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Research Product 85-14

**Guidelines for Conducting a
Training Effectiveness Evaluation (TEE)
Volume I: TEE Evaluator's Handbook**

ARI Field Unit at Fort Bliss, Texas
Systems Research Laboratory

February 1985

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21. ABSTRACT (Continue on reverse side if necessary and identify by block number) A system for conducting Training Effectiveness Evaluation (TEE) on Army Air Defense Training is described in detail. The TEE Evaluation's Handbook includes the following major components: (1) Guidelines for Conducting the TEE; (2) a Master List of Evaluation Questions; (3) job-aids for conducting product and process evaluation; (4) training materials for TEE analysts; and (5) a set of worksheets keyed to the Guidelines. The scope of the TEE Guidelines extends from the initial request to perform an evaluation on a designated Army course to a report outlining the results of the investigation. The scope of a TEE project includes		

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20. ABSTRACT (cont.)

collecting data for the purposes of identifying "failures" in performance of tasks by the trainees (called "performance discrepancies" in the Guidelines) and failures in the instructional system itself. Data on both the training process, collected by actually observing the training, and on the training materials (a "product evaluation") can be included.

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Research Product 85-14

**Guidelines for Conducting a
Training Effectiveness Evaluation (TEE)
Volume I: TEE Evaluator's Handbook**

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FOREWORD

The Guidelines for Conducting a Training Effectiveness Evaluation (TEE), Volumes 1-3 were developed in response to Army Training Study HRN 79-269, entitled Methodology for Training Effectiveness Analysis (TEA).

The three volumes of the Guidelines explain how to use the TEE methodology to evaluate a course of instruction and to formulate revisions for correcting training deficiencies, in ongoing courses and in training for operational tests (OT's) of new or improved equipment. Both product analyses of training materials and process analyses of training methods are covered by the Guidelines. Volumes I and III are directed toward the TEE analyst and associate analysts and explain how to conduct a TEE and how to remedy deficiencies, respectively. Volume II addresses the needs of the TEE data collector.



EDGAR M. JOHNSON
Technical Director

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GLOSSARY

CLASSROOM INSTRUCTION:	A lecture or discussion involving a group of students and an instructor. Statements, statement help, examples, and example help are the most commonly used presentation components in the classroom; however, practice, feedback, and feedback help could possibly be employed for some non-equipment related tasks or for remember level objectives.
COMMON ERRORS:	Errors commonly made while performing a task on the job.
COMPONENT:	See PRESENTATION COMPONENT.
CONCEPT:	A set of specific objects, symbols, or events, which are grouped together on the basis of shared (critical) characteristics and which can be referenced by a particular name or symbol (see CRITICAL CHARACTERISTICS).
CONDITIONS:	The "givens" of a performance. They describe the circumstances under which the task (objective, or team function) is performed. Conditions are those things which are specifically given or denied to the student at the time he performs the action specified in the objective.
CONTENT TYPE:	A category of subject matter which requires the same general kind of learning strategies. Content types include fact, concept, procedure, rule, and principle (see entries for each content type).
CRITICAL CHARACTERISTICS:	A set of features which define a concept. Any object, symbol, or event which has those features is included in the concept class. Anything which lacks even one of the features in the set is not a member of the concept class (i.e., a non-example).
DEMONSTRATION:	An actual performance of a procedure for purposes of showing the learner how it is done. Demonstrations are usually best when live or conducted with communications media (e.g., film, videotape, tape/slide), but may be written when necessary.
ENTRY SKILLS:	The skills and knowledge required of students entering a course necessary for them to succeed in the course.
ENTRY TEST:	A test covering course entry skills given before the course begins. Used to restrict course enrollment to students possessing the entry skills.
EXAMPLE:	A presentation component in which the student is told or shown how a statement of a concept, procedure, rule, or principle applies in a specific case. Also the specific case itself which possesses the critical characteristics of the concept class.

GLOSSARY

EXAMPLE HELP:	Additional information given following the presentation of examples to aid students in understanding them.
FACT:	A simple piece of information to be remembered, such as an object, event, name, part, function, location, or date, alone or in combination with others.
FEEDBACK:	Information given to a student as to the correctness of a practice or test performance.
FEEDBACK HELP:	Explanation of why an answer to a test or practice item was wrong.
FORMAT:	See TEST FORMAT.
HELP:	Additional information about a statement, example, or feedback to aid the students in understanding it.
HELP SESSION:	Instruction of any of a number of the types held in addition to the regular course instruction to aid students who need additional help. Statement or example help as well as practice and feedback would be the typical presentation components employed.
HIGHER-ORDER RULE:	A rule made up of other concepts, rules, and/or principles which is constructed and applied when using a principle.
INDICATOR BEHAVIORS:	Actions specified in an objective which are performed to indicate that the student has acquired the required skill or knowledge.
INDIVIDUAL STUDY:	A situation in which students are allowed to study on their own. It could follow classroom instruction or it could occur in individual instructional courses where students typically proceed at their own pace.
INTEGRATED PRACTICE OR TEST:	Practice or testing of two or more tasks in conjunction with each other at a high level of realism or in an operational setting. This may be done by an individual, a group performing individual tasks, or a team performing team functions.
JOB PERFORMANCE AID (JPA):	Any written or pictorial device showing the steps in a procedure or rule or giving a decision rule for concept classification. Used as an aid during job performance.
LEARNING OBJECTIVE (LO):	A subunit of terminal learning objective consisting of a precise description of what is to be learned in terms of the expected student performance under specified conditions to accepted standards. These learning objectives identify the mental skills, information, attitudes, or physical skills that are required to perform the terminal learning objective. (See TERMINAL LEARNING OBJECTIVE.)

GLOSSARY

LESSON:	A unit of instruction teaching one or more tasks or parts of tasks usually encompassing a short series of training events.
NON-CRITICAL CHARACTERISTICS:	Features which do not define a concept, but may be possessed by one or more of the members of the concept class (see CONCEPT, CRITICAL CHARACTERISTICS).
NON-EXAMPLE:	An object, symbol, or event which does not contain all of the critical characteristics of a concept class, usually used in contrast to an example during instruction.
OBJECTIVE:	A precise statement of a behavior to be learned containing a statement of the required action along with conditions and standards of performance.
ORAL TEST:	Assessment of how well students can perform at any task level using spoken responses by the students.
PERFORMANCE TEST:	Assessment of how well students can perform at the use task levels in isolation from other tasks.
PRACTICE:	A presentation component in which students are given the opportunity to remember facts, classify examples and non-examples of concepts, perform procedures, demonstrate rules, or apply principles.
PRACTICE REMEMBERING:	Practice at the remember task level.
PRACTICE USING:	Practice at the use-aided or use-unaided task levels.
PRESENTATION COMPONENT:	A basic unit of instruction; either a statement, example, practice, or feedback.
PRETEST:	A test given at the beginning of a course on course content; used to exempt students from parts of the course they have already mastered.
PRINCIPLE:	A general rule for the development and application of a "higher-order" rule. In principle-using situations the behavior involved is that of recalling subordinate concepts, rules, or principles; combining them in different sets; and trying them out until the combination (the higher-order rule) that works is discovered.
PROCEDURE:	A set of ordered steps designed to solve a specific problem that always presents itself in the same way.

GLOSSARY

PROCESS EVALUATION:	The observation of the process of training as it occurs in the classroom or field setting and the analysis of the resulting data.
PRODUCT EVALUATION:	The analysis of printed or otherwise mediated training materials to ascertain their potential effectiveness.
RELIABILITY:	See TEST RELIABILITY.
REMEMBER TASK LEVEL:	A dimension of task performance in which the student is required to remember either facts, concept definitions, steps in a procedure or rule, or potential causes/effects useful in principle building.
STANDARD:	A portion of a task, objective, or team function which specifies how well the action must be performed.
STATEMENT:	A presentation component in which the student is given a statement of a fact, a concept definition, the steps of a procedure or rule, or a statement of a principle.
STATEMENT HELP:	Additional information given following the presentation of a statement to aid students in understanding it.
RULE:	A set of ordered operations or steps which, when applied, will solve a particular type or class of problems.
SUBORDINATE SKILLS:	Tasks which must be learned prior to the learning of other (superordinate) tasks.
SUPERORDINATE SKILLS:	Tasks in a superior relationship to other (subordinate) tasks. Superordinate tasks cannot be learned until their subordinate tasks are mastered.
TASK:	A highly specific component of a job stated in terms of a verb and an object with conditions and standards of performance.
TASK ELEMENT:	A step in a task that is just small enough that it requires no explanation for a non-expert to understand what it means.
TASK LEVEL:	A general classification of task or objective actions, either remember, use-aided, or use-unaided; (see the respective task levels).
TEAM FUNCTION:	An action to be performed by a team or crew requiring multiple tasks to be performed by individuals in conjunction with each other.
TEAM PRACTICE:	Practice of a team function by all crew/team members in a realistic setting.

GLOSSARY

TEAM PRACTICE CONDITIONS:	The circumstances under which a team function is practiced including the resources available to team members.
TEST ADEQUACY:	The extent to which a test conforms to factors contributing to validity and reliability.
TEST FORMAT:	The type of test item used in an examination, either true/false, multiple choice, matching, fill-in, short answer, listing, or performance.
TEAM PRACTICE FEEDBACK:	Feedback given to a team following practice of a team function.
TERMINAL LEARNING OBJECTIVE (TLO):	A specific description of the action, with conditions/standards, to be performed after training. Derived from job performance measures, TLO's are to be attained during training. TLO's are broken down into their component parts which are documented as learning objectives which may be further divided into learning steps.
TEST RELIABILITY:	The consistency with which a test measures the amount of student achievement.
TEST VALIDITY:	Whether test items or tests measure what they are supposed to measure as defined by instructional objectives.
TRAINING EVENT:	A period of instruction with a specific purpose usually involving one or two presentation components.
USE-AIDED TASK LEVEL:	A dimension of task performance in which the student uses a job performance aid in performing the task.
USE-CONCEPT, USE-PROCEDURE, OR USE-PRINCIPLE:	Terms used to describe objectives, practice items, or test items at the use-aided or use-unaided task level and the designated content type.
USE-UNAIDED TASK LEVEL:	A dimension of task performance in which the student has no aids to task performance except his own memory.
VALIDITY:	See TEST VALIDITY.
WRITTEN TEST:	Assessment of how well students can perform at any task level using paper and pencil tests.

THE TEE SYSTEM

The TEE system consists of the TEE Evaluator's Handbook: Guidelines for Conducting a Training Effectiveness Evaluation, a Data Collector's Manual, job performance aids for product and process evaluation, and a set of reproducible masters for worksheets and training materials.

The TEE Evaluator's Handbook includes the following major components:

- a. Guidelines for conducting the TEE (Phases A through F).
- b. A master list of evaluation questions.
- c. Job aids for conducting product and process evaluations.
- d. Training materials for TEE analysts and associate analysts.
- e. A set of worksheets keyed to the guidelines.

Worksheets are used with 11 out of the 18 TEE tasks in conducting an evaluation. In other tasks, actual course documentation is annotated and used as a worksheet. Each worksheet is for the purpose of either planning to collect data, collecting data, summarizing data, or interpreting data. The Guidelines give step-by-step directions and examples for using the worksheets to conduct an evaluation.

The primary components of the Data Collector's Manual are:

- a. The master list of evaluation questions edited for use by data collectors.
- b. Training materials on how to classify task level and to recognize glossary terms.

The job performance aid for use in product evaluation is a subset of the master list of evaluation questions. It contains only those TEE questions appropriate to product evaluation along with abbreviated rating guidance.

The job performance aid for use in process evaluation is also a subset of the master list. It contains detailed guidance for those process TEE questions which cannot be rated without directions beyond that provided in the questions themselves.

The scope of the TEE Guidelines extends from the initial request to perform an evaluation on a designated Army course to a report outlining the results of the investigation. The scope of a TEE project includes collecting data for the purposes of identifying failures in performance of tasks by the trainees (called performance discrepancies in the Guidelines) and failures in the instructional system itself. Data on both the conduct of training (derived from a process evaluation), and on the training materials (derived from a product evaluation) can be included.

Along these same lines, it may not always be necessary to conduct a "full TEE" using every task and step outlined in Figures 1 and 2. Some of the data collection steps may be omitted when corresponding information is already known, or

