complex, concrete to abstract, logically, and Objective sequentially, especially where mastery of one objective is necessary to master another or would make mastery easier. See FORMS.

13. Key points/aid cues. Any aids or cues, to include visuals (by number) and reference documents. Include nomenclature, page, and paragraph number. Write the cues adjacent to the points in the lesson where you will use them.

4-4. Materials and Aids to Support Classroom Training

1. Support materials serve as an extension of the instructor, not a replacement. Use them for the following:

   a. Increase interest by providing variety or change of pace to the instruction.

   b. Clarify or reinforce the spoken or written word.

      (1) Illustrate.

      (2) Emphasize.

      (3) Provide example.

   c. Focus attention of students.

2. Development. **Course managers, in coordination with the instructors, will ensure such materials will be an integral part of the classroom training, necessary to support accomplishment of the training objectives in the classroom**. **Lesson plans will designate the purpose of these materials.** Don't forget to integrate Learning Activities into your materials. Be creative. Get students involved in the learning process.

3. Training manuals. Training manuals serve as guides for the student and instructor in the classroom. Any material developed for the training manual must support accomplishment of the training objectives. Job Aid 5 prescribes the basic requirements for development of training manuals.

4. Publications to support classroom training. The course manager, in coordination with the proponent will approve publications used as support materials.

5. Student Handouts.

   a. **Student Handouts should have a definite purpose in the lesson. The lesson plan should state where and how to use the handout. Student Handouts support the learning process.**

   b. Identify the handout with a title as part of Appendix D of the lesson plan.

c. Number the pages and state applicable page numbers in the lesson plan so instructors can guide students in using the handout.

d. **Don't overload. Plan only those handouts that students can use within the classroom.**

6. Slide Presentations (TSP-Annex A).

a. Before developing the presentation, determine whether visualization is appropriate. Comprehension should be almost instantaneous upon viewing, leaving students free to focus on the instructor's message.

b. Visuals should not be the major message carrier; you do not need a visual for everything the instructor says or does. Use for clarifying, reinforcing, or gaining attention.

c. Use bullets, not full text or large amount of written information on a slide. Using bullets encourages instructors to *expand on/teach* the points versus reading them. This in turn enhances instructor communication skills through more eye contact, movement, etc. Students are also more likely to take notes when instructors expand on points/bullets shown in lesson slides. When slides are full of text, and instructors mostly read them to students, students have less incentive to take notes because their slides already contain mostly what the instructor says.

d. Develop one main idea per visual.

e. If at all possible, use a horizontal format.

f. Limit the information and use only key words. Effective presentations implement the 6X6 rule, 7X7 rule, or 8X8. This means that a slide will have no more than six to eight bullet per slide and not more than six to eight words per bullet.

g. Use color for variety and focusing attention; however, avoid overuse or complicated patterns.

h. If you must use a form or similar graphic, break the graphic down, using an overall view first, and then display segments of the graphic as the instruction merits.

i. Graphs and tables are effective informational graphics that can be used in the slide presentation. However, developers must make sure to limit the information in the graph and table so that they are easily read.

j. Be sure students can see the slides from the rear of the room. See JA-3 for Job Aid for Visuals.

4-5. Dry Run

To provide continuity, eliminate duplication, identify omissions, and establish policy where various SMEs have divergent ideas, the course manager will schedule a dry run, whenever possible, prior to initial presentation of the training. Preliminary lesson plans and support materials must be ready for use in the dry run. As practical, those instructors who will actually be teaching the course should participate in the dry run. The proponent or his designated representative provides approval of technical content. The course manager approves developmental and educational aspects. Submit draft materials, to include revised materials per the dry run, to the course manager who will coordinate any changes required with the proponent prior to production.

4-6. Development

After revision of draft materials, the course manager will oversee development. The course manager also determines milestones.

4-7. Courses Developed and Taught by a Contractor

For contract courses, the government furnishes the results of the analysis and design phase to the contractor as government-furnished material. The contractor will then, in conjunction with the SMEs, develop the training and materials, adhering to the ADDIE process as stated above. Contractor personnel who will be the course instructors participate in the dry run.

4-8. Validation of Training Materials

Developers accomplish the validation process in three phases:

1. Design Phase (Content Validation). The course manager, proponent (or representative), and SME review all materials to verify technical accuracy, coverage of all objectives, and educational soundness. Correct identified problems prior to the external validation.

2. Development Phase (Individual and Group Trials). Present the course to an individual or a small group of “students” in the same manner as you would present actual training. (Note: If you cannot perform this kind of external validation, your first iteration will serve as the Operational Tryout.)

    a. The course manager coordinates the validation and furnishes all course materials.

    b. The proponent furnishes a well-qualified facilitator to conduct the training.

    c. Students complete the pretest and posttest.

d. Each student and the facilitator complete end-of-course evaluation forms.

The course manager, in coordination with the proponent, evaluates the results of the validation and processes necessary corrections prior to final production of materials.

3. Implementation Phase (Operational Tryouts). The purpose of the operational tryout is to test the instructional materials under actual training conditions using the target audience for which it was developed. The goal of conducting an operational tryout is to determine of the materials are ready for fielding.

4. Remember, revisions do not stop upon the first implementation of the program. Course managers and instructors will make revisions and changes throughout the life of the program.

Section III – Development of Course Manuals and Materials

4-9. Policy

1. Desktop Publishing, ULC, is the official repository for Course Manuals.

2. Desktop Publishing will prepare text and visuals for PROSPECT Course Manuals, unless contractors prepare them. If contractors prepare Course Manuals, they must follow the general guidelines in this pamphlet, and responsible Course Managers and/or technicians must furnish electronic copies of materials to Desktop.