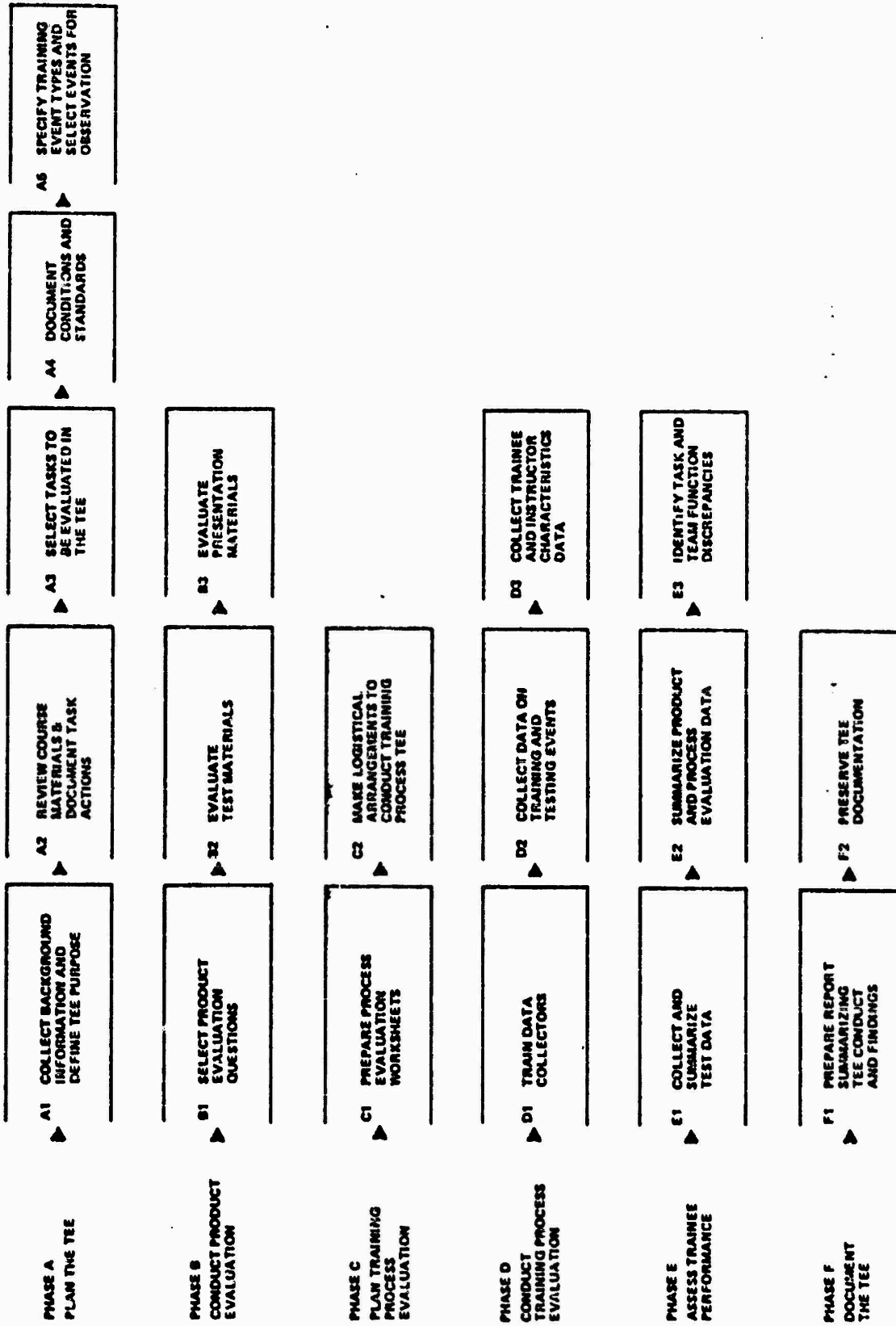


Figure 1 CONCEPTUAL MODEL OF TEE PROCEDURES

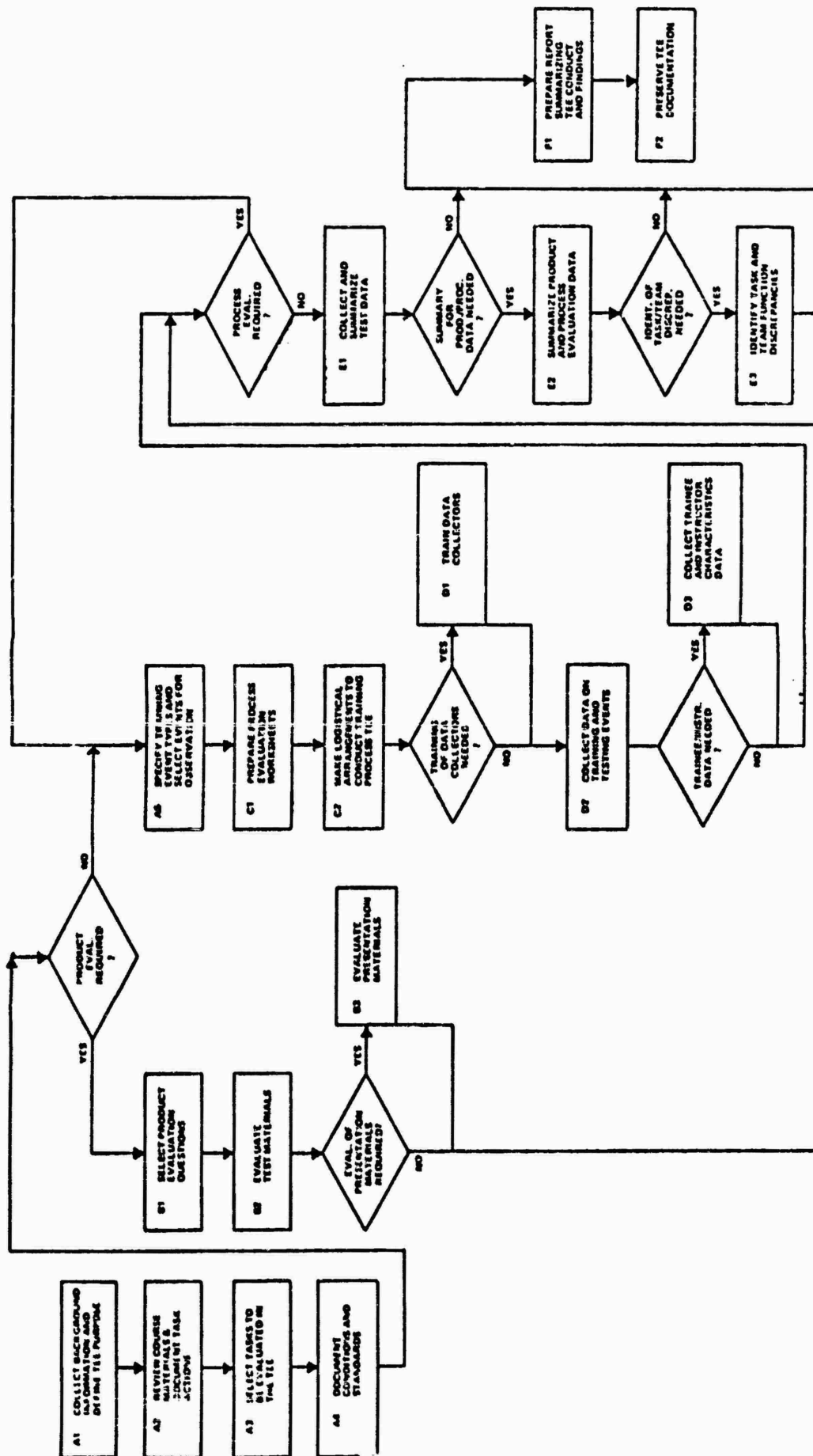


Figure 2 FLOWCHART OF TEE TASKS

one may wish to concentrate on certain aspects of the training which are known to be bad. A complete TEE may not be within the resources available.

A number of different types of personnel will be involved in the TEE. In addition to the sponsor, the organization that decides to conduct the TEE and utilizes the results, and the training organization which will be evaluated, there are three possible types of personnel who may also be involved:

- a. The TEE analyst will be responsible for planning and conducting the TEE, analyzing the data, and writing the final report on the TEE. He may need to supervise a team of data collectors. He should have some background in training development or evaluation and should preferably have some familiarity with Instructional Systems Development (ISD, see TRADOC Pam 350-30). Completion of an ISD Workshop and/or a Criterion Referenced Instruction course (or their equivalent) is recommended.
- b. An associate analyst may be employed to assist the TEE analyst with some or all of his responsibilities. He should be a subject matter expert (SME) in the training to be evaluated. If a team of data collectors (described below) is employed, one of his primary responsibilities should be to supervise much of the data collection activity, acting as an interface between the TEE analyst and the data collectors. In that event, he should be an Army officer, noncommissioned officer, or enlisted man with a higher rank than that of the data collectors selected for the TEE. He need not have a training background, although that would be desirable.
- c. Data collectors should be employed whenever the TEE analyst and associate analyst cannot adequately observe the training alone. This may occur when there are several classes being taught at the same time. Data collectors can be selected from the pool of all available personnel, but should be used only after successful completion of training on TEE observation tasks. It may also be desirable to have one or more subject matter experts among them as an additional resource to the TEE analyst.

Another characteristic important for associate analysts and data collectors is reading ability. Without this quality they will be difficult to train and will not function well in the TEE. The associate analyst should have a reading grade level of at least 10. It is also preferable for data collectors to have a tenth grade reading ability. However, subject matter experts (SMEs) with a lower reading level may be paired with non-SMEs who have a tenth grade reading ability. In no case should data collectors be recruited with reading grade levels lower than 8. Approximate reading grade levels can be computed from AFQT scores by using the following formula*: Estimated reading grade = $.075 (\text{AFQT}) + 5.52$ level.

Especially in the early stages of the TEE, the TEE analyst should become well acquainted with the sponsor (the organization requesting the TEE) so that he

*Stitch, T.G. (Ed.). Reading for working: a functional literacy anthology. Alexandria, VA: Human Resources Research Organization, 1975, p. 80.

will understand what is expected from the TEE and what his resources will be. It is also important that the channels of communication be opened, putting him in direct contact with the training organization conducting the training he will evaluate.

The TEE methodology consists of six phases:

- a. Phase A: Plan the TEE.
- b. Phase B: Conduct product evaluation.
- c. Phase C: Plan training process evaluation.
- d. Phase D: Conduct training process evaluation.
- e. Phase E: Assess trainee performance.
- f. Phase F: Document the TEE.

Each of these phases is described in the following scenario of a typical TEE. In this instance, all of the TEE tasks are exercised, as would be required for an OT training evaluation.

Phase A: Plan the TEE

The purpose of Phase A is to collect as much background and logistical information as feasible in advance of observing the training and testing that will be analyzed. This involves assembly of documentation and plans that already exist, and an initial meeting with the requestor/user of the TEE. It also involves decisions regarding the TEE's purpose and the selection of appropriate questions to ask during the TEE.

Little actual judgment of the training and materials is involved in Phase A. The effort primarily involves getting ready to perform the TEE. However it does involve a review of the tasks and objectives addressed in the course.

These are the tasks for Phase A:

Task A1: Collect background information and define TEE purpose. In this task, the TEE analyst requests a meeting with the organizations that are most knowledgeable of the training content and methods of the course that the TEE will analyze. He also requests the following materials and documentation relevant to the project:

- a. Task documentation and/or Job Data Worksheets.
- b. ISD or other documentation relevant to the training events that will occur, such as objectives, hierarchies, lesson plans, and practical exercises.
- c. Test administration directions and/or any documentation concerning the methods that will be used during and at the end of the course to evaluate the performance of the trainees.

- d. Commander's manual relevant to training.
- e. Soldier's manual(s) relevant to the training.
- f. Course materials to be used by the trainees.
- g. Testing/evaluation instruments to be used in the course.
- h. Training/testing schedules.
- i. Course administration policies.

This documentation is studied prior to the initial meeting with representatives of the training organization. A worksheet entitled "Background on the Project" is provided to organize relevant TEE background information and for use as an agenda for the initial meeting. Guidelines for completing this worksheet are included in the TEE Evaluator's Handbook.

Another subtask in Task A1 involves determining the scope of the TEE effort in light of the TEE purpose and corresponding resource considerations. The TEE analyst makes his initial determination from an informal needs assessment and from reference to the flowchart of TEE tasks and the table of TEE purposes and corresponding task options in the TEE Evaluator's Handbook. A preliminary assessment of TEE purpose (i.e. operational test, Review, or Complaints), corresponding TEE tasks, and required resources is made to define the scope and to guide the TEE Analyst in making recommendations to his sponsor.

The TEE Analyst then meets with his sponsor for the final determination of the scope of the TEE. It is the TEE Analyst's responsibility to insure effective communication so that a complete understanding of the effort required and the anticipated results is established with the sponsor. Once this understanding is achieved, the TEE Analyst documents all commitments in writing.

Task A2: Review course materials and document task/TLO actions. The analyst next reviews all available documentation and the information accumulated via the Background worksheet. If practical, he discusses the key training tasks to be taught with the instructors or other subject matter experts.

The analyst then develops an accurate list of tasks or objectives and/or team functions. A glossary, self-instruction and practice on classifying content types and task levels, and "Guidelines for Task/TLO Actions" are provided in the manual as supporting reference material for this effort.

If an existing list of tasks or objectives is unavailable or is of poor quality, the Guidelines provide for options of extensively revising the existing task list or producing a new one.

Task A3: Select tasks to be evaluated in the TEE. In this task, the analyst decides whether or not he can evaluate all of the tasks in the course.

If doing so is beyond existing resources or is impractical, tasks must be selected for evaluation. The list of tasks under consideration is iteratively narrowed down, based on considerations of whether each task is: already known by the majority of trainees; known to have had performance problems in the past; difficult to learn; performed frequently on the job; and other factors.

Task A4: Document conditions and standards. The purpose of this task is to document objectives so that they validly reference tasks as they are performed on the job. Up to this point, the analyst has examined tasks in terms of the actions the trainee will be expected to exhibit after training. Now conditions and standards for tasks/terminal learning objectives (TLOs) must be evaluated or added if not already documented.

"General Guidance on Objectives" and "Guidelines for Evaluating Objectives" are included in the TEE manual as an aid to identifying/writing complete TLOs which correspond to tasks, and learning objectives (LOs) which match the major subtasks. Criteria are given for determining whether each objective (TLO or LO) is correctly stated, classifiable by task level and content type, and appropriate. Guidance is also provided for determining whether all of the required LOs for a TLO are present.

Task A5: Specify training event types and select events for observation. Using the documentation collected in previous Phase A tasks, the analyst now makes a list of the types of training events that are employed in the course. These may include:

- a. Classroom Instruction.
- b. Demonstration.
- c. Practice.
- d. Performance test.
- e. Written test.
- f. Oral test.
- g. Integrated practice or test.
- h. Individual study.
- i. Help session.

He then lists the training events associated with each lesson topic, annotates this list with the corresponding task numbers, and eliminates events for tasks not selected for evaluation.

Phase B: Conduct Product Evaluation

The purpose of Phase B is to evaluate the course materials and note deficiencies that are likely to cause performance problems on the final test. The general evaluation strategy is to check to see that test items are adequate and match the objectives, and to check the planned presentation for adequacy and its match to the test items.

These are the tasks for Phase B:

Task B1: Select product evaluation questions. In this task the master list of evaluation questions (Appendix A) has its first use. A list of the "short forms" of all master list questions, along with their rating scales, is shown in Appendix B. The master list is divided into two sections: one for tests, and one for the presentation of the instruction. In Task B1, the analyst identifies those questions that are applicable to a product evaluation (conducted using the course materials), and to the training situation. A similar process is conducted for process evaluation in Task C1.

Task B2: Evaluate test materials. In this task, the TEE analyst, referring to both the list of objectives and the course test(s), identifies the test questions that test each objective. He then classifies each test question by task level and content type, eliminating inapplicable test items. Finally the TEE analyst conducts the evaluation of applicable test materials by asking each of the test-related master list questions (not previously eliminated) of each test or test item, as appropriate. A job performance aid for product evaluation is provided to facilitate this process.

Task B3: Evaluate presentation materials. The first step in this task is to gather the necessary course documentation:

- a. The course objectives.
- b. All lesson materials and manuals used by the students.
- c. Any audio-visual equipment needed to hear or view the materials.
- d. Lesson and course administrative directions.

The Product Evaluation JPA and the course outline with events to be evaluated are also required for this task. The analyst conducts the evaluation of presentation materials by asking each question in the presentation section of the master list, of each lesson, objective, presentation component (e.g., examples or practice), or the course as a whole, depending upon the level to which each question applies.

Phase C: Plan Training Process Evaluation.

The purpose of Phase C is to prepare a set of worksheets for recording training process observations appropriate to the TEE setting and to make plans to observe specific training events. General worksheets containing all possible TEE

questions for different event types are included in an appendix to the TEE Evaluator's Handbook.

No actual judgment of the training or materials is involved in Phase C. The effort primarily involves getting ready to train data collectors and preparations for observing the training as it is being conducted in Phase D.

These are the tasks for Phase C:

Task C1: Prepare process evaluation worksheets. In this task the analyst locates the appropriate TEE worksheets for the training events to be evaluated in the process mode. The general heading of each worksheet is modified to fit the analyst's particular requirements. TEE questions which are inapplicable to the events under consideration are eliminated from the worksheets. The analyst also has the option of creating his own process evaluation worksheets, tailored to the training settings to be observed.

The steps remaining in this task concern the preparation of trainee and instructor reaction instruments. While trainees are not particularly qualified to make subjective judgments about the quality of training, they are quite capable of observing what happened in the training and stating how it affected either the way they learned the material or their motivation for learning it. Therefore, trainee reactions which pinpoint individual learning problems or points in the instruction that substantially reduced motivation for learning are appropriate for TEE data collection.

Task C2: Make logistical arrangements to conduct the training process TEE. At this point, the TEE analyst must consider how many training events to observe. As a minimum, the following events must be observed for each task selected for evaluation:

- a. A final test for each task selected for evaluation.
- b. At least 50% of the demonstrations for each instructor involved.
- c. As much practice as is practical for each task selected.
- d. As much classroom instruction as possible.
- e. As many of the other training event types as possible.

When the purpose of the TEE is to certify training prior to an operational test of a developing weapons system, it is more important to observe a large percentage or all of the training events for their entire duration. On the other hand, when ongoing training is observed that appears to be functioning fairly well and which is consistent across instructors, complete observation of every training event becomes less important.

After deciding which events to observe, the analyst prepares an "observation plan" or TEE schedule, and communicates his plans for an

on-site visit to the personnel in charge of the training to be observed. At this time the analyst obtains and reviews all training material and tests for the events to be evaluated, if he has not already done so.

Phase D: Conduct Training Process Evaluation.

During Phase D, the training and testing events selected in Phase A are observed directly. The primary purpose of Phase D observations is to gather information that will be useful in analyzing the results of the training, i.e., the performance scores.

If the trainees are unable to meet performance criteria when they engage in operational tests, the information collected in Phase D will be useful in determining the causes of the performance deficiencies.

If the trainees are able to perform to criteria, the observation data collected in Phase D will serve as a record of the training and testing conditions that produced the result. A record of success is often as helpful to the designers and deliverers of training as feedback on failures.

Three major types of information are collected during this phase:

- a. Direct observation data.
- b. Trainee and instructor characteristics.
- c. Trainee and instructor reaction data.

These are the tasks for Phase D:

Task D1: Train data collectors. In this task the TEE analyst familiarizes data collectors with the worksheets they will use in observing the training and trains them in the skills necessary to do so.

The analyst first insures that he has a sufficient number of data collectors, if indeed the course has sufficient enrollment to require additional personnel to collect data.

In the next few steps the analyst gathers the appropriate training materials, gives the data collectors an overview of the TEE process and the mechanics of what they will be doing, conducts training on terminology used in the observation worksheets that may be unfamiliar to the data collectors, and administers a self-instructional module on how to classify task level, a skill the data collectors will need in answering some of the questions on the worksheets.

If some data collectors are not SME's, the analyst must insure that all of them are familiar with the tasks to be evaluated. He may have one of the data collectors who is a SME conduct this segment of the training.

In the last few steps, the analyst gives a thorough explanation and discussion of the questions on the applicable observation worksheets, demonstrates methods for interviewing trainees and administering questionnaires, and gives the data collectors an opportunity to practice making ratings on a segment of the training.

Task D2: Collect data on training and testing events. In this task, the TEE analyst sends the data collectors out to observe the training. On a daily basis he prepares assignments, stating where to go and what to observe. He includes the appropriate data collection worksheets prepared in Task C1 and training materials needed for reference. When the data collectors return, the analyst reviews the data and clarifies problem areas with the data collectors. He decides whether data are usable or not and whether individual data collectors can indeed collect good data.

When a series of training events has been observed that apply to an individual task, the analyst fills out a special worksheet answering questions that are broader than can be answered by observations of a single training event.

Task D3: Collect trainee and instructor characteristics data. At some point during the TEE, the analyst examines available personnel records or other documentation to ascertain course entrance requirements and instructor qualifications, and the degree to which students and instructors possess them. The TEE Handbook provides guidelines for filling out worksheets for trainees and instructors.

Phase E: Assess Trainee Performance.

This phase has four major purposes:

- a. Make assessments of how well trainees can perform the tasks selected for evaluation upon completion of training.
- b. Judge the adequacy of the above assessment.
- c. Summarize observations of the training and training materials as an aid to identifying performance discrepancies and as input to the revision process.
- d. Identify tasks on which performance standards are not met -- (performance discrepancies).

The TEE analyst takes all of the observational, interview, questionnaire, and test data collected during the TEE and synthesizes two primary outputs: a. a list of tasks for which the standards have not been met, and b. a list of potential problem areas for each task. Each deficiency will have been rated as minor or serious as it would impact test adequacy or student performance.

Phase E Tasks are:

Task E1: Collect and summarize test data. In this task, the analyst locates all of the relevant test data for the course final exam. He converts to Go/No Go scoring on a task by task basis, if the data are not already in that form. He then enters the data on a worksheet which allows him to calculate the percentage of No Gos on each task and for the entire test. The same process can be accomplished for team functions, if crews rather than individuals are scored.

The data from any within-course, entry, or pretests are summarized in the same manner.

Task E2: Summarize product and process evaluation data. For process evaluation data which do not stem from master list questions, i.e., trainee and instructor reaction instruments, the reactions must be rated on a three-point scale. Having done that, the analyst averages ratings for all TEE data for questions where different data collectors have rated the same event. The averages are then used rather than the raw data. Reactions by trainees and instructors are labelled as pertaining to product or process evaluation.

Testing problems are then summarized: the analyst records the question number and rating for each problem noted in the data for each task or learning objective. Product and process ratings are recorded under separate headings, which are segmented further into sections for questions that apply to each test item, to the objective, or to the test as a whole. The analyst then uses a similar method to record ratings of the training presentation. When serious problems are identified in the next task, these summaries of training and testing problems become one of the primary TEE outputs mentioned above.

Task E3: Identify task and team function performance discrepancies. The analyst must first define an appropriate performance standard for each task. These standards are based on task factors rated in TEE Task A3, such as task criticality or uniqueness. The analyst then rates test adequacy for each task based on the seriousness of problem areas summarized earlier. He then combines test ratings with percent No Go data for each task to yield a task rating, either acceptable, discrepant, or unknown. The analysis process is conducted to this point for both final exam and within-course test data. If both exist, the analyst combines the task ratings from each into a single set of ratings.

Having determined "combined task ratings" (or final exam task ratings alone when no within-course tests exist) from test adequacy and performance data, the analyst examines the presentation data summaries and rates the presentation for each task based on the seriousness of the problems summarized, again as acceptable, discrepant, or unknown. Finally, the analyst combines the ratings from tests and performance data with the presentation ratings for a "final task rating" for each task. These ratings represent the other primary TEE output referred to above.

If entry or pretest scores are available, the analyst can identify student selection problems by arraying entry, pretest, within-course, and final exam data for each trainee. Summary data is recorded at the bottom of the worksheet. Test adequacy is also rated. In addition, the analyst records discrepancies between specified and actual trainee characteristics.

When team functions are analyzed, and data are available for their subordinate tasks, the analyst can use a special worksheet to arrange the tasks and team functions hierarchically. He then rates the relationship between each team function and its subordinate tasks and identifies team functions which are discrepant due to team communication skills beyond individual task performances and those which are discrepant due to problems with subordinate tasks.

Phase F: Document the TEE.

The purpose of Phase F is to summarize the findings of the TEE, prepare a report documenting the effort, and organize the raw data worksheets for future use. Phase F has two tasks:

Task F1: Prepare report summarizing TEE conduct and findings. Before writing the final report, the analyst must first consider whether all desirable data have been collected. If not, he must decide whether it is feasible to collect additional data. When the data and its analysis are complete, the analyst must then interpret his findings and draw some conclusions. He considers the following items:

- a. Test adequacy.
- b. The number of tasks rated discrepant or unknown.
- c. The need for a second TEE (when the tests are very inadequate or extensive revisions in the presentation are indicated).
- d. Which lessons need the most revisions.
- e. Relationships between poor lessons and instructors.
- f. An excessive number of No Gos on the entry test,
- g. An excessive number of Gos on the pretest.
- h. Relationships between trainee characteristics and entry and pretest scores.
- i. Problems with team functions not related to problems with their subordinate tasks.

The analyst prepares a rough draft of his conclusions and recommendations and lets some of his associates review it, taking note of their questions and challenges. As the analyst prepares his complete report, he follows sections of the TEE Handbook which give examples

of techniques for displaying data and a recommended outline for the report.

Task F2: Preserve TEE documentation. So that future TEE analysts and those who may become involved in revising the course will be able to reference the TEE documentation, the analyst files it by task and step. The documentation includes course materials, product and process data collection worksheets, summary worksheets, the final report, and other TEE documentation.

PHASE A: PLAN THE TEE

Overview of Phase A

TASKS:	RELEVANT WORKSHEET:
A1. Collect the background information and define TEE purpose.	A1
A2. Review course materials and document task/TLO actions.	Task List
A3. Select tasks to be evaluated in the TEE.	A3
A4. For tasks/TLOs selected for evaluation, document conditions and standards.	Task List, Objectives List
A5. Specify training event types and select events for observation.	Course Outline

Guidelines for Phase A

Task A1: Collect background information and define TEE purpose.

A1.1 Request a meeting with the organizations that are the most knowledgeable of the training content and methods of the course that your TEE will analyze.

A1.2 Request the following materials and documentation relevant to the project:

- Task Documentation and/or Job Data Worksheets
- ISD or other documentation relevant to the training events that will occur, such as objectives, hierarchies, lesson plans, and practical exercises
- Test administration directions and/or any documentation concerning the methods that will be used during and at the end of the course to evaluate the performance of the trainees
- Commander's Manual relevant to the training
- Soldier's Manual(s) relevant to the training
- Course materials to be used by the trainees

- Testing/Evaluation instruments to be used in the course
- Training/Testing schedules
- Course administration policies

A1.3 Study the documentaton provided prior to the initial meeting with representatives of the training organization. Fill out worksheet A1 as far as you can.

NOTE: It is recommended that you read this User's Guide before the meeting so that you will be familiar with the requirements of the TEE.

A1.4 Determine the scope of the TEE effort in light of the TEE purpose and corresponding resource considerations. As indicated in Figure 2 (pg. 8), the flowchart of TEE tasks, major decision points determining the scope of the TEE involve the selection of product and process evaluation components and the treatment of resulting data. Table 1 specifies those TEE tasks which are required and those which are optional for a TEE in response to each of three basic purposes (i.e., "OT," "Review" of ongoing training, and "Complaints" arising from performance discrepancies and/or perceived instructional deficiencies). Optional TEE tasks are selected or omitted on the basis of time and manpower resources available to the TEE Analyst. For example Task B3, Evaluate Presentation Materials, is optional for a TEE which has the purpose of reviewing ongoing training. If resources are constrained, the scope of the TEE may be limited to a product and process evaluation of tests, rather than instructional materials as well. A TEE which has the purpose of responding to complaints has numerous optional TEE tasks. This is because indications of the problem area(s) are given as a starting point. If resources are constrained, the TEE Analyst can thus focus on probable discrepancies and/or deficiencies, and select such components as product or process evaluation and tests or presentation materials. Note, however, that a TEE with the purpose of fulfilling OT requirements has no optional TEE tasks. This is because the TEE model was designed specifically for that purpose. OT training is newly developed training, thus requiring an in-depth analysis of the entire training system. It would appear then that a TEE in response to OT requirements can not be conducted if resources are constrained. However, the scope of a TEE for any purpose can be limited to a significant extent when resources are constrained by exercising the sampling strategies and contingency options described within many of the TEE tasks. Task A3, Select Tasks to be Evaluated in the TEE, offers the greatest opportunity for limiting the scope of a TEE in this manner. Additional opportunities exist in such TEE tasks as B1, where product evaluation questions are selected, and A5, where training events are selected for observation.

A1.5 Make your decisions relative to the scope of the TEE based on TEE purpose, resource considerations and the goals and objectives indicated by your sponsor. At the initial meeting, you should identify the decision points and the options available, and work with your sponsor in defining exactly what is to be done. It is extremely important that you both reach an understanding of requirements, expectations, and commitments.

TABLE 1. TEE PURPOSES AND CORRESPONDING TASK OPTIONS

TEE TASKS	OT	REVIEW		COMPLAINTS	
	REQUIRED	REQUIRED	OPTIONAL	REQUIRED	OPTIONAL
A1	•	•		•	
A2	•	•		•	
A3		•		•	
A4	•	•		•	
A5	•	•			•
B1	•	•			•
B2	•	•			•
B3	•		•		•
C1	•	•			•
C2	•	•			•
D1	•		•		•
D2	•	•			•
D3	•		•		•
E1	•	•			•
E2	•		•		•
E3	•		•		•
F1	•	•		•	
F2	•	•		•	

- A1.6 Use Worksheet A1 and notes from study of the documentation as an agenda for the initial meeting. Guidelines for completing Worksheet A1 are given in the table below.

Guidelines for Worksheet A1

WORKSHEET ITEM	GUIDELINES/NOTES
Date	Date meeting conducted.
Evaluator	Your name.
Course	Official name of the course on which your TEE will be based.
Purpose	What is the overall goal of the course?
Primary Audience	For whom was the course primarily designed? (Write job title and/or MOS.)
Secondary Audience	In addition to the primary target audience, are there any others to which the course may be directed? If so, write job title(s) or MOS. If not, write "none."
Expected entry skills/training	Is the primary target audience to be able to perform at some entry-level beyond "know nothing about the job?" If so, describe the expected entry skills/knowledge or any prior training relevant to the course that will be taken.
Purpose of TEE	The TEE purpose from Step A1.4: evaluate, revise, or both.
User of TEE	To whom will your TEE report be given? Who will act on your findings? Who is the "client" you are performing the TEE for?
User Contact	Name of the point of contact you will work with in performing the TEE.
Training Dates/Locations	When and where will the training to be analyzed via the TEE be conducted? List additional dates and locations if applicable. Or attach a schedule of the training if there are many dates or locations for the training. For very large courses, information should be entered by module or "blocks" of training.

WORKSHEET ITEM**GUIDELINES/NOTES**

Testing Dates/
Locations

Often there is a considerable time period between the completion of training and testing on the skills taught in training. If so, this time interval may be important in the diagnosis of training deficiencies later in the TEE.

Training Contact

Who will arrange for your observation of the actual training and on-site testing.

Limitations

Are there any physical or other conditions in the training/testing environment that will prevent/make difficult your first-hand observation? If so, note them.

- Resource material exists?
- Source
- Date obtained?
- Date revised?

- Listed are the minimum materials and documentation needed for your familiarization and analysis.
- Add any others that are indicated.
- Check if they exist or not.
- Record the organization who did/will provide them.
- Check off the "Obtained" column when you receive each item.
- Enter the last date the materials were updated.

- Target date for completion
- Contingencies

- When is your TEE report due to be submitted to the "client"?
- What events or inputs will affect your meeting this deadline?

Previous TEE

Has a TEE been conducted on an earlier version of this course? If "yes", is that report available? If so, request that documentation as part of the background to the project.

Comparative study?

For example, comparing the performance of Vulcan crews to performance of SGT YORK gun crews. If so, note the performance with which the present trainees are to be compared.

Training development organization

If the user of your TEE is not the same as the requester/"client" for the TEE, so note. Request permission to contact the training development organization as it becomes necessary during the TEE.

Training delivery organization

Who will actually conduct the training on-site? Request permission to contact them, as it later becomes necessary as part of the planning and execution of the TEE.

WORKSHEET ITEM**GUIDELINES/NOTES**

Trainees selected?	On what basis will the trainees be assigned to take the course?
Entry test?	Will the prerequisites be assumed or will they be tested for? If there is to be an entry test, request a copy of it or any documentation that describes the entry test event.
Instructors selected?	On what basis will the instructors be assigned?
Qualifications?	Are the instructors already knowledgeable in the tasks they will train? Have they undergone instructor training?
Instructor/Trainee ratio	What will be the number of trainees per instructor? If there is a different ratio in the classroom compared to the field training, so note. Remember that some training courses exhibit cyclical variations in the number of students per class. This may cause variations in the trainee to instructor ratio, if the number of trainees remains constant.
Instructor-dependence	Examine the training plan and make an assessment concerning the degree that the teaching methods of the course depend on the skill and knowledge of the instructor, as opposed to relying on self-instructional materials and job performance aids. Use this chart as a guide for your judgment:

**If materials of
course contains**

**Then regard
instructor
dependence:**

A considerable number
of self-instructional
materials and/or job
aids

LOW

A few self-instructional
materials and/or job aids

MEDIUM

No self-instructional
materials or job aids

HIGH

WORKSHEET ITEM**GUIDELINES/NOTES**

Complexity of the task

After studying the performance tasks in your documentation, make a judgment about the complexity of the tasks to be learned in the course as a whole. Use the chart below as a guide for your judgment:

If many of the tasks involve:

Then regard the tasks as:

A considerable amount of visual and conceptual discrimination and/or
A considerable amount of fine-grained motor movements

HIGH complexity

Discrimination and/or fine-grained motor movements

MEDIUM complexity

Mostly straightforward sequential performance

LOW complexity

Ease of training observation

After studying the training plan and discussing the matter with the "client", assess the degree that you'll be able to directly observe the training and testing. Use chart below as a guide:

Ease of testing observation

If training and/or testing occurs:

The ease of observation is:

Mostly in the classroom situation

EASY

Some in classroom and some in field

MEDIUM

Mostly in the field and/or inside vehicles such as tanks

DIFFICULT

If the training is not "easy" to observe, get details on the different observation situations that will be encountered in terms of positions and tasks that are hard to observe. Use the space for notes at the bottom of the worksheet.