3. Course Managers (CMs) or technicians must submit work requests for major revisions to Desktop Publishing, ULC, at least 30 days before the first class session of the fiscal year and 2 weeks prior for minor revisions.

4. CMs will revise Course Manuals no more than once annually, unless absolutely necessary.

5. Course material will be developed so that they can be distributed digitally:

4-10. Manuscript Standard Procedures

The following guidelines will serve as standards in the preparation of a manuscript for a PROSPECT manual; however, Desktop personnel may vary the layout to accommodate various type publications.

4-11. Page Size

1. Standard page size – 81/2" x 11"

4-12. Margins

1. 1.25-inch minimum margin on top, right, and left. Bottom margin is 1.33-inches.

2. Illustrations, tables, etc., should also have the same margins as text to provide adequate space for binding the document.

4-13. Line Spacing

Single space text with double spacing between paragraphs.

4-14. Page Headers

Upper and Lower Case Bold, minimum 20-point font. **Underline and Use Initial Capitals in the Subheading with a minimum 14-point font**

4-15. Paragraphs

Use a paragraph when the thought changes or when necessary to emphasize a specific request or idea so that students will not overlook it. One subject may extend over several paragraphs, but each paragraph should contain a certain phase or angle on the subject. A "long" paragraph should not run more than 10 or 12 lines. Paragraph frequently in single-spaced work so that the reader's eye can hold to the copy and the mind can retain the thought of the paragraph.

4-16. Paragraph Heading

BOLD and USE ALL CAPITALS AND UNDERLINE with a minimum 14-point font. Start the first paragraph three lines below the last topic heading. Type the paragraph number flush with the left margin; then type the paragraph title.

4-17. Subparagraph Heading

BOLD AND USE ALL CAPITALS WITH A 12-POINT MINIMUM FONT. When you subdivide a paragraph, you must have at least two subparagraphs. For example, when you have a "1," you must have a "2." Subparagraphs may have titles, but are not required. Be consistent. If you give a title to one subparagraph, give titles to all subparagraphs at the same level. Use standard outlining procedures for

paragraphing. Consult AR 25-50, a Webster's dictionary, or any freshman college English book for guidance on outlining.

4-18. Justification

In all possible cases, you should justify the right and left margins, meaning that both margins begin and end in the same place.

4-19. Revisions

If you submit a manual to Desktop Publishing for revision, use the following guidelines:

Step	Action
1.	Put all revisions and corrections on the latest draft or final copy.
2.	Do not cut, paste, or otherwise alter the document. If you alter the document, your copy is no longer compatible with the material stored by
3.	Insert corrections by noting them on the document and attaching added sentences or paragraphs on a separate paper, indicating by asterisk
4.	Use a red pen or similar distinguishable colored pen for marking revisions and corrections to the original material.
5.	Ensure the corrections are legible.

4-20. Spell Check

Routinely scan material for spelling errors. Even though word processors scan for spelling errors, they do not detect incorrect word usage in every case, e.g., to for too. Nothing ruins the credibility of a document more than incorrect spelling.

4-21. Manual Organization

PROSPECT training manuals generally follow the organizational structure as indicated below. Items occur in the order listed.

Manual Part	Explanation

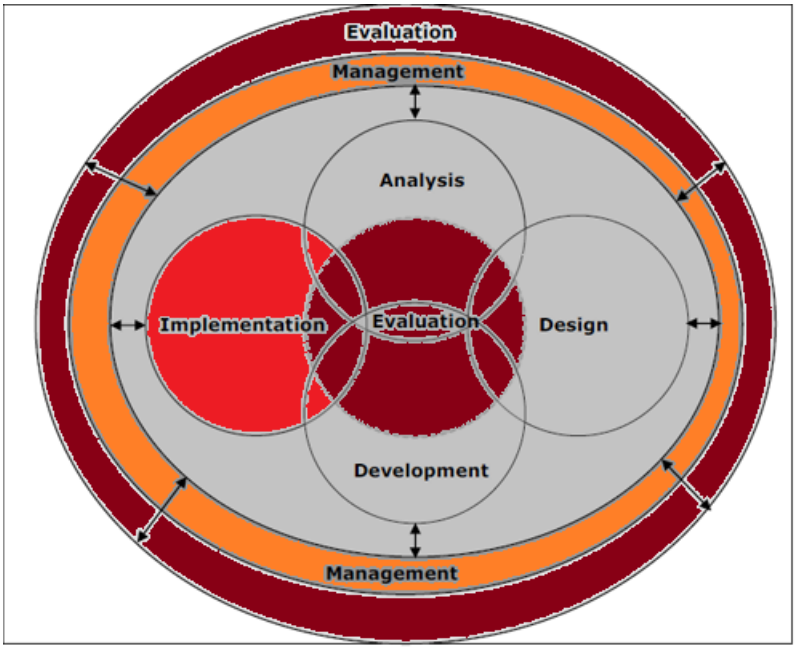
Cover	The cover contains the title of the course and gives the name, address, and other appropriate information. (See Desktop personnel for a sample manual. The course control number will appear in the upper left corner of the cover page. The fiscal year date will appear in the upper right corner, indicating the date the manual was updated, not the present fiscal year.
PROSPECT Intro	See Course Manual sample in Desktop Publishing for the two paragraphs on PROSPECT Course Information for mandatory placement on the back of the cover.
Foreword (Optional)	You may include a foreword to provide the reader with a short explanation of the purpose of the document. If you include a foreword, it will follow the cover page.
Table of Contents (TOC)	The TOC will include a consolidated list of sections, appendixes, glossaries, and references. Number TOC pages at the bottom of the page, centered with lower case Roman numerals.
Schedules of Instruction (SOI)	The SOI lists all major topics of the manual/course, the times of presentation, and usually the name of the presenter/instructor.
Student Notes (Optional)	You may furnish students lined or unlined pages for taking notes.
Instructor Bios	These sketches should be no longer than one page and include information about each instructor's background, present employment, current address, telephone number, and e-mail address.