Consider making preliminary arrangements to observe some of those situations. For example, if you must observe training inside of an enclosed vehicle with room only for crewmembers, you might consider arranging to hear the training through an

WORKSHEET ITEM**GUIDELINES/NOTES**

Ease of training
observation

Ease of testing
observation
(Continued)

open intercom, or even audio surveillance equipment. You may be able to substitute data from trainee reaction questionnaires (see Task C1) administered immediately after training events, since these are designed to ascertain what happened from the trainee's viewpoint rather than to elicit trainee judgments on the quality of the training.

Ease of observation will be an important consideration in deciding which factors to include on trainee or instructor reaction instruments in Steps C1.5 and C1.7.

Mission criticality

Review task documentation and discuss criticality of mission with "client." Make an assessment using these guidelines:

If the performance taught in the course is:	Then judge criticality:
Absolutely vital to the overall mission of the Army (Top priority performance)	VERY HIGH
Vital to the mission of unit of the performer	HIGH
Necessary to the mission of Army and/or unit, but below-criterion perfor- mance will <u>not</u> greatly affect success	MEDIUM
Incidental to the mission of the unit	LOW

Other notes:

Space has been left on the worksheet for you to add additional notes that may affect the planning of the TEE: constraints, important dates, special reviews, etc.

Task A2: Review course materials and document task/TLO actions.

Familiarize yourself with the Glossary near the beginning of the User's Guide and practice classifying CONTENT TYPES and TASK LEVELS using the materials in Appendix F if you have not already done so.

You will recall from your study of the Glossary that a task is a "highly specific component of a job stated in terms of a verb and an object with conditions and standards." Terminal learning objectives (TLOs) are objectives which correspond to tasks. Whereas tasks describe job performance, TLOs are specific descriptions of the actions, with conditions and standards, to be performed after training.

Sometimes these differences are small but they are still important. For example, if the task requires the soldier to decontaminate a piece of equipment following a chemical or biological attack but the "real" conditions in the training environment do not permit the soldier to be subjected to such a hazard, then a TLO should be written to describe precisely the performance which is acceptable in the training environment.

- A2.1 Review all documentation that is available and the information accumulated via Worksheet A1. Existing course documentation may include a list of tasks or TLOs. Since the TEE procedures are concerned with examining training rather than job performance, use the list of TLOs if available.
- A2.2 If practical, discuss the key technical training tasks/TLOs to be taught with the instructors or other personnel knowledgeable of the subject matter (your associate analyst, if you have one).
- A2.3 Develop an accurate list of tasks or TLOs and/or team functions. This will be necessary in order to properly conduct the TEE. If you have obtained one in Task A1 or if you can quickly derive a list by copying task statements appearing in the manuals or other documentation, proceed with Step A2.4 below. You may find it helpful to first list the tasks or TLOs in one double-spaced list. Remember, at this point in the TEE you need only list the task/TLO action statements, not their associated conditions and standards. These will be addressed later in the TEE (see TEE Task A4).

If you cannot obtain a list of tasks or TLOs or if you find that major problems exist with the actions in the list you have, consider the options below:

- If you can make revisions to existing but inadequate tasks or TLOs, or if you can list new action statements from manuals and your own knowledge of the course with relatively little effort, then that is the best course of action.
- If you do not know enough about the course to revise the actions or write new ones and you have access to a SME, e.g., your associate analyst, you may be able to work with him to produce or revise a task list. Do this only if you are certain it can be

accomplished in the time available for this TEE task. The listing of new action statements is a long process for many Military Operational Specialties. The feasibility of this option will depend on the number of tasks in the course.

- If the alternatives above are not workable, consult with your sponsor. It is not possible to conduct a TEE without an acceptable set of task or TLO action statements. If arrangements cannot be made to produce them, the TEE must be postponed until such arrangements can be made.

A2.4

Evaluate the existing task/TLO list: Review each task or TLO action statement using the Guidelines for Task/TLO Actions shown below. Use the list which appears to be most adequate. If they are roughly equal, however, use the TLO list, for reasons noted previously. If there are any problems, make minor corrections or notes on your list at this point. Note that conditions, standards, and other aspects of the actions will be examined in Task A4.

Compare the task/TLO list with operator's, soldier's, and/or commander's manuals to insure its correctness and completeness. If manuals do not exist or are outdated, you should discuss the list with instructors or other subject matter experts to be sure it is up-to-date and valid. Be sure to include only tasks tested in the course.

If there are any major problems with your list, consider the options listed in the second paragraph of Step A2.3 above.

Use the documentation and notes assembled thus far to evaluate the actions the trainee will be expected to exhibit after training - not the events of training, but the tasks or TLOs the students must perform. Evaluate and revise tasks/TLOs and/or team functions in accordance with the guidelines following:

Guidelines for Task/TLO Actions

In order to assess the adequacy of task actions (or the action component of a TLO), it is helpful to understand the interrelationship of a task to a duty and to its job. This interrelationship is portrayed in Figure 3.

Job

The duties and tasks performed by a single worker constitute his job. If identical duties and tasks are performed by several individuals, they all hold the same job. The job is the basic unit used in carrying out the personnel actions of selection, training, classification, and assignment. In the Army such groupings or jobs are defined as Military Occupational Specialties (MOS). Note that in many cases, however, a single MOS may be composed of several jobs.

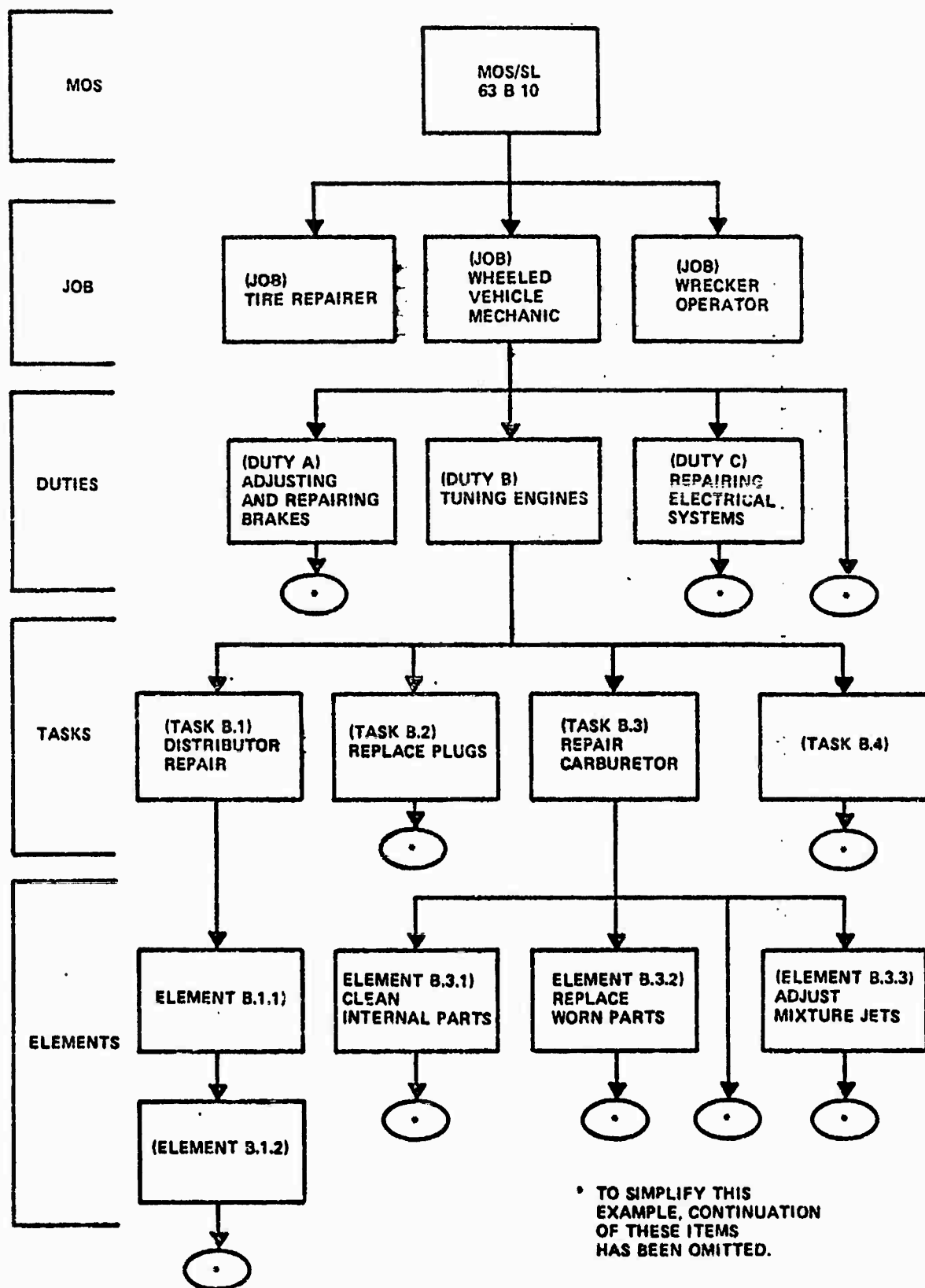


Figure 3 THE WHEEL VEHICLE MECHANIC MOS

Duty

A duty is one of the major subdivisions of work performed by one individual. A job is made up of one or more duties.

The following are some of the characteristics of duties:

1. A duty is one of the job incumbent's main functions. It sometimes may be a particular job incumbent's total job.
2. A duty is a grouping of closely related tasks.
3. Duty requirements often are the basis for initial assignment to a job, for determining the qualifications required to perform in the job, or for determining requirements for post-assignment training.

Duties can usually be defined by asking a supervisor what he thinks are the 5 or 6 most critical factors of a job or what he would demand of a person being considered for a job.

Duty titles often are used for categorizing groups of tasks under identifiable headings to help in the organizing of lists of tasks. At other times, duty titles are assigned for convenience after tasks have been identified and grouped. In either case, the duty title serves to clearly identify closely related groups of tasks.

Duty statements often use action words ending in "ing" to describe duties. The action word generally is followed by an object.

Some examples of duties are:

EXAMPLES - For wheeled vehicle mechanics: tuning engines, adjusting and repairing brakes, repairing exhaust systems, repairing suspension systems, and repairing electrical systems.

Task

Training Effectiveness Evaluation is accomplished at the task level. As you will recall, duties are actually clusters of tasks, the performance of which constitute the duties. A task is the lowest level of behavior in a job that describes the performance of a meaningful function in the job under consideration. Task statements must be constructed carefully to assure that the TEE yields usable evaluation data. The following are characteristics of tasks and task statements:

1. A task statement is a statement of a highly specific action. The statement has a verb and object.

EXAMPLE - 1. "Repair wheeled vehicles" is not sufficiently specific to be a good task statement. To one individual, such a statement might mean performing such actions as "replace wiper blades" and "replace burned-out head lamp." Another person might think it means "overhaul transmission and engine."

2. Also "inspect and repair exhaust system" is not sufficiently specific. However, One task might be "inspect exhaust system," and another task be "repair exhaust system."
3. Specific task statements, for vehicle mechanics, would include: "replace wiper blades," "replace burned-out head lamp," "inspect exhaust system," and "repair exhaust system."

2. A Task has a definite temporal beginning and end.

EXAMPLE - 1. Such action phrases as "have knowledge of" or "take responsibility for" are not time-ratable and therefore should not be included in a task statement.

2. A task statement might be "inform platoon sergeant when."

3. Tasks are performed in relatively short periods of time, i.e., seconds, minutes, or hours, but rarely, if ever, days, weeks, months, or years. Although no definite time limit can be set, the longer the period of time between the beginning and the completion of the activity, the greater the probability that the activity is a generality or goal rather than a task.

EXAMPLE - 1. "To assure a well-trained army" is probably a goal, not a task.

2. "Perform button-up procedures" takes a definable amount of time.

4. Tasks must be observable in that by observing the performance of the job holder or the results of his efforts a definite determination can be made that the task has been performed.

EXAMPLE - 1. "Understand electronic principles" is not observable. Neither the process nor the results can be observed. (However, certain actions that require an understanding of electronic principles can be observed.)

2. An observable task is "isolate an error in the circuit under inspection."

5. A task must be measurable; that is, in the real world, a technically proficient individual can observe the performance of the task or the product produced by the task and be able to conclude that the task has or has not been properly performed.

EXAMPLE - 1. "Know how to" or "be able to" are not measurable. Neither are they observable.

2. "Assure success of mission" is too general to be measurable.

3. "Clean weapon" is measurable and observable.

6. Each task is independent of other actions. Each task statement must describe a finite and independent part of the job. Tasks are not components of a procedure. In the eyes of a job holder, a task is performed for its own sake in the job situation. A task is either performed or not performed by any one job holder. The job holder is never responsible for only part of a task. If he is responsible for only a part of a work activity that would otherwise be defined as a task, the part for which he is responsible is the task.

EXAMPLE - 1. If one of the wheeled vehicle mechanic's tasks is "repair exhaust system," "remove muffler" might be one element of the task. However, a helper or trainee might be assigned the task of "remove muffler." For the mechanic "remove muffler" is only part of his task. His responsibility is not fulfilled until he performs the other appropriate work elements that together constitute "repair exhaust system." However, the trainee's responsibility for this particular work activity ends as soon as he properly "removes muffler." The wheeled vehicle mechanic does not remove the wheel and tire from a vehicle for the purpose of removing the wheel and tire. The removal is part of a procedure intended to accomplish one of several tasks such as rotate the tires, repair a flat, or install a new tire. The latter are tasks because they are independent of other actions and are done for their own sake.

Some requirements for writing good task statements are listed in Table 2.

TABLE 2. TASK STATEMENT REQUIREMENTS

Requirement	Task Statement	Example
Clarity	Use wording that is easily understood.	"Compare written description to actual performance."
		But Not
	Be precise so it means the same thing to all personnel.	"Relate results to needs of field."
	Write separate, specific statements for each. Avoid combining vague items of skill, knowledge, or responsibility.	Use words such as "check, coordinate, assist" with caution—they are vague. "Supervise files." "Maintain files."
		But Not
		"Have responsibility for maintaining files."
Completeness	Use abbreviations only after spelling out the term.	"Inventory War-Readiness Material (WRM)" may be followed by "Prepare requisitions for WRM."
	Include both form and title number when the task is to complete a form, unless all that is needed is the general type of form.	"Complete Task Description Worksheet (Form No. XXX)."
Conciseness	Be brief.	"Write production and control reports."
		But Not
		"Accomplish necessary reports involved in the process of maintaining production and control procedures."
	Begin with a present-tense action word (subject "I" or "you" is understood).	"Clean" or "Write."
	Indicate an object of the action to be performed.	"Clean engine." "Write report."
	Use terminology that is currently used on the job.	Use most recent military documentation.
Relevance	Do not state a person's qualifications.	"Load computer tape."
		But Not
		"Has one year computer training."
	Do not include items on receiving instruction, unless actual work is performed.	"Prepare lab report."
		But Not
		"Attend lecture."

Element

An element is the smallest "package" of behavior that has practical meaning to the trainee. By "has practical meaning," we mean that further subdivision of the element would be unnecessary since the trainees fully understand the element without further subdivision. To be useful as a basis for instruction, step-by-step direction and guidance is required as to how the task is performed. The work activities that make up this step-by-step direction and guidance are the elements that make up the task.

EXAMPLE -

If the task of "perform before-operation maintenance on 2 1/2-ton truck" will need to be performed, either individuals must be trained to do the task or Job Performance Aids must be provided that will show the individuals exactly how to perform the task. In either case, the instructional developers must know the elements that make up the task. These elements are:

- a. Check oil and coolant levels.
- b. Inspect pulleys and fan for alignment, and belts for tension. Check water pump and hose clamps for leaks.
- c. Inspect air compressor and connections for security of mounting. Check belts for tension.
- d. Visually inspect exposed electrical wiring, conduits, connectors, and shielding for cracks or breaks.
- e. Inspect engine compartment for indications of fuel, engine oil, or water leakage or seepage.
- f. Drain each fuel filter daily before starting.
- g. Check level of water in batteries. Check terminals, clamps, and holddown frames for security and corrosion.
- h. Check for loose wheels and correct tire pressure.
- i. Check general condition of body for scratches, dents, and holes.
- j. Inspect cab and cab body mountings and springs.

- k. Inspect transfer power takeoff, front winch drum lines, drive shaft U-joints, and shear pins.
- l. Check service break for proper travel.
- m. Notice if starter pedal requires only normal pressure to engage starter and that engine starts immediately without unusual noises.
- n. Check instruments as soon as you start the engine. If oil pressure stays at zero or is very low, SHUT DOWN. Normal ideal pressure is 15 psi.
- o. Operate horn, lights, and windshield wipers.
- p. Listen for any unusual noises with engine under load.

Without at least this level of detail of how the task is done, the instructional designer could not prepare meaningful instruction or meaningful Job Performance Aids.

Note that it is not necessary to go down to the task element level during this TEE task (A2). It may be necessary, however, to decompose tasks to this level during a later task (A4), since some task elements correspond to the learning objectives (LOs) (See Guidelines for Evaluating Objectives).

If an existing task/TLO list contains task elements, you can ignore them for now. Remember, it is the task action which you are concerned with during this step.

Your task actions, in addition to being appropriate "chunks" of behavior and well-written, should also conform to the following guidelines:

- Are task actions/TLOs written for each critical task? Critical tasks have the following characteristics:
 - They have serious consequences of inadequate performance in terms of their impact on task performance.
 - They are common sources of failure.
 - They are actions which the soldiers of the target population do not already know how to do and must therefore be taught.
- Are subordinate tasks/objectives common to more than one higher task/TLO or team function so identified?

- If the course involves functions performed by a TEAM, is there a list or hierarchy showing each TEAM FUNCTION with its subordinate tasks/TLOs?
- If skills such as coordination, cooperation, or communication are critical elements of TEAM FUNCTIONS, are they appended as tasks/TLOs subordinate to the functions in those lists or hierarchies?
- Is an appropriate numbering system used with which to reference tasks, TLOs, and TEAM FUNCTIONS?
 - Tasks can be numbered either serially (e.g., 24, 25, 26, etc.) or hierarchically (e.g., 24, 24.1, 24.2, 24.3, etc.)
 - TEAM FUNCTIONS can be assigned numbers higher than the last task numbers on the task list.
 - TLOs should be numbered to correspond with the task list. For example, if a job performance task is numbered "177", the corresponding TLO could be numbered 177T to indicate that it is the training (T) equivalent of Task 177.
 - Skills such as coordination and communication can be designated with letters.

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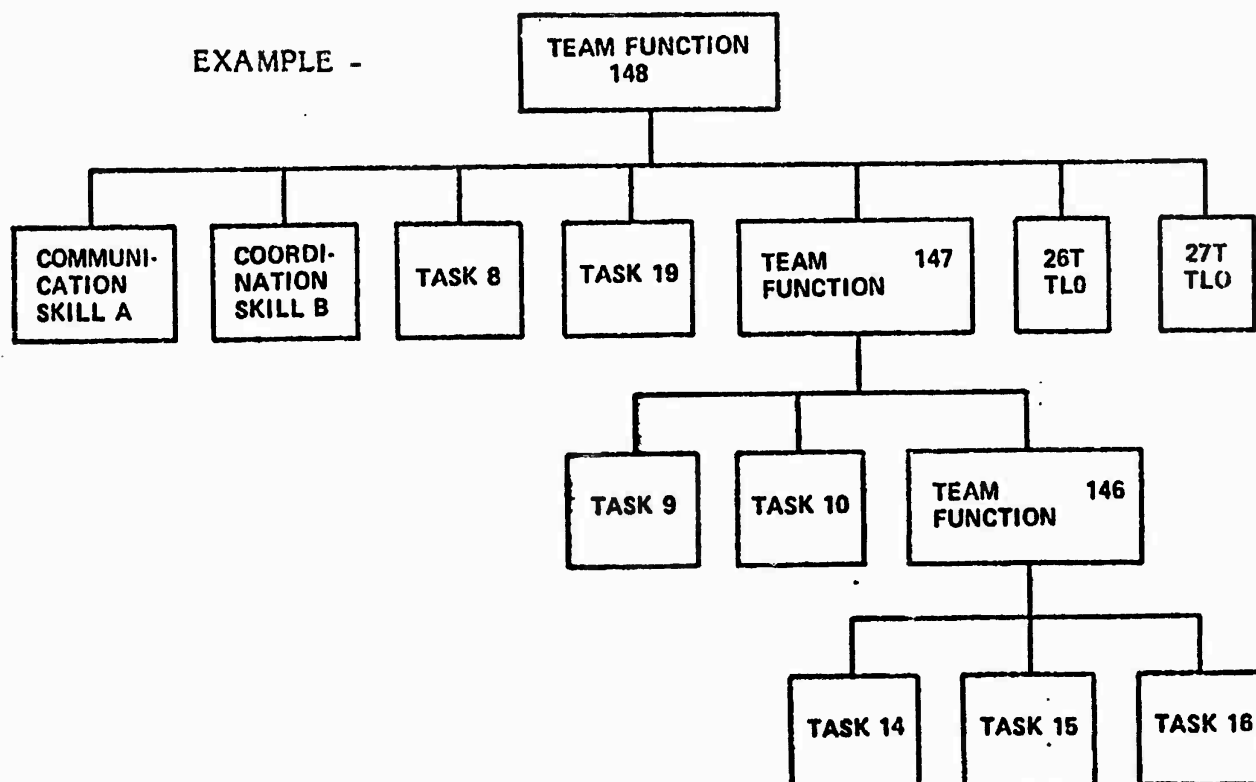


Figure 4. Example Task/TLO/Team Function numbering system

In the above example, tasks are numbered serially. Team functions are assigned 3-digit numbers to distinguish them from individual tasks (1- and 2-digit numbers). TLOs 26T and 27T are the training equivalents of Job Tasks 26 and 27. Coordination and communication skills are designated with letters (A and B).

- o Further information on task listing and analysis may be found in the following references:

Schultz, R.E. & Farrel, J.R. Job aid manuals for Phase I-ANALYZE of the instructional systems development model (Research Product 80-14). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1980.

U.S. Army Headquarters, United States Army Training and Doctrine Command. Interservice procedures for instructional systems development. Phase I - Analyze (TRADOC Pam 350-30). Fort Monroe, VA: Author, 1975.

U.S. Army Headquarters, United States Army Training and Doctrine Command. Job and Task Analysis Handbook (TRADOC Pam 351-4(T)). Fort Monroe, VA: Author, 1975.

Task A3: Select tasks to be evaluated in the TEE.

A3.1 Decide whether or not you can evaluate all of the tasks in the course. The course you will evaluate in the TEE may teach a small number of tasks. That is, it may be so short that you can perform the TEE on all the tasks being dealt with in the course. More likely, the course will deal with a large number of tasks. If so, it is usually impractical to attempt evaluation of all tasks being taught. If that is true, it is likely that a TEE covering all tasks is beyond your resources. If so, select tasks for evaluation beginning in Step A3.1 below. If the necessity for task selection is not obvious, then make a judgment considering the following points:

- Each task is trained using a series of training events, such as a lecture, a demonstration, hands-on practice, and a test. Training for a task may also include events for objectives subordinate to the overall task.
- You should be able to form an idea of the average number of training events per task, how long they take, and what you would have to do to observe and evaluate them. Consider the fact that you will have to conduct an evaluation of the training events as they occur in the course, as well as an evaluation of the presentation materials and tests.
- Consider the time you have to conduct the TEE; the number of personnel at your disposal; and the logistics of the training, i.e., number of classes and how their schedules may intertwine for different tasks.
- Make a judgment as to whether the whole course can be easily evaluated within resources. If so, skip this task (A3) and go on to task A4. If it is not feasible continue with Step A3.2 below.

Guidelines for Worksheet A3

A3.2 Find Worksheet A3. Record the reference numbers from your task list in the Task ID # column. Ask each question in Steps A3.3 through A3.8 of all tasks on your list, as directed.

Data for the task factors below may be contained in the task documentation. You have the option of accepting those ratings or using your own judgment in conjunction with the guidance for this step. If there are no task data, and you feel you are not qualified to make these estimates, consult with subject matter experts.

IMPORTANT: After assessing your entire task list on the factor in each of Steps A3.3, A3.4, A3.6, A3.7, and A3.8, go to Step A3.9 and eliminate tasks on that factor. (Tasks are not eliminated on the factor in Step A3.5 by itself.) Then, judge whether you can conduct the TEE on the number of tasks remaining at that point. If so, you need not evaluate the tasks in the steps you have remaining in this task (A3).

In that case go on to Task A4. Only if too many tasks remain on the list to conduct the TEE should you go on to the next step in this task after eliminating tasks each time.

A3.3

Some tasks are part of the overall performance to be learned in the course, but the majority of the trainees already have learned the task previously. That is, they enter the course with an acceptable level of proficiency. For example, students in training for an Operational Test of a new weapon system may have been selected from an MOS similar to the new weapon system MOS. As a result they may already be proficient on many tasks on the new system.

IF THE TASK IS:	THEN RECORD:
Already KNOWN by the majority of the trainees.	"YES" in the second column of worksheet A3.
NOT known by the majority of the trainees on entry to the course.	"NO" in the second column of worksheet A3.

NOTE: The "KNOWN" factor will not apply if your TEE is limited to the evaluation of tests and/or performance scores.

A3.4

Make an assessment concerning the likelihood of performance PROBLEMS for each task. This factor is a combination of how often below-standard performance occurs on the job for each actual task or similar tasks and how difficult it is to learn the task.

(Consult subject matter experts, if necessary.)

IF TASK IS:	AND/OR:	THEN RECORD:
Known to have had performance problems in the past.	Difficulty in becoming proficient in the past.	"YES" in the third column.
NOT known to have had performance problems in the past.	Task task seems to be <u>difficult</u> to learn.*	"MAYBE" in the third column.
	The task seems to be relatively <u>easy</u> * to learn.	"NO" in the third column.

*"Difficult" or "easy" to learn is usually a matter of the characteristics of the performance and/or the presence of very high accuracy or speed-of-performance standards. Some generalizations:

- o Tasks requiring fine discrimination/decisions are usually "difficult."
- o Tasks requiring a few simple steps are usually "easy."
- o Tasks requiring fine tolerance, psychomotor movements are usually "difficult."
- o Tasks requiring many steps are usually difficult to remember - thus difficult to learn, if not to perform.

If you are conducting a TEE for an Operational Test (OT), you should stop at this point and go to Step A3.9 to select tasks for evaluation. None of the remaining factors in Steps A3.5 through A3.7 are appropriate for the OT setting. If there are still too many tasks to evaluate, confer with your sponsor to discuss possible approaches. You may wish to discuss the criticality of each task in terms of its importance to the Operational Test and construct a scale similar to the one in Step A3.5. Then, for each task, make a judgment concerning how critical it is.

A3.5 For each task, make a judgment concerning how critical it is. That is, how serious are the consequences of not performing the task adequately under real job conditions? Use the rating scale below for task criticality.

- 4 = Critical. Failure to perform the task to criterion will result in casualties and/or complete failure of the mission.
- 3 = Very important. Essential task, but failure will not necessarily result in casualties or failure of the mission.
- 2 = Moderately important. Performance is of significant value, but failure will not jeopardize the mission.
- 1 = Not important. Performance is useful, but failure is incidental to success of the mission.

NOTE: Criticality is to be used in conjunction with "uniqueness" and "use" in Step A3.9; therefore go to step A3.6 at this point without branching to Step A3.9.

- A3.6 Make an assessment of the UNIQUENESS of the training of each task, i.e., how easy it is to learn the task on the job. Uniqueness is a function of the three factors considered in the box below.

IF:	AND:	AND:	THEN RECORD:
There is little time to learn the task after an assignment is given to perform the task.	The task must typically be performed soon after assignment to the job.	The task has proven difficult to learn in the past or seems difficult to learn.*	"YES" in the fourth column of A3.
	OTHERWISE:		"NO" in the fourth column of A3.

*See guidance on learning difficulty under Step A3.4 above.

- A3.7 Some task skills are used on the job more than others. Make an assessment of task USE.

IF TASK:	AND/OR:	AND:	THEN RECORD:
Is performed frequently on the job.	A large percentage of time on the job is spent on the task.	Performed by most MOS holders in the field.	"YES" in the fifth column.
		Performed by many MOS Holders in the field.	"MAYBE" in the fifth column.
	OTHERWISE:		"NO" in the fifth column.

- A3.8 Use the space in the OTHER column on Worksheet A3 to enter any other factors or notes relevant to the decision whether to include the task in the TEE or not. For example, some tasks may be required to be part of the TEE by directive or by request of your sponsor or other user of the TEE.

- A3.9 Use the table below, a row at a time, after each of the above steps you perform (except A3.5). Check the ELIMINATE column on Worksheet A3 as indicated. All tasks not eliminated are assumed to be retained.

If there are still too many tasks to evaluate after making the eliminations for the step you just completed, go back and continue with the next step.

IF:	AND:	AND:	THEN:
KNOWN column is "YES".	—	—	ELIMINATE
PROBLEMS column is "NO".	Eliminating via KNOWN still leaves too many tasks to analyze.	—	ELIMINATE

The remaining factors below are not appropriate for a TEE of an Operational Test.

UNIQUE column IS "NO".	Eliminations via KNOWN and PROBLEMS still leave too many tasks to analyze in the TEE.	CRITICALITY = 1	ELIMINATE
		CRITICALITY = 2	Consider eliminating.* (Mark "C" or "Consider")
		CRITICALITY = 3 or 4	RETAIN
USE column is "NO".	Eliminations via all of the factors above still leave too many tasks to analyze in the TEE.	CRITICALITY = 1	ELIMINATE
		CRITICALITY = 2	Consider eliminating. (Mark "C" or "Consider")
		CRITICALITY = 3 or 4	RETAIN

*If there are still too many tasks for the TEE after the task list is reduced by the tasks eliminated in this step, (but not by those marked by consideration), go on to step A3.7 and consider USE.

NOTE: If the considerations above still leave too many tasks for practical analysis, given your time and resources, then you must either request additional time/resources or consult with your sponsor to select additional tasks for elimination. Think of any tasks marked to consider for elimination as primary candidates.

A3.10 Delete tasks/TLOs not selected for evaluation from your task/TLO list.