Manual Part	Explanation
Text Material	Material in the text should be factual, specific, concise, and clearly worded. Maintain high standards of grammar, spelling, and clarity. Cover topics accurately and completely and ensure information agrees with established policies. ¾ Chapters and Sections: Divide text materials into Sections with each section covering information relative to the subject discussed. When you need more detailed information, divide into Chapters and further divide into smaller Sections, as needed. Be sure you use tabs to label the Chapters and/or Sections. ¾ Ensure Learning Objectives precede each section or chapter or put them in the appropriate place so that students will have no doubt as to the purpose of the material. Objectives and summaries are desirable at the ends of sections also. You may even have a separate section in the manual and tab it for learning objectives if the Course Manager and instructors want a separate section. ¾ Number text pages consecutively at the bottom of the page and center within each chapter/section, using Arabic numbers separated by a hyphen, e.g., 2-3 means Chapter/Section 2, page 3. Each new Chapter/Section should begin on a right-hand page with an odd-numbered page, e.g., 2-1. ¾ Foldout pages. Use for material that cannot be reduced for satisfactory presentation on standard size pages. Single foldout pages are always right-hand pages. ¾ Tables. Considered a systematic listing of information in columns and rows, tables can explain or clarify material or they can replace and simplify complicated narrative. Number tables consecutively within each Chapter/Section, using two-part Arabic numbers, e.g., Table 1-2. The first number represents the Chapter/Section, and the second number represents the numerical sequence of the table within the Chapter/Section.

Manual Part	Explanation
Abbreviations and Acronyms	Hold abbreviations to a minimum and only use when no doubt exists as to what the abbreviation means. Spell out an acronym the first time it appears and follow with the acronym in parentheses. You may want to include a list of abbreviations and acronyms, showing definitions and meanings. This list would become a part of the glossary and should precede the glossary.
Appendixes	Use appendixes for supporting material not properly falling within the text. Refer to the appendixes in the main body of the publication. They should appear after the last labeled Chapter/Section of the manual. Identify them in the same order cited: the first appendix mentioned will be Appendix A; the second, Appendix B; and so on. Number pages within the appendix with capital letters followed by a hyphen and an Arabic number, e.g., A-1, A-2, B-1, etc.
Glossary	Glossaries explain abbreviations and terms when there are too many to explain in a paragraph in the body of the text. If you have more than 5 terms or more than 15 abbreviations, use a glossary. Place the glossary after the appendixes (if any) and reference the glossary in the text. Arrange items alphabetically and do not number them.
Reference Material	Provide a list of references for students' use at their work sites if supplemental publications are necessary. Reference materials serve as an extension of the training materials even though you may use them minimally at the course site. Arrange references in alphabetical order.

Chapter 5 –Implementation

Figure 5-1. Implementation Phase



5-1. Implementation: Basic Requirements

Many activities must occur during the implementation phase, Figure 5-1, of training to ensure successful training. The activities included in this chapter specifically address the following:

1. The approved TSPs used to present the instruction.

2. The test instruments designed to measure accomplishment of the training objectives.

3. Each student must participate in all learning events and activities scheduled in the Schedule of Instruction including:

    a. Pretest (if applicable).

    b. Posttest (70% score)

    c. End-of-course evaluation.

4. As applicable, the course manager will prepare the following:

    a. Course evaluations. (See paragraph 5-7.)

b. Instructor or facilitator evaluations. (See paragraph 5-8.)

5-2. Administration of the Pretest

1. A good way to ease test anxiety is by explaining the purposes of the pretest.

   a. The pretest will measure the student's previous knowledge of the training objectives, not as a test of the student, but to give indicators to the trainers as to whether they have designed the training for the proper target audience. For example, a majority of the students answering a particular pretest question correctly over a period of time would indicate that the students did not need instruction on the particular subject matter covered by that question.

   b. The instructors can also use the pretest to tailor the instruction for a particular audience. Weaknesses and strengths indicated by the pretest for students in one session may be different from those in another session. The pretest provides the instructors suggestions about areas to stress or deemphasize for a particular audience.

   c. The students will not be able to answer every question or even a majority of the questions. If they could answer every question, they would have no need for the training. If they cannot confidently answer a question, they should leave a response blank. Guessing can produce false indications about class strengths or weaknesses. The false indications can result in students receiving inappropriate instruction or not receiving instruction they need.

2. The students should use a machine-scannable form, CEHR-P Form 911 (Test Answer Sheet), to record their answers. See FORMS. Instructions for completion are on the form. Caution the students not to make any extraneous marks on the form, as this will render it unscannable. Students must use a pencil on all scannable forms.

3. Collect all test materials (i.e., questions and answer sheets) upon completion of the pretest.

4. Do not discuss the answers to the pretest with the students.

5. Ensure each student completes a pretest.

5-3. Review of the Pretest

During the student introductions, an instructor(s), not a student(s), should check the pretest.