Task A4: For tasks/TLOs selected for evaluation, document conditions and standards, and evaluate objectives.

The purpose of this task is to document objectives so that they validly reference tasks as they are performed on the job. Therefore, the documentation in the course cannot be your only reference, since you are evaluating its adequacy. You will need to consult subject matter experts to insure that the tasks or objectives you use for the TEE are valid and up-to-date.

This is not likely to be a trivial task. Only if (a) tasks or TLOs already exist, (b) the TEE is to be conducted at that gross level, and (c) they need little or no revision, will your task be relatively simple. It could take days to evaluate the large mass of finer learning objectives (LOs) (See Step A4.2) that may exist for a course of any size, even if there are no problems with them. Writing new tasks and objectives for a course can take months. Therefore, proceed with caution and carefully consider the alternatives given if you should run into any problems.

A4.1 Consider options when there are no conditions and standards.

If there are no conditions or standards in your task/TLO list, consider some alternatives. (Note that LOs are dealt with in Step A4.2).

- o If you can add conditions and standards from manuals and your knowledge of the course with relatively little effort, that is the most desirable course of action.
- o If you do not know enough about the course to add conditions and standards, you may wish to consider working with a subject matter expert to resolve existing problems. Do this only if you are certain it can be accomplished in the time available for this task. (It can be a lengthy process as noted above.) You may wish to consult your sponsor about limiting the number of tasks to evaluate further, if it can make this alternative feasible. To do so, continue with the process begun in Task A3.
- o It is not possible to conduct the TEE without conditions and standards. If the alternatives above are not workable, however, you can proceed with task or TLO actions alone, but you and all of your data collectors must be thoroughly familiar with the conditions and standards. Training on tasks by a subject matter expert is included in Task D1: Train Data Collectors.

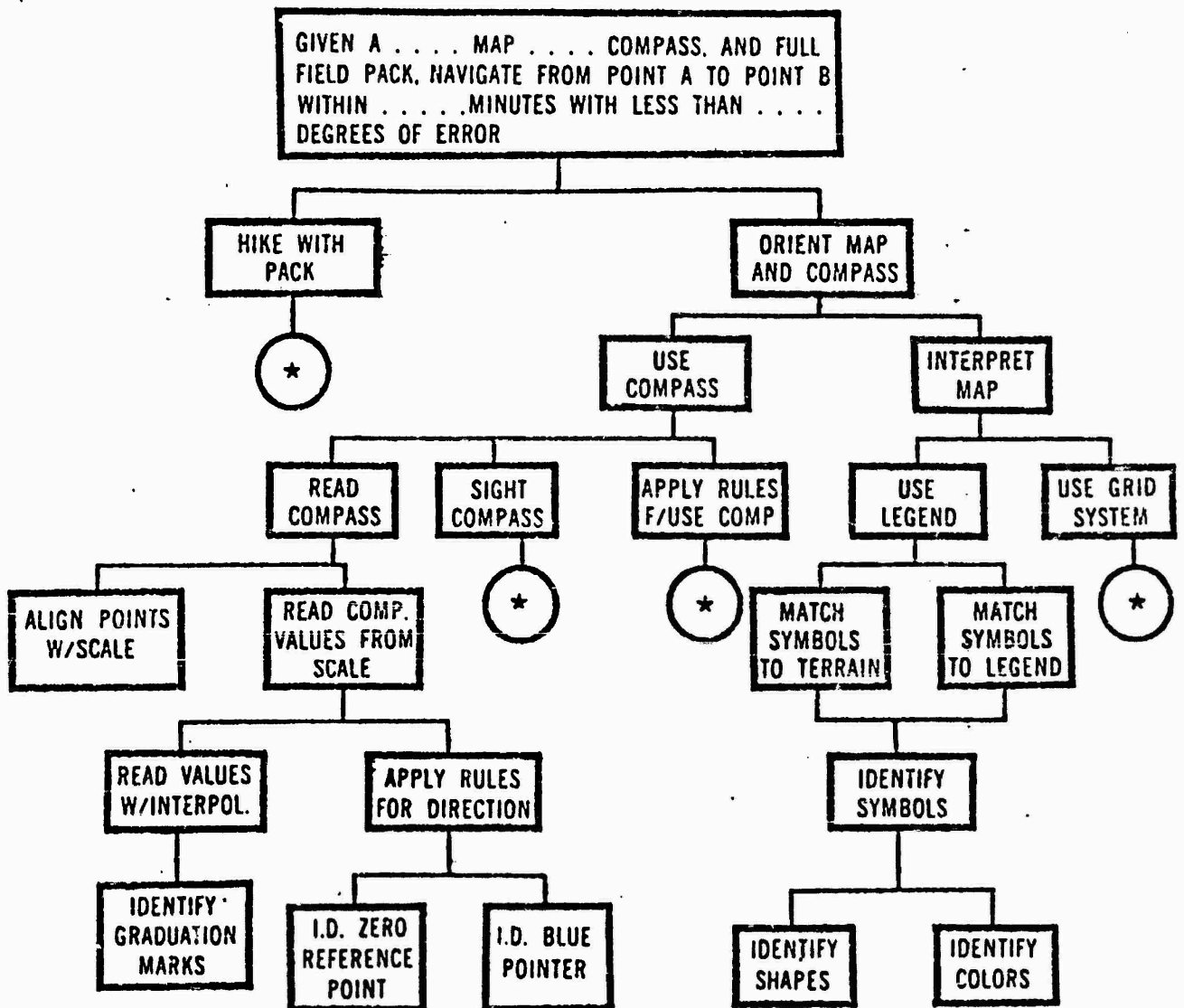
A4.2 Locate any additional documentation which contains the objectives of the course to the greatest level of detail available. Ideally you should have TLOs, which correspond to tasks, and learning objectives (LOs) which match the major subtasks. Read the General Guidance on Objectives below as a guide to identifying the appropriate objectives.

General Guidance on Objectives

- For each task statement one terminal learning objective (TLO) should exist. TLOs can be broken down further into enabling objectives called learning objectives (LOs). You will recall that a learning objective (LO) is a subunit of a terminal learning objective consisting of a precise description of what is to be learned in terms of the expected student performance under specified conditions to accepted standards. These learning objectives identify the mental skills, information, attitudes, or physical skills that are required to perform the terminal learning objective. Each LO can be broken down further to as many levels of detail as are necessary due to the task's complexity.
- TLOs and LOs can be arrayed in a learning or objectives hierarchy. A learning hierarchy, or shorthand pyramid of objectives is a quick and efficient way of showing a working draft of the skills, knowledges, and their relationships to one another, necessary for performing the terminal objective. Through such a hierarchy, the analyst creates a visual representation of the relationship between a terminal objective and its subordinate objectives.
- Figure 5 illustrates an example learning hierarchy. In this hierarchy, the analyst has taken one specific task from the task list (navigate from point A to point B) and has written a task statement (task/condition/standard) for that portion of the course. From the terminal objective, he has derived the major subordinate skills (LOs) (orient map and compass/hike with pack), and then further broken down those subordinate skills into lower level prerequisite skills and knowledges. Further, he has shown, by drawing prerequisite lines, the relationships between all subordinate skills and knowledges and the terminal objective. Thus, for purposes of course evaluation, he can now determine which specific skills must be learned before the student can master higher level skills. With the completed learning hierarchy there is a graphic representation of the essential content of this particular portion of the course.
- In a complete analysis, objectives would be written down to the level just above a point where it can be assumed that anyone with the capacity to be trained in the task could perform the objectives.

Example of an objective any trainee could perform:

For a task involving a PATRIOT operator's console:
Identify shapes (a necessary skill in locating controls).



— TO SIMPLIFY THIS EXAMPLE,
CONTINUATION OF THESE
ITEMS IS OMITTED.

Figure 5 LEARNING HIERARCHY

- Learning Hierarchy Numbering System

The major task objectives which form the top boxes in the hierarchies for a course are assigned the exact same reference numbers as they are given in the task listing. Each subordinate objective in a hierarchy has a reference number which includes the complete reference number from its superordinate objective in the hierarchy and an added entry. For example, a single LO subordinate to Task 26 would be numbered 26.1.

If a number of objectives are immediately subordinate to the same objective, the reference numbers for all of them will be identical in all but the last entry. The final entries for the subordinate objectives will be sequentially assigned numbers beginning with 1. For example, in the example hierarchy, Figure 6 below, the subordinate objectives to objective 3.2 are numbered 3.2.1, 3.2.2, 3.2.3, 3.2.4, and 3.2.5.

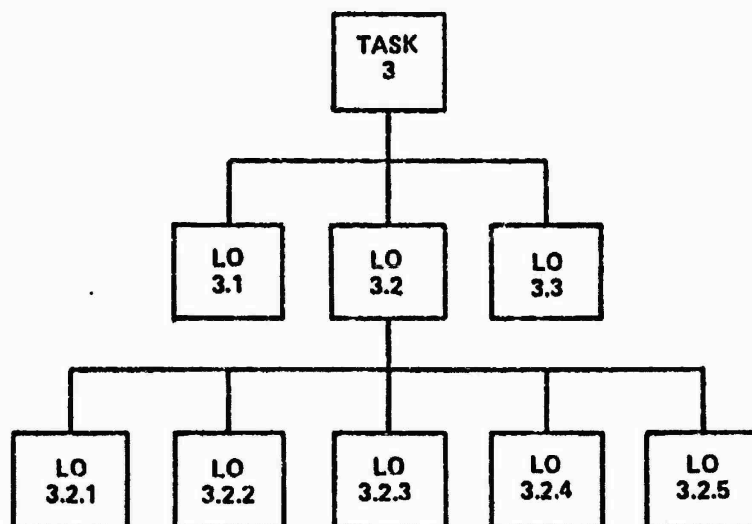


Figure 6 EXAMPLE LEARNING HIERARCHY NUMBERING SYSTEM

- At some point above the lowest level of objectives which ought to be written in a complete analysis, a line can be drawn (not necessarily a straight line), below which objectives are classed as entry skills. An entry skill is something a student will be expected to already know or be able to perform prior to entering the course. The objectives above the line are to be taught in the course.
- Terminal learning objectives should be identical to task statements except when the task conditions or standards are so dangerous, costly, or time-consuming that the conditions cannot be simulated or the standards cannot be required in the intended training environment. How well the objectives match the tasks is referred to as fidelity. Each TLO should have the greatest fidelity possible, except when it can be shown that tests based on lower fidelity objectives can accurately predict the real task performance.

For example, an objective that is simple in terms of physical movements, but that requires a great deal of mental expertise, might have conditions specifying a paper and pencil test if it could be shown or realistically assumed that those who could pass the test could also perform the task and that those not passing the test could not perform the task.

A4.3

If the smallest unit of instruction addressed by any test item or training event is an LO, or you have a complete set of adequate LOs, skip this step and go on to step A4.4. If the course addresses LOs and a complete set of LOs does not exist, consider the following options:

- If you can make revisions or list new LOs from manuals and your own knowledge of the course with relatively little effort, that is the best course of action.
- If you do not know enough about the course to revise LOs or write new ones and you can have access to a subject matter expert, you may be able to work with him to do so. Do this only if you are certain it can be accomplished in the time available for this task (A4). The listing of new LOs is an especially long process for many MOSs. The feasibility of this option will depend on the number of LOs in the course.
- If neither of the above options is feasible, but could be made so if the number of tasks in the evaluation were limited further, consider continuing the selection process in Task A3 until one of these approaches can be used. Consult with your sponsor to see if he prefers this approach or one of the next two.
- The TEE can be conducted at the TLO level by asking questions regarding the match of test items, objectives, and presentation materials and events at the TLO level rather than the LO level.
- If you have a list of TLOs and LO actions, you can conduct the TEE without LO conditions and standards if you are thoroughly

familiar with the difference between the conditions and standards in the job setting (referenced by tasks and elements) and the learning setting (referenced by TLOs and LOs), and have an idea of what the task elements are. With that knowledge you (or your associate analyst) should be able to make the judgments required in the TEE questions that deal with LOs. If this is your decision, and you are not a subject matter expert, you will need to study the conditions and standards in the tasks and TLOs. Sit down with a subject matter expert and discuss the conditions and standards in both settings for the LOs and make some detailed notes before proceeding. Any task documentation containing task elements should be studied, since the elements often have the same actions as the most specific LOs.

- A4.4 Evaluate the tasks/TLOs (if you have not already done so) and existing LOs using the Guidelines for Evaluating Objectives below. Make editorial notes or comments on your list of objectives as you go along. Be aware that when dealing with LOs, you can quickly exceed your resources if the LOs are not in good shape. When you have completed this step (A4.4), under ideal conditions you will have an acceptable set of TLOs and LOs that match the job tasks. They are the standard with which you will judge the course of instruction.

Guidelines for Evaluating Objectives (GEO)

For each TLO and LOs at every level of detail ask each of the questions in Sections 1-3 below. Edit or note problems with objectives as required. If no entry test is needed for the course, you need not be concerned with objectives below the entry level. The questions in each section should be used with the set of objectives supporting each TLO before going on to the next TLO. TEAM FUNCTIONS, as defined in Section 4, should also follow the rules in Sections 1-3.

Use existing manuals, other documentation, and subject matter experts as your resources. Do not use course tests, however, as their validity is to be assessed by comparing them with the objectives which are matched to the tasks in this step.

In evaluating the LOs, any documentation of task elements will be valuable, since the LO action statements will often be the same for LOs at the greatest level of detail.

In the next few pages, the criteria for determining the adequacy of LOs are listed. Following this section is an EXAMPLE section, in which several sample objectives are rated and explanations for the ratings are provided.

Objective Adequacy

1. Each objective must be correctly stated in terms of CONDITIONS, STANDARDS, and the ACTION the student must perform.

Several categories of conditions and standards are listed below. Obviously, no objective will require all of these. Each objective should be reviewed with these categories in mind, and a decision should be made about whether or not they are applicable. If you are unsure about whether or not a particular condition or standard should be included in an objective, a good rule is "when in doubt, stick it in."

CONDITIONS

<u>Environment</u>	<u>Information</u>	<u>Resources</u>
Physical	Given	Job Aids
Social	Cues or Clues	Equipment or Tools
Psychological	Special Instructions	Technical Manuals

STANDARDS

<u>Performance</u>	<u>Product</u>
Completeness	Completeness
Accuracy	Quality
Time Limit or Rate	Judgment

NOTE: Many objectives contain "implicit" conditions or standards like "Given paper and pencil, . . ." or "with 100% accuracy." Obviously the action part of an objective should use an action verb. It is usually best that there be only one action per objective; if there is more than one action, the objective should probably be split into several objectives. The action verb should always be observable and measurable.

2. Each objective must be classifiable by TASK LEVEL and CONTENT TYPE. A classification matrix is given in Figure 7. If an objective cannot be classified, it must be restated. If an objective fits more than one cell of the matrix, it probably needs to be split up into more than one objective.
3. Each objective must be appropriate in the following ways:
 - a. Conditions, standards, and the task level and content type of the action must be appropriate for the work to be performed on the job or for later training.
 - b. If the objective is classified as a REMEMBER task level, there should be a later USE objective.
 - c. If the objective is classified as a USE-UNAIDED task level, there should be a previous REMEMBER objective.
 - d. If the objective is classified as a USE-AIDED task level, the aid must be adequate, or other objectives on the aid must be included.

CONTENT TYPE

FACT
RECALL OR
RECOGNIZE
NAMES,
PARTS,
DATES,
PLACES, ETC.