1. Do not mark on the test answer sheets with anything other than a “copy-not pen” furnished by the ULC. Any other marks will render the form unscannable.

2. The pretest provides the instructor(s) information as to the students' entry knowledge of the objectives. With this knowledge, the instructor(s) can gear instruction to any weaknesses or strengths identified by the pretest. For example, questions, which have not been answered correctly by most students, will indicate areas for instructional emphasis. Further, if the pretest shows most of the students already know the answer to some questions, these areas will not need extensive instruction.

3. When analyzing the pretest results, consider the following:

    a. A low percentage of correct responses indicates the class has little knowledge of the subject matter; therefore, the instructor will want to give special emphasis to presentation of this material.

    b. A high percentage of a particular incorrect response can further indicate a common misconception held by the students, which the instructor will want to counter in instruction.

    c. A high percentage of correct responses indicates the class has a fair grasp of the material the question is testing. In this case, the instructor will not need to put as much emphasis on this area as on areas where many incorrect responses exist. A cursory review may be sufficient or if the percentage is high enough, instructors should inform the proponent so that they can adjust the course material accordingly.

5-4. Delivery of Instruction

1. Instructors/facilitators should discuss the training objectives before beginning each segment of instruction. The student's training manual contains the objectives at the beginning of each section; therefore, a good technique is to have the student locate and follow along as the instructor reads or discusses them. Discussion of the objectives eliminates guesswork on the student's part about the importance of the training: the student will know exactly what instructors expect of them upon completion of the training.

2. Instructors must use an approved schedule of instruction (SOI), TSP, and course support materials to present the instruction. The TSP contains the primary training material necessary for accomplishment of the learning objectives. Presentation using the TSP ensures uniformity of training from one session of a course to another. Instructors may want to add their own touches to their portions of instruction by sharing experiences. Instructor experiences are shared with students to provide the class with a concrete experience to learn from. TSPs will not be altered to present instructor experiences, or district/division techniques tactics and procedures (TTPs). For example, Annex A (Slide Presentations) will not be developed based on an instructor's experiences but rather will be developed to support the course concepts and principles based on the Corps of Engineers doctrinal references and will be standardized to support the course learning objectives.

Instructors should keep in mind that they must teach standardized TSPs to accomplish the course learning objectives. Additionally, since the Schedule of Instruction (SOI) provides only a limited amount of time for each portion of instruction, instructors should not alter the SOI. See FORMS.

5-5. Administration of Posttest

1. The instructor administering the posttest can relieve some test anxiety by explaining the purpose of the posttest. The posttest questions reflect the objectives taught in the training. The course managers use the results to determine whether (1) the instructors have successfully presented the material, and (2) the students have accomplished the objectives.

2. The students should use a machine-scan form, CEHR-P Form 911 (Test Answer Sheet), to record their answers. See FORMS. Instructions for completion are on the form. Caution the students not to make any extraneous marks on the form, as this will render the form unscannable.

3. An instructor or facilitator should collect all test materials (i.e., questions and answer sheets) upon completion of the posttest. One instructor should critique the test by reading the stem (part of the test that asks the question) and the complete correct answer. This procedure provides feedback of course learning outcomes and objectives to the students without compromising the test. To give the students their tests back could invalidate future test data. If possible, ensure the students know their scores on both the pretest and posttest. An effective method of letting the students know their numerical scores on the test is to put them on the back of the certificate in pencil. It is the instructor's responsibility to grade all course assessments.

4. Instructors will forward all test material to the ULC within 5 working days after course completion or give them to the course manager if he/she is present..

5-6. Completion of End-of- Course Evaluations

To begin the evaluation process, instructors collect completed end-of-course evaluations, ULC Forms 924 (PROSPECT Classroom Course Evaluation). See FORMS. The instructor must ensure all students complete evaluation forms before receiving a certificate.

5-7. Evaluation of Courses

The course manager monitors the first session of all new courses and, when practical, sessions of existing courses in order to offer suggestions for improvements or revisions to the training strategy or methods of presentation. Use ULC Form 744 (Evaluation of Proponent Sponsored Engineer Corps Training (PROSPECT) Course), FORMS. The proponent or his/her representative monitors the first

session of all new courses, and sessions of existing courses, as applicable, for technical accuracy. The proponent completes the applicable portion of ULC Form 744.

5-8. Evaluation of Instructors

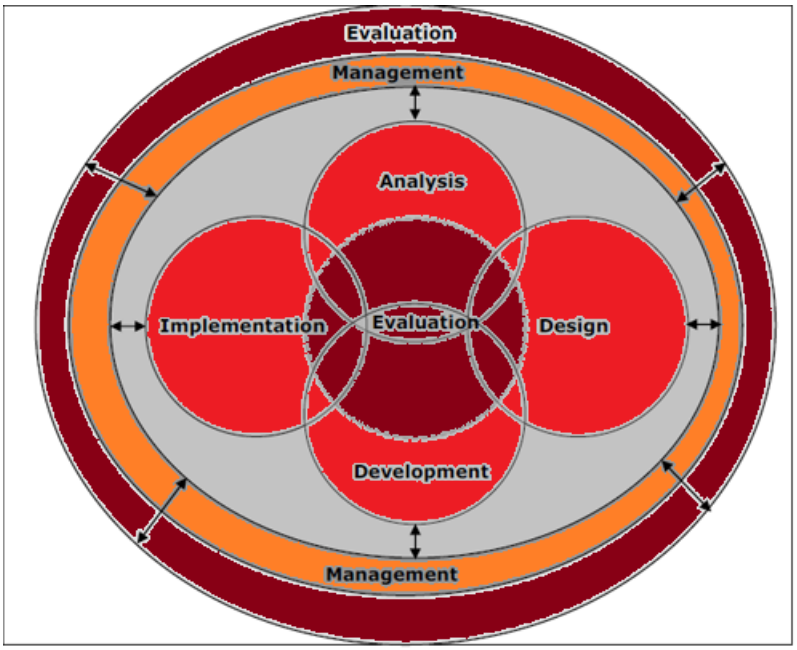
To offer suggestions to enhance the capabilities of our instructor staff, the course manager completes a ULC Form 748 (Evaluation of PROSPECT Instructor/ Facilitator, FORMS, when evaluating training. The evaluation serves as a useful tool for the instructor, proponent, and course manager in assessing areas of strengths as well as areas of weakness.

5-9. Validation of Classroom Training and Training Materials

If an internal and external validation with individual or small group was not conducted, the results of the pretest and posttest for the first session of each new course can serve as validation of the training and training materials. See Chapter 6 for a detailed discussion of these evaluation instruments.

Chapter 6 – Evaluation

Figure 6-1. Evaluation Phase



6-1. Evaluation: Basic Requirements

1. The ultimate goal of the Systems Approach to Training is to provide quality training based on identified job needs (tasks). In the previous phases, this document has identified the target audience; described and substantiated the needs; and designed, developed, and implemented the training. Now, in the evaluation phase, Figure 6-1, the instructional design team must determine whether the training actually taught the students to perform the tasks that comprise their jobs and was the instruction methods effective and had a positive Return on Investment.

2. An effective evaluation program consists of four levels as follows, and answers these questions:

    a. Level One (Satisfaction): Did the learners enjoy training?

    b. Level Two (Learning): Did knowledge transfer in the classroom?

    c. Level Three (Behavior): Did behavior change on the job?

    d. Level Four (Results): Did the training have a measurable impact on performance correlating to a positive return on investment.

3. To aid in the evaluation process, the course manager will develop the following:

    a. For each session:

        (1) Composite of student end-of-course evaluations - computer printout of totals for each question and demographic data, plus actual student comments. (See FORMS) for examples of printout and resulting graph for courses.)

        (2) Course manager's recommendations and comments.

    b. Course managers will prepare the following evaluation forms during the implementation phase:

        (1) Evaluation of Proponent Sponsored Engineer Corps Training (PROSPECT) Course, CEHR-P Form 744. (See FORMS)

        (2) Evaluation(s) of PROSPECT Instructor(s), CEHR-P Form 748. (See FORMS)

6-2. Analysis of Pretest Items

The pretest questions test accomplishments of the training objectives. Analysis of the pretest results yields objective information about the target audience and their abilities at the beginning of the training.

1. Consistent successful completion of pretest items can indicate an inaccurate assessment of the target audience. If the majority of the students can answer the questions, they do not need training on the tasks the questions cover. Look at the task identification and, subsequently, eliminate any training based on those tasks, if necessary.

2. Consistent failure by the students to respond correctly to pretest questions reinforces the target audience's deficiency in particular areas. The course manager must continually attempt to answer the following:

    a. Does the deficiency result from a lack of training or from an environmental or managerial breakdown?

    b. Is the deficiency widespread across the Corps or is it confined to particular districts or divisions? Limitations in particular areas could indicate problems originating from sources other than a training deficiency, i.e., if the target audience in some areas can perform without training, something occurs in those areas that is not occurring in the localities with deficiencies.

6-3. Analysis of the Posttest

Test item analysis is the process of examining the class wide performance on individual test items. There are three common types of items that provide instructional system specialists with three different types of information:

1. Difficulty Index- A difficulty index for a test item is calculated by the proportion of the students in class that got an item correct.

2. Discrimination Index- This is a measure of a test item's ability to discriminate between those who scored high on the test and those who scored low. This index can be interpreted to determine the extent to which overall knowledge of the content area or mastery of the skills related to the response of an item. This is crucial to determining to validating that students got the test item correct because of their level of knowledge or ability and not because of chance or test bias.

3. Analysis of Response Options- This index is a method to examine the performance of each distractor. By calculating the proportion of students who chose each answer option, instructional systems specialists can identify which distractors are working and appear attractive to students that do not know the answer.

Consider the following areas and questions in diagnosing problems found during test item analysis.

1. Prerequisites: Did designers and developers properly define course prerequisites? If the students need minimal prerequisites, yet the instruction applies to the master level, instructional success will be minimal.

2. Design:

    a. Does the instruction stress the objectives sufficiently?

    b. Does the instruction counter common misconceptions?

    c. Is the test question properly constructed?

        (1) Is the stem (question) ambiguous or misleading?

        (2) Are the distracters clear?

        (3) Are the distracters misleading?

        (4) Are all distractors plausible?

3. Instruction (presentation):

   a. Did the instructors stress the objectives during presentation?

   b. Did instructors discuss and correct common misconceptions.

   c. Is the instruction understandable?

   d. Was the instruction logical and sequential?

6-4. Analysis of Student End-of- Course Evaluations

Course managers, instructors, and proponents review the student end-of-course evaluations for areas requiring improvements in single sessions as well as trends that develop for the entire course. For example, they consider whether comments pertain to a particular location or group of instructors or whether the comments remain consistent no matter who presented the course or where the course occurred. This information can help determine whether to make changes in the course as a whole or in part. End of course evaluations should be used as data points for course revisions.