CONCEPT
REMEMBER
CHARACTERIS-
TICS, OR
CLASSIFY OR-
JECTS, EVENTS
OR IDEAS AC-
CORDING TO
CHARACTERISTICS

PROCEDURE
SEQUENCE OF
STEPS REMEM-
BERED OR USED
IN A SINGLE
SITUATION OR
ON A SINGLE
PIECE OF
EQUIPMENT

RULE
REMEMBER OR
USE A SEQUENCE
OF STEPS WHICH
APPLY ACROSS
SITUATIONS
OR ACROSS
EQUIPMENTS

PRINCIPLE
REMEMBER OR
USE A GENERAL
RULE WHICH SELECTS OTHER
PRINCIPLES, RULES,
PROCEDURES, OR
CONCEPTS, AND
APPLIES THEM TO
SOLVE PROBLEMS

TASK LEVEL	REMEMBER - RECALL OR RECOGNIZE FACTS, CON- CEPT DEFINITIONS, STEPS OF PROCEDURES OR RULES, STATEMENTS OF PRINCIPLE	CONCEPT	PROCEDURE	RULE	PRINCIPLE
	USE-UNAIDED - TASKS WHICH REQUIRE CLASSIFYING, PERFORMING A PROCEDURE, USING A RULE, OR APPLYING A PRINCIPLE WITH NO AIDS EXCEPT MEMORY.				
	USE-AIDED - SAME AS USE-UNAIDED, EXCEPT JOB AIDS ARE AVAILABLE.				

Figure 7 CLASSIFICATION MATRIX

Test Consistency

1. The CONDITIONS in each test item, or the conditions under which the items are administered, must match the conditions in the objective.
2. The STANDARDS in each test item, or the standards for scoring each item, must match the standards in the objective.
3. The ACTION in each test item must match the action of the objective in terms of task level and content type.
4. The FORMAT for each test item must be appropriate for the task level and content type as indicated in the following section.

Test Adequacy

1. Each test item must be clear. Instructions for completing the item must specify what response the student is expected to make.
2. Each test item must be unambiguous. Each item must have one and only one correct response, and the item must be interpretable in only one way. Items must not be confusing.
3. Each test item must be free of hints. An item should not give away the answer to itself or to any other item on the test. The grammar of multiple-choice and fill-in items should not give hints to answers.
4. Test items should allow common errors to be made.
5. Enough test items must be provided for USE-LEVEL objectives to test the objective adequately, and to reflect the range of performance required on the job.
6. Each test item must be well constructed. Different criteria apply to different item formats as indicated below:

TRUE-FALSE

An item should include only one statement to be judged true or false.

Negative statements should be avoided.

Do not use words like "never," "always," etc.

Item statements should be short.

MULTIPLE CHOICE

All alternatives should be plausible.

Negatives in the item stem should be highlighted.

Repetitive phrases should be placed in the stem, not in the alternatives.

Alternatives like "All of the above", "A and B only," should be avoided.

MATCHING

Instructions should explain the contents of each column, and explain the basis for matching.

Instructions should specify how many times each answer may be used.

The choice column should include extra answers unless answers may be used more than once.

FILL-IN

The blank should be at or near the end of the sentence.

One and only one word or phrase should correctly complete the item.

Blanks should require key words.

SHORT ANSWER

The required answer should be kept short.

The directions to the student should specify how the item will be scored.

The scoring key should identify allowable synonyms or alternatives.

LISTING

The directions should specify the number of items to be listed (if appropriate for the objective, and if the number of items is not a hint).

The directions should specify whether or not order is important. If so, the scoring key should score sequence separately.

The scoring key should identify allowable synonyms or alternatives, and should specify differential weights if appropriate.

PERFORMANCE

The directions should clearly explain what the student must do and how the item will be scored.

The scoring key must specify all criteria for all standards the performance must meet, such as level of completeness, accuracy, quality, time limit, rate, etc. If steps in the performance are scored, a checklist should be provided.

Presentation Consistency

1. The instructional presentation must be consistent with the task level of the objectives. Certain presentation components must be present for each task level. The instructional presentation components are:
 - a. **STATEMENT:** The instruction presents a statement of a fact, a concept definition, the steps of a procedure or rule, or a statement of a principle.
 - b. **EXAMPLES:** The student is told or shown how a statement of a concept, procedure, rule, or principle applies in a specific case.
 - c. **PRACTICE:** The student practices remembering or using the content, and is given feedback. **PRACTICE REMEMBERING** components ask the student to supply part or all of a fact statement, concept definition, the steps of a procedure or rule, or the statement of a principle. **PRACTICE USING** components ask the student to use a concept definition, procedure, rule, or principle on a specific case to which it applies.

The REMEMBER task level requires a statement and PRACTICE REMEMBERING. The USE-UNAIDED task level requires a statement (or a review of the statement), at least one example, and PRACTICE USING. The USE-AIDED level requires examples and PRACTICE USING with the aid.

These required components apply across all content types (facts, concepts, procedures, rules, and principles) for REMEMBERING, and all except facts for USING. For example, if the objective and test item called for the student to remember a fact, then the instruction must contain a statement of the fact to be remembered, and at least one PRACTICE-REMEMBERING item with feedback. No example is required, because it would be redundant with the statement.

Presentation Consistency also requires that each required component meet the following criteria:

2. STATEMENTS must be complete.
3. EXAMPLES must show application of the complete content.
4. EXAMPLES must match or reflect the conditions and standards required of the objective and the test as closely as possible.
5. PRACTICE must include feedback.
6. PRACTICE must be of the same task/content level as the test item.
7. PRACTICE must match or reflect the conditions and standards required of the objective and the test as closely as possible, or be designed to help the student gradually learn the final task.

Most of the requirements above are probably obvious, but some are complicated. COMPLETENESS, for example, requires different descriptions for different content types:

- a. For a CONCEPT: "complete" means that all the critical characteristics of the concept, and their combinations, are given.
- b. For a PROCEDURE: "complete" means that all the steps of the procedure are given in the proper order.
- c. For a RULE: "complete" means that all the steps of the rule are given in the proper order.
- d. For a PRINCIPLE: "complete" means that all the relevant pre- and post-conditions, actions, processes, causes, effects, and results are stated, and the relationship between them is clearly stated.

Presentation Adequacy

A STATEMENT is ADEQUATE if it meets the following criteria:

1. The statement must be SEPARATED from the rest of the instruction. This helps the student find the main idea. When the statement is separated, the key points stand out, and are not buried in the presentation. There are several ways to accomplish this goal:
 - a. Set off the statement with boxes.
 - b. Use a different color.
 - c. Use a different type, or underline.
 - d. Place on a separate page, or in a special place on the page.
 - e. For audio or movies, pause before giving the statement.

2. The statement must be IDENTIFIED. After the statement is separated, the student should be told what it is. This permits the student's attention to be focused on the key points and their application, rather than the student trying to become generally familiar with everything in the instruction. One way to identify a statement is to use the word "statement." Other more content-oriented words are even more helpful:

definition procedure for _____ the principle of _____

Main Idea: Key Point: General rule:

3. In addition to the statement, the presentation should include something to help the student better understand and remember the statement. Methods of providing this help include:
- a. Giving a MNEMONIC (memory trick).
 - b. Giving a general example of how the statement can be used.
 - c. Explaining why the statement is important.
 - d. Explaining how it came about, how it fits in the course, or how it relates to something the student already knows.
 - e. Explaining some of the terms in the statement.
 - f. Representing the statement with pictures, symbols, flowcharts, tables, etc.
4. Statements for different content types must meet the criteria below:
- a. CONCEPTS: Give a decision rule or search strategy for classification.
 - b. PROCEDURES: Each type should have only one action.
 - c. RULES: If a formula is used, symbols must be defined.

EXAMPLES are ADEQUATE if they meet the following criteria:

1. Examples must be separated and identified.
2. Examples should range from "easy" to "hard".
3. Examples should be representative of the job the student will do after training.
4. There should be enough examples to cover the content area adequately.
5. Examples should clearly show why common errors are wrong.

The criteria are generally self-explanatory. SEPARATED and IDENTIFIED are the same as for statements, and points 2 to 5 need no further explanation.

6. Examples must include some type of help.

HELP is applied in different ways for different content types. Some types of HELP for each content type are given below:

a. CONCEPTS

Highlight the critical characteristics of an example.

Explain why or why not something is classified as a member of a concept.

Show the use of a checklist or heuristic to help classify.

b. PROCEDURES or RULES:

Explain why each step is done.

Explain why each step is important.

Give additional information about how to perform the task.

Give additional information about how to know if it was performed incorrectly.

Give flowcharts, tables, etc.

c. PRINCIPLES:

Highlight important features.

Simplify the relevant information from the case study in which it is embedded.

Use logical representations of the if-then relationships.

Give additional information about why the principle applies, or why it doesn't.

Give hints as to how to analyze problems.

PRACTICE items are ADEQUATE if they meet the following criteria:

1. The practice section must be separate and identified.
2. The practice items must be free of hints that will not be present in the test or on the job.
3. The practice items should have the same format as the format of the test items.

4. The practice items should range from easy to hard.
5. The practice items should be typical of the job to be performed after training.
6. The practice items should include the opportunity for common errors.
7. The feedback must also be separated and identified for each practice item.
8. The feedback should include help (similar to that for examples). As a bare minimum, the feedback should direct the student back to where the instruction was originally presented. However, it is better to have a new brief presentation, because if the student got practice wrong, the original presentation didn't help enough.

STATEMENTS, EXAMPLES, and PRACTICE must be clearly stated. The following criteria apply:

1. The reading level must be appropriate for the students.
2. The presentation should not be confusing, vague, or too wordy.
3. All essential information should be present; the student should not be referred to other places to obtain information.
4. All presentations should be performance-oriented, not topic-oriented.

Objectives

1. Are the OBJECTIVES correctly stated?

a. CONDITIONS

- o Are all CONDITIONS under which student performance is expected specified?

ENVIRONMENT: PHYSICAL (weather, time of day, lighting, etc.)
SOCIAL (isolation, individual, team, audience, etc.)
PSYCHOLOGICAL (fatigue, stress, relaxed, etc.)

INFORMATION: GIVEN INFORMATION (scenario, formula, values, etc.)
CUES (signals for starting or stopping)
SPECIAL INSTRUCTIONS
NON-CRITICAL CHARACTERISTICS OF KEY CONCEPTS

RESOURCES: JOB AIDS (cards, charts, graphs, checklists, etc.)
EQUIPMENT, TOOLS
TECHNICAL MANUALS

- o Are the CONDITIONS specific enough to be unambiguous?
- o Are the CONDITIONS as close to real task CONDITIONS as possible under existing constraints? (Consult a subject matter expert.)
- o Are the CONDITIONS which can be logically implied deleted?

b. STANDARDS

- o Are the STANDARDS which the student performance must meet specified?

PERFORMANCE: COMPLETENESS (How much of the task must be performed?)
ACCURACY (how close to correct must the performance be?)
TIME LIMIT (How much time is allowed?)
RATE (How fast must task be done?)
SAFETY (procedures for avoiding hazards in task performance)

PRODUCT: COMPLETENESS (What must finished product contain? the precise nature of the output)
QUALITY (What objective standard must product meet?)
JUDGMENT (What subjective opinions must the product satisfy?)

- Are the STANDARDS specifically and unambiguously stated in measurable terms (trainees, instructors, and evaluators can discriminate between above- and below-standard performances)?
- STANDARDS are not based on judgment calls unless task outcome can be classed as art.
- Are the STANDARDS complete?
- Are STANDARDS for terminal objectives (TLOs) as close to real task standards as possible? (Consult a subject matter expert.)

ACTION

- Is the ACTION the student must perform specified?
- Is an action verb used to specify what the student must do?
- Is only one ACTION stated in the objective?
- Is the indicator behavior simple enough to be performed by trainees?
- Is the ACTION as similar to the real task as possible?

Section 2: Is the OBJECTIVE classifiable?

- Does the OBJECTIVE fit in one and only one cell of the table in Figure 8? Record the TASK LEVEL and CONTENT TYPE on your list of OBJECTIVES. Note that you should have read the training materials and done the practice items in Appendix E that relate to this section prior to attempting to classify your OBJECTIVES.

3. Is the OBJECTIVE appropriate?

- Is the TASK LEVEL of the ACTION appropriate for the work to be performed on the job or for later training?
- Is the CONTENT TYPE of the ACTION appropriate for the work to be performed on the job or for later training?
- If this OBJECTIVE is REMEMBER, is there a later USE OBJECTIVE?
- If this OBJECTIVE is USE-UNAIDED, is there a previous REMEMBER OBJECTIVE? (Not required if USE-UNAIDED objective is easy for any student to remember.)

NOTE: If objectives to be taught later are identified in the first two points of Section 3 above, or there are OBJECTIVES covering a job aid for a USE-AIDED OBJECTIVE and any of the associated objectives are taught in the present course, evaluate those OBJECTIVES next and keep the related objectives together when conducting the product evaluation (Phase B).

Sample Objectives

In this section, sample objectives are rated for objective adequacy. For each objective, we will first determine whether or not it is correctly stated, then whether or not it is classifiable, and finally whether or not it is appropriate.

1. OBJECTIVE: "The student will state the rule for finding total inductance in a series circuit."

Correctly Stated?	Conditions?	IMPLIED
	Standards?	IMPLIED

In this objective, our assumptions about implied conditions and standards apply. We are assuming that the student will state in writing from memory, with 100% accuracy.

Action?	O.K. - ONE ACTION
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This objective uses an action verb, "state." There is only one action.

Classifiable?	Task Level?	REMEMBER
	Content Type?	RULE

Appropriate?	Conditions?	O.K.
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For nearly all Remember-level objectives, the performance expected is some written or oral response under fairly normal classroom conditions. Occasionally, other conditions might apply, such as fatigue, noisy environment, etc. These conditions would have to be stated. The key is REMEMBER THE JOB.

Standards?	O.K.
------------	------

For nearly all Remember-level objectives, the implied standard of 100% accuracy is appropriate. There is no point in having someone remember something unless it really has to be remembered. The only exception is in a familiarization situation, where for cost reasons the standard may be slightly relaxed.

Action?	O.K.
---------	------

Later Use-Unaided?	?
-----------------------	---

This objective is out of context. For a whole course, we would expect to see a later Use-unaided objective which requires the student to calculate total inductance in series circuits.

REVISED OBJECTIVE:	This objective is O.K. If implicit conditions and standards were not allowed, the objective would be: "The student will write from memory without error the rule for"
-----------------------	--

2. OBJECTIVE: "The student will write from memory the steps of the procedure for field stripping the SGT YORK cannon as listed in the current edition of TM9-XXX-XXX-10."

Correctly Stated?	Conditions?	IMPLIED
	Standards?	SPECIFIED
	Action?	O.K. - ONE ACTION

The standard is "as listed in the current edition of TM9-XXXX-XXX-10."

Classifiable?	Task Level?	REMEMBER
	Content Type?	PROCEDURE

Appropriate?	Conditions?	O.K.
	Standards?	O.K.
	Action?	O.K.
	Later Use-Unaided?	?

There should be a later hands-on objective requiring the student to field strip the SGT YORK cannon.

REVISED OBJECTIVE:	O.K.
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3. **OBJECTIVE:** "The student will describe the principles of operation of a rotary gear pump."

Correctly Stated?	Conditions?	IMPLIED
	Standards?	INCOMPLETE

With Principle objectives, particular care must be given to specifying the standards. In this case, the implied standard is "accurately," but we don't know what "accurately" means. The solution to this problem is to specify completely what information the student's description must contain. This can be done either in the objective, or by reference to some other document.