6-5. Analysis of Instructor and Facilitator End-of-Course Evaluations

The instructor and facilitator should always provide feedback orally or in writing for the course manager to use in the evaluation of the course. This feedback provides a different viewpoint. For example, an instructor's comment that students did not participate in classroom activities would lead the course manager to search for the reasons in the students' evaluations in areas such as prerequisites, instructor motivation, and subject matter knowledge. Again, course managers will monitor comments that are peculiar to a particular location, instructor, or facilitator, as well as trends that develop over multiple sessions.

6-6. Analysis of Evaluation of Proponent Sponsored Engineer Corps Training (PROSPECT) Course, CEHR-P Form 744

As mentioned in Chapter 5, the course manager uses information from this form to determine the need for revision or changes in the course in areas covered by the evaluation. The course manager and proponent monitor the first session of any new course and monitor existing courses as necessary.

6-7. Analysis of Evaluation of PROSPECT Instructor(s), CEHR-P Form 748

As discussed in Chapter 5, this evaluation can offer suggestions to enhance the capabilities of our instructor and facilitator staff. It emphasizes areas of strength on which to build as well as weaker areas for improvement.

6-8. Course Manager's Recommendations and Comments

The course manager analyzes all the tools discussed and prepares recommendations for revisions to the course (e.g., content, materials, staff, scheduling) and coordinates these recommendations with the course proponent. The course manager ensures the implementation of required changes for the next course year, or immediately when warranted.

6-9. Levels 3 and 4 Evaluations

Each course manager will conduct at least two Level 3 / 4 evaluations per year and additional evaluations as time permits. The course managers should maintain schedules of these evaluations to ensure they include all their assigned courses over time. Course managers may conduct the evaluations by email or by using forms mailed through the postal system. Course managers or technicians must obtain students' and students' supervisors' postal and email addresses at the time the students attend PROSPECT courses. The Level 3 / 4 evaluations should occur 6 months after the course ends. The course managers may construct their own Levels 3 / 4 evaluations or use standardized forms available for mailing.

Currently, ULC course managers have the capability to do the following:

- Choose a course to evaluate.
- Construct Levels 3 and 4 surveys for students and their supervisors.
- Put those surveys on the server at ULC.
- Send the students emails asking them to (1) go to the link for the student survey and respond (2) forward an email to their supervisors asking them to go to a link for the supervisor survey and respond.
- After the suspense date for responses, the course manager and the QA/QC officer may pull statistical reports from the ULC Intranet regarding student and supervisor responses.

Course managers should conduct continuous internal evaluations to ensure students achieve learning objectives, and external evaluations (Levels 3 and 4) as often as possible to ensure that what instructors taught was relevant and transferred to the job and benefited the organization.

6-10. Accreditation

Accreditation is the formal authority to conduct (or continue to conduct) training and education. Formal accreditation certifies that an institution's administration, operations, and logistical support are adequate to support training to course standards. It certifies that all training and education follows approved academic processes and methods.

Army training and education accreditation is the Army accreditation program that learners in Army schools are being trained and educated on the right tasks to the appropriate standards, from qualified/certified instructors/facilitators and mentors, with all the necessary equipment, supplies, support personnel and facilities, and in an atmosphere conducive to learning.

Glossary

Section I – Abbreviations

ADDIE

Analysis, Design, Development, Implementation, Evaluation

ATMP

Army Training Management Program

CAI

Computer-aided instructions

CBI

Computer-based instructions

CBT

Computer-based training

CD-ROM

Compact-Disk Read Only Memory

CEHNC

U.S. Army Engineering and Support Center, Huntsville

CEHR-D

Human Resources Planning and Development Division, Directorate of Human Resources, HQUSACE

CEHR-P

USACE Professional Development Support Center, Huntsville

ADDIE

Analysis Design Development Implement Evaluate (Systems Approach to Training)

COTS

Commercial off-the-shelf

CRI

Criterion-referenced instruction

CRT

Criterion-referenced test/testing

CSI

Computer-supported instruction

DIF

Difficulty, Importance, Frequency

DL

Distributed Learning

Dod

Department of Defense

ER

Engineering Regulation

FAA

Functional Area Assessment

ICH

Instructor Contact Hours

LO

Learning Objective

METL

Mission Essential Task List

MIPR

Military Interdepartmental Purchase Request

OJT

On-the-job training

PAT

Process Action Team

PE

Practical Exercise

PMP

Project Management Plan

PROSPECT

Proponent-Sponsored Engineer Corps Training

SAT

Systems Approach to Training

SGI

Small Group Instruction

SME

Subject Matter Expert

TBD

To be developed/determined

TD

Training Developer or Training Development

TLO

Terminal Learning Objective

TMIS

Training Management Information System

TNET

Teletraining Network

TRADOC

Training and Doctrine Corps of Engineers

USACE

United States Army Corps of Engineers

VI

Visual Information

VTC

Video Teleconference

VTT

Video Teletraining

WBT

Web-based training

Section II - Terms

Action Verb

Verb that conveys action/behavior, e.g., place, cut, or drive. For training purposes, these action verbs must reflect measurable, observable, verifiable, and reliable behaviors

Analysis

One of the five basic phases of the ADDIE training development process. Analysis tells (1) if training is needed; (2) who needs the training; (3) the critical tasks students must perform; and (4) the standards, conditions, and performance measures needed to perform each task.

Answer Key

A document that shows the answer to each test question

Audit Trail

A systematic documentation of decisions or actions taken.

Behavior

An observable activity or action. The performance of a skill.

Bypassing

In instruction, normally programmed, web-based, or computer-based; this technique permits a student to omit certain portions of material because of prior knowledge.

Cognitive Learning

A category of learning concerned with knowledge and various mental activities and processes.

Computer-aided Instruction (CAI)

CAI involves use of computers to aid in the delivery of instruction.

Computer-based Instruction (CBT)

CBI usually refers to course materials presented or controlled by a computer, using multiple requirements for student responses as a primary means of facilitating learning.

Content Validity

Tests intended to measure the extent to which students learn the content of the instructions. The extent to which the test measures this is called content validity.

Corps of Engineers Analysis, Design, Development, Implementation, and Evaluation (ADDIE)

The Corps system for complying with the requirement in AR 690-400 to develop training based on needs systematically.

Course Manager

ULC personnel assigned responsibility to oversee/manage courses in accordance with ER 690-1-414.

Criterion

The standard by which something is measured

Criterion-referenced Test

Test to measure student's accomplishment of lesson objectives, with the criterion or standard being accomplishment of the objectives.

Cue

A word, situation, or other signal for action.

Design

The phase of ADDIE that translates analysis data into a blueprint for training. The design phase tells resource requirements, training structure, learning objectives, training sequence, student evaluation requirements, and a schedule of instruction.

Design Concept

Detailed description of the way objectives will be presented in an exportable course.

Development

A major phase of the ADDIE process that converts the design into training materials, e.g., lesson plans, student handouts, media, etc.

Difficulty – Importance - Frequency Model

A model sometimes used for selecting tasks for training, based on difficulty, importance, and frequency of job task performance.

Digitization

The overarching term for electronic recording of information for distribution via Internet, computer networks, computer disks, magnetic tapes, optical disks, satellite transmission, and bulletin boards.

Distributed Learning (DL)

The delivery of training to students at the right place and right time through application of multiple means and technologies. DL may involve both synchronous (with instructor) and asynchronous (without student-instructor interaction). It may also involve self-paced instruction without benefit or access to an instructor.

Enabling Learning Objective (ELO)

A statement in behavioral terms of what is expected of the student in demonstrating mastery at the knowledge and skill level necessary for achievement of a Terminal Learning Objective (TLO) and another ELO.

Formative Assessment

A range of formal and informal assessment procedures employed by instructor/facilitators during the learning process in order to modify teaching and learning activities to improve learner attainment. Formative assessments monitor progress toward goals within a course of study. It typically involves qualitative feedback (rather than scores) for both learner and instructor/facilitator that focus on the details of content and performance.

Formative Evaluation

The monitoring of a learning product as it proceeds through the ISD process to make sure the product achieves the desired outcome/objective. This is a check-on-development to control the quality of the learning products developed and their implementation.

Evaluation

The cornerstone of quality training. One of the five phases of ADDIE. Evaluation can occur as formal as internal and external evaluations or informal feedback between the student and instructor.

Exportable Training

Training to be conducted locally using visual-based exportable training materials.

Facilitator

In the exportable training program, the individual who leads training sessions.

Fidelity

The extent to which an objective or training approximates those of a task or job.

In-house Course

A classroom training program course designed, developed, and taught by Corps employees who serve with the permission of their organization.

Item Analysis

The process of determining whether a test item is functioning as intended.

Interactive Multimedia Instruction (IMI)

The IMI is a group of computer-based training and support products. This includes source materials that are commonly used in IMI products, electronic products used for the delivery of or supporting the delivery

of instruction, and software management tools used to support instructional programs. The IMI products include: computer aided instruction, computer managed instruction, interactive courseware, electronic publications, electronic testing, electronic guides and simulations (AR 350-1).

Job (or Duty Position)

A collection of unique, specific, related set of activities (tasks) performed by a unique, defined set of personnel.

Job Aid

A checklist, procedural guide, decision table, worksheet, algorithm, or other device used as an aid in performing duty position tasks.

Just-in-Time Training

Training provided to individuals or groups just before they will use the skills or function taught, typically used to teach perishable or infrequently used skills.

Knowledge-based Test

Testing procedure that simply asks for recall or the selection of information or knowledge.

Learning Hierarchy

The relationship among objectives in which students must master some objectives before they can learn others.

Learning Object

Learning objects represent an alternative approach to content development: developers break content down into chunks, normally between five and fifteen minutes of learning material.

Learning Objective

A three-part statement consisting of an action, condition, and standard. This statement clearly and concisely describes learner performance at the prescribed level of learning required to demonstrate competency in the instructional material. Learning objectives are derived from task/competency performance specifications. Objectives serve as the foundation for instructional design, provide the basis for instructional strategy decisions and criterion tests, establish clear and concise learner goals, and determine content.

Learning Step Activity (LSA)

LSAs are the foundation for a lesson. LSAs also provide a structured means to focus learning on a small part of what a student needs to learn, and provide the basis for identifying specifications, including such items as the method of instruction and resources required to present the lesson.

Learning Outcome

A statement that indicates the level and type of competence a learner will have at the end of a course. The specification of what a student should learn as the result of a period of specified and supported study.

Learning Organization

Organization with continuous testing of experience and the transformation of that experience into performance and supporting skills/knowledge. The learning is accessible to the whole organization and is relevant to its core purpose.

Lesson

The basic building block of training. The lesson normally includes (1) showing or telling students what to do or how to do it, (2) giving an opportunity for students to practice, and (3) providing students feedback regarding their performance.

Lesson Plan

A lesson plan is the detailed development of information and resources used by instructors/facilitators to execute the instruction prescribed in one lesson within the prescribed time limits using the specified resources. A lesson plan includes the content and supporting information for only one lesson which supports the learning and assessment of one TLO.