	Action?	O.K. - ONE ACTION
Classifiable?	Task Level?	?
	Content Type?	PRINCIPLE

This objective is difficult to classify. The main problem with the "describe" action verb is that it is not precise enough to determine the task level. At this point in the objective adequacy procedure, the action should be revised.

Appropriate?	Conditions?	O.K.
	Standards?	?

The standards should be revised as discussed above, and care should be taken to make sure that they are appropriate for the "job." Let's assume that recall of the principle is required.

Later Use-Unaided	?
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If this objective is Remember, then there should be a later objective requiring the student to use the principle to predict something about the pump's operation.

REVISED OBJECTIVE:	"The student will write from memory the principles of operation of a rotary gear pump, as described in Tech. Manual XXX."
-----------------------	---

4. **OBJECTIVE:** "Given a globe valve, rags, prussian blue, gasket material, packing, tools, and job aid, the student will disassemble and reassemble the globe valve."

Correctly Stated?	Conditions?	SPECIFIED
	Standards?	INCOMPLETE

The reason the standards are incomplete is that there may be a time limit for performing the task. If there is, then it should be specified in the objective. If time is not important, then the implicit standards are O.K.

Action?	O.K.
----------------	-------------

Although there are two action verbs, assemble and disassemble, the action is all right because the verbs refer to different steps in a procedural task.

Classifiable?	Task Level?	USE-AIDED
	Content Type?	PROCEDURE

Appropriate?	Conditions?	O.K.
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It is assumed that all the materials listed in the objective will be available on the job.

Standards?	?
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Standards are O.K. if no time limit is required.

Action?	O.K.
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Aid Adequate?	?
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If the job aid has unfamiliar terms or instructions on it, there should be additional objectives to clarify the aid.

REVISED OBJECTIVE:	This objective is O.K. unless a time standard needs to be specified. A subject-matter expert should be consulted to make this decision.
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5. OBJECTIVE: "Given the formula for Ohm's Law and two values, the student will solve for the third value."

Correctly Stated? Conditions? INCOMPLETE

The conditions should specify the type and difficulty of the problems to be solved. In addition, because Ohm's Law can be written in several different ways, the conditions should specify which form or forms of the formula will be given.

Standards? INCOMPLETE

The number of decimal places should be specified.

Action? O.K. - ONE ACTION

Classifiable? Task Level? USE-AIDED

Content Type? RULE

Appropriate? Conditions? ?

The type and difficult of the problems should be representative of the job.

Standards? ?

The number of decimal places should be typical of what is required on the job.

Action? O.K.

Aid Adequate? ?

The symbols used in the formula should have been defined previously. This would have been most effectively covered in a fact-level objective.

REVISED OBJECTIVE: "Given the formula for Ohm's Law, $E=IR$, and any two values typical of the values encountered on the job, the student will solve for the third value correct to two decimal places."

6. OBJECTIVE: "Given schematic symbols for common electronic components, the student will write from memory the name of the component represented by each symbol."

Correctly Stated?	Conditions?	SPECIFIED
	Standards?	IMPLIED
	Action?	O.K. - ONE ACTION
Classifiable?	Task Level?	REMEMBER
	Content Type?	FACT
Appropriate?	Conditions?	O.K.

We will assume that the "common electronic components" are ones that are typical of the equipment the student will be trained to maintain or repair. If there were special components or symbols that the student had to know, then these should be included.

Standards?	O.K.
Action?	O.K.
Later Use-Unaided?	?

There should be a later Use objective for which the student must be able to recall component names given component symbols.

REVISED OBJECTIVE: O.K.

7. **OBJECTIVE:** "Given the explanation of the principle of supply of a military force from the text, the student will describe how this principle applies in Hitler's attack on Russia, the Battle of Midway, the Battle of the Bulge, and Sherman's march through Georgia."

Correctly Stated?	Conditions?	SPECIFIED
	Standards?	INCOMPLETE

The implied standard is "correctly" but with principle objectives it is often difficult to tell what correctly means. Therefore, either the correct explanation should be included in the objective, or a document containing the correct explanation should be referenced.

	Action?	O.Y. - ONE ACTION
Classifiable?	Task Level?	USE-AIDED
	Content Type?	PRINCIPLE
Appropriate?	Conditions?	?
	Standards?	See above
	Action?	?

The appropriateness questions depend on how the student is going to use the principle on the job. If the job is to plan military operation given reference materials, then the conditions are probably appropriate. If, however, the job involves making quick decisions on the battle field, then reference materials would not be appropriate, and the task level should then be Use-Unaided.

The action of discussing how the principle of supply applied in previous battles may or may not be appropriate, depending on whether or not the principle still holds in modern warfare.

Aid Adequate?	?
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Is the explanation given in the text sufficient to allow the student to give a correct discussion, or should other objectives on the aid be included?

REVISED OBJECTIVE: The standard should be revised as indicated above. Other revision would depend on answers to the appropriateness questions we have raised.

8. OBJECTIVE: "The student will solve for inductive reactance in a circuit, given frequency and inductance."

Correctly Stated? Conditions? UNCLEAR

Is the student given the circuit, or just the values for frequency and inductance? If he is given the circuit, is it the actual equipment, or a schematic?

Standards? IMPLIED

Action? O.K. - ONE ACTION

Classifiable? Task Level? USE-UNAIDED

Content Type? RULE

Appropriate? Conditions? ?

The revised conditions should be appropriate for the job.

Standards? O.K.

Action? O.K.

Previous Remember? ?

There should be a previous objective requiring the student to recall the formula for solving for inductive reactance.

REVISED OBJECTIVE: "Given a circuit schematic with values of frequency and inductance specified, the student will solve for inductive reactance."

9. **OBJECTIVE:** "The student will perform the steps required to accept, verify, and log messages to be transmitted via teletype tape."

Correctly Stated? **Conditions?** **INCOMPLETE**

The conditions should specify the equipment the student will use and the environmental conditions.

Standards? **INCOMPLETE**

A time or rate standard may be required. A subject-matter expert should be consulted.

Action? **? - MULTIPLE ACTION**

If accept, verify, and log are all steps of a procedure for transmitting messages, then the action is O.K. If, however, one or more of the action verbs involves a different content type, then additional objectives should be written.

Classifiable? **Task Level?** **USE-UNAIDED**

Content Type? **PROCEDURE**

Appropriate? **Conditions?** **?**

Standards? **?**

Action? **?**

Any revisions made to the conditions, standards, and action should be representative of the job.

Previous Remember? **?**

There should be a previous remember objective that requires the student to memorize the steps of the procedure.

REVISED OBJECTIVE: "In a classroom laboratory simulating a radio room, the student will perform the steps required to process (accept, verify, log) messages to be transmitted via teletype tape, at the rate of 5 minutes per message."

10. OBJECTIVE: "The student will use the principle of electromagnetic induction to describe the operation of an AC generator."

Correctly Stated?	Conditions:	IMPLIED
	Standards:	INCOMPLETE

The standard must specify what the student's description must contain in order to be correct.

	Action?	O.K. - ONE ACTION
Classified?	Task Level?	USE-UNAIDED
	Content Type?	PRINCIPLE
Appropriate?	Conditions?	O.K.
	Standards?	See Above.
	Action?	?

On the job, will the student ever have to use his knowledge of electromagnetic induction to describe the operation of equipment? If so, then this objective is appropriate. On the other hand, if the intent was just to have the student learn the principles of operation of the AC generator, then the objective should be to "Remember" the principles of operation. As it stands, the objective might be appropriate if the student will be required to troubleshoot new AC generators.

Previous Remember?	?
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There should be an earlier objective requiring the student to remember the principle of electromagnetic induction.

REVISED OBJECTIVE: "The student will use the principle of electromagnetic induction to describe the operation of an AC generator. The description must contain the following points..."

11. OBJECTIVE: "Given the guidelines for determining message security classification, the student will determine the security classification (Top Secret, Secret, Confidential, or Unclassified) for outgoing messages."

Correctly Stated?	Conditions?	SPECIFIED
	Standards?	IMPLIED
	Action?	O.K. - ONE ACTION
Classifiable?	Task Level?	USE-AIDED
	Content Type?	CONCEPT
Appropriate?	Conditions?	O.K.
	Standards?	O.K.
	Action?	O.K.
	Aid Adequate?	?

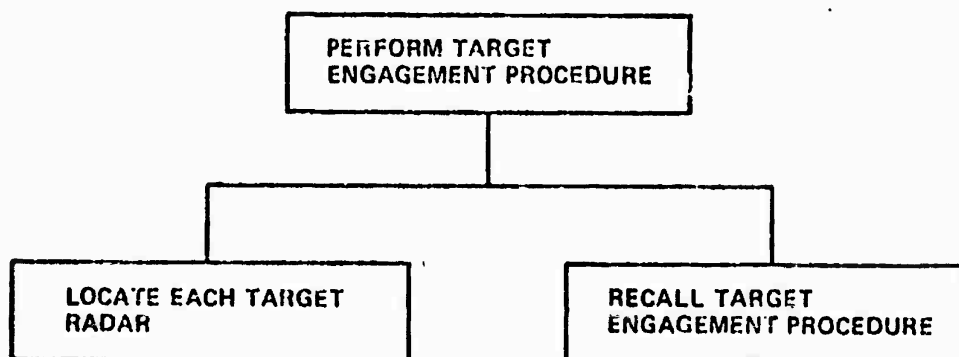
The guidelines should be checked to make sure they are complete, and are detailed enough so that the student can use them to perform the task.

REVISED OBJECTIVE: This objective is probably O.K. if the aid is adequate.

4. Is the coverage of the LOs complete? (TLOs have already been considered in Step A4.1.)

- o Does a list of LO actions or an objectives hierarchy exist for each TLO?
- o Whenever any test item or training event addresses a unit of instruction smaller than a TLO and you have decided to conduct the TEE at that level, does a list of LO actions or an objectives hierarchy exist for each TLO?
- o Are complete objectives written for each critical element of the task? Label LOs as critical which have the following characteristics:
 - They are some of the most measurable and observable elements of the task.
 - They have serious consequences of inadequate performance.
 - They are common sources of failure.
 - They are actions which the soldiers of the target population do not already know how to do and must therefore be taught.

NOTE: When evaluating LOs, note that a common type of LO for procedure and rule tasks in equipment-related MOS is a "Remember LO" on the location of certain controls or pieces of equipment. Along with another objective requiring the recall of the related steps in the procedure or rule, an LO on equipment location would be subordinate to a higher LO or TLO. That LO or TLO would require the performance of the steps. For example:



Note, however, that "Remember LOs" will have indicator behaviors different from the kind shown. (Remember objectives are taught before their corresponding skill objectives at the use level are trained.) As shown in the diagram above they are unobservable as independent skills, but are measured by watching the performance of the

superordinate LO. At the remember level the controls would have to be "pointed out" on the equipment or a picture of it and the procedure would have to be stated in some way, rather than the procedure being performed. This level of detail will be useful only when such remember-level instruction exists for a complex task.

- Are subordinate OBJECTIVES common to more than one LO or TLO so identified?

Task A5: Specify training event types and select events for observation.

A5.1 Using the documentation collected in previous Phase A tasks and your knowledge of the course, make a list of the types of training events that are employed. A list of some possible kinds of events is given below. You should label the types of events in your course and define them if they are different from the definitions shown below. Consult one of the course instructors if you need help. (Note that your materials may be such that it would be more efficient to discover the training event types as you do Step A5.2)

**CLASSROOM
INSTRUCTION:**

A lecture or discussion involving a group of students and an instructor. Statements, statement help, examples, and example help are the most commonly used presentation components in the classroom; however, practice, feedback, and feedback help could possibly be employed for some non-equipment related tasks or for remember level objectives.

DEMONSTRATION:

Showing the students when and how to perform a procedure in a realistic setting such as on real equipment. A demonstration is a realistic example and can employ example help. Most often it also includes a statement of the procedure given with the example.

PRACTICE:

Allowing trainees to perform one task isolated from the performance of other tasks. This could apply to individuals, groups, or teams, although team practice is more often of the integrated type defined below. Practice, feedback, and feedback help are the related presentation components. Practice-remembering and practice-using could be designated as separate events although practice-remembering would usually be included in classroom instruction or individual study.

PERFORMANCE TEST:

Assessment of how well students can perform tasks at the use task levels in isolation from other tasks.

<u>WRITTEN TEST:</u>	Assessment of how well students can perform at any task level using paper and pencil tests.
<u>ORAL TEST:</u>	Assessment of how well students can perform at any task level using spoken responses by the students.
<u>INTEGRATED PRACTICE OR TEST:</u>	Practice or testing of two or more tasks in conjunction with each other at high level of realism or in an operational setting. This may be done by an individual, a group performing individual tasks, or a team performing team functions.
<u>INDIVIDUAL STUDY:</u>	A situation in which students are allowed to study on their own. It could follow classroom instruction or it could occur in individualized instructional courses where students typically proceed at their own pace.
<u>HELP SESSION:</u>	Instruction of any of a number of the types held in addition to the regular course instruction to aid students who need additional help. Statement or example help as well as practice and feedback would be the typical presentation components employed.

You will observe training events and evaluate the corresponding presentation materials and tests for each task selected for evaluation in Task A3. The next three steps identify the events that apply to the tasks which were selected. You may need an instructor's help at some point.

- A5.2 Locate documentation which outlines the lessons and tests to be given in the course, such as the Program of Instruction (POI) and/or lesson plans and tests. If the documentation does not provide a clear outline showing the lesson topics broken down into the training event types identified in Step A5.1, either amend your outline accordingly or list the topics with the events in a separate list.
- A5.3 Create a column (to the left or the right of your outline) labelled "TASKS." Refer to Worksheet A3 and any course materials you may need. List the task number for each task not eliminated on Worksheet A3 by each lesson of which it is a part. It is a part of the lesson if it is taught or tested in the lesson and must be performed or understood in order for other tasks in the lesson to be learned.
- A5.4 Cross off the lessons with no task numbers beside them. Next, examine all of the training events listed for the remaining lessons. If any event applies only to a task or tasks which are not listed for the lesson, cross it off. If an event covers both tasks selected for evaluation and any that were not, mark the event with an asterisk (*) and write this footnote at the bottom of the page: "* events for which only some tasks are to be evaluated."

PHASE B: CONDUCT PRODUCT EVALUATION

Overview of Phase B

TASKS:	RELEVANT WORKSHEET:
B1. Select product evaluation questions	Master List of Evaluation Questions (Appendix A) and Product Evaluation JPA (Appendix C)
B2. Evaluate test materials	B2 (Appendix H), Master List of Evaluation Questions #1 - 26 (Appendix A), and Product Evaluation JPA (Appendix C)
B3. Evaluate presentation materials	B3 (Appendix H), Master List of Evaluation Questions #27 - 94 (Appendix A), and Product Evaluation JPA (Appendix C)

Guidelines for Phase B

Task B1: Select product evaluation questions.

In this task the Master List of Evaluation Questions (Appendix A) has its first use. It is divided into two sections: one for tests (used in Task B2), and one for the presentation of the instruction (used in Task B3). In this task you will identify those questions that are applicable to a product evaluation (conducted using the course materials). Also, you will limit the evaluation to those applicable to the training situation. A similar procedure is followed for process evaluation in Task C1.

Make a copy of the job performance aid (JPA) for product evaluation in Appendix C and turn to the Master List of Evaluation Questions in Appendix A. Using the copy of the JPA as your recording instrument, examine each question listed in the Master List and cross out (on the JPA) those questions that do not apply to your TEE for any of the following reasons:

- Several questions contain an "if clause" restricting their use to certain types of subject matter or to certain conditions. Do not include questions inappropriate to the situation.
- To what degree are the course presentation and test dependent