Mission Essential Task List (METL)

A compilation of mission essential tasks that an organization must perform if it is to be successful. A mission-based training requirement (1) justifies resource needs, (2) links functional requirements to tasks, and (3) allows developers to make informed decisions, thereby satisfying critical mission-based task performance requirements.

Objectives

Statements which specify precisely what behavior the student must exhibit upon completion of training, the conditions under which the behavior will be accomplished, and the minimum standard of acceptable performance (also referred to as training or learning objectives).

Performance-based Tests

Tests which measure performance of a task in either the natural or a simulated situation against a standard or criterion. Included are written simulations, identification tests (written or performance), simulated performance, and work samples (written or performance).

Posttest

A test given to a student upon completing a course of instruction to measure learning achieved.

Prerequisites

Skills, knowledge, and abilities required of a student to effectively participate in a specific training course prerequisites may be based on position, grade, job series, subject knowledge, or experience the student must have.

Pretest

A test given to a student before entry into a course or unit of instruction to determine the technical skills and knowledge he or she already possesses in a given subject. In classroom training, this test can be used to identify areas for more/less emphasis; in exportable training, it can be used to identify portions of the instruction the student can by-pass.

Proponent (Organizational)

The Organizational Proponent sponsors and reviews the training curriculum, to include all courses for the functional area: (1) to ensure consistency with mission objectives and eliminate or prevent any duplications between courses, (2) to recommend solutions for training tasks not covered by existing courses, (3) to recommend the most cost-effective methodology for training; and (4) to ensure currency of content training and materials.

Proponent- Sponsored Engineer Corps Training (PROSPECT)

Short-term training courses sponsored by USACE elements. Previously, the acronym was used to refer to the classroom program only; however, all training managed by the ULC is proponent-sponsored, whether classroom or exportable.

Reliability

The extent to which a test/test item gives consistent results each time instructors use it. Instructors should measure tests for validity as well as reliability.

Rubric

A guide listing specific criteria for grading or scoring academic papers, projects, or tests. Rubrics are also used for assessing levels of learner achievement of competencies.

Stem

The part of a multiple-choice test item that asks the question.

Subject Matter Expert(s)

An individual, usually from a USACE element, who has been designated by a proponent or action officer to serve as an advisor/consultant to CEHR-P-TO for a specified course regarding subject matter, content, objectives, etc. An SME may be an advisor/ consultant, a developer, a course monitor, or an instructor; an SME sometimes performs multiple roles.

Student Handout

A booklet, schematic, circuit diagram, table, or similar material that augments the study guide, work book, learner text, or otherwise supports course objectives.

Summative Assessment

A process that concentrates on learner outcomes rather than only the program of instruction. It is a means to determine learners' mastery and comprehension of information, skills, concepts, or processes. Summative assessments occur at the end of a formal learning/instructional experience, either a class or a program and may include a variety of activities (for example: tests, demonstrations, portfolios, internships, clinical experiences, and capstone projects).

Summative Evaluation

A process that concerns final evaluation to ask if the project or program met its goals. Typically the summative evaluation concentrates on the program of instruction and the learning products.

Target Population

The group of individuals that will potentially require training in a specific area.

Task

A unit of work that forms a significant part of a duty.

Task Analysis

A method by which the knowledge, skills, and steps required for task performance is systematically examined.

Task Inventory

A list of all the task statements for a job.

Teletraining

Video or audio training delivered via communication links such as satellite or cable links.

Terminal Learning Objective (TLO)

The TLO is the main objective of a lesson. The TLO describes in observable, measurable terms what the learner must do at the end of the lesson to demonstrate acceptable performance. A lesson has only one TLO. A TLO may be identical to the task/competency it covers. The learning level of the TLO is always equal to or at a higher level than the ELOs.

Test Control

The application of security measures to protect tests and test items and related sensitive material from unauthorized disclosure from the time of their creation until they become obsolete or are destroyed.

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Training and Education Development

The process of developing, integrating, prioritizing, resourcing and providing quality control/quality assurance of the Army's training and education concepts, strategies and products to support the Army's training and education of Active Army and Reserve Component Soldiers, civilians and units across the institutional, self-development and operational training domains.

Training Developer (TD)

The individual with the function of analyzing, designing, developing, and evaluating training and training products. Any individual functioning in this capacity is a training developer, regardless of job or position title.

Training Development Capability

TDC is a web-based, CAC-approved, automated system used to develop, store, and manage learning products for all training domains.

Training Support Package (TSP)

A complete, exportable package integrating training products, materials, and/or information necessary to train one or more tasks or competencies. The contents will vary depending on the training site and user. A TSP for collective training is a package that can be used to train critical collective and supporting critical individual tasks (including leader and battle staff).

Validation

The process used to determine if new/revised courses and training products/materials accomplish their intended purpose efficiently and effectively. It is the process used to determine if training accomplishes its intended purpose. Validation and revising training are continuous actions in the teaching/revising process of training improvement. Validation is of the training products themselves, not the training site.

Web-based Training

Web-based training is a DL method in which training applications residing on a central computer functions as a network server to deliver training across a public or private computer network, e.g., the Internet, to students at any location and displayed on a web-browser. Authorized students may access training on demand and download applications for individual instruction.

Written test

Instrument used to sample each learning objective and, when necessary, performance objective knowledge components. Tests can be unit, module, block, or end-of-course tests administered in a formal testing mode during time allotted in the POI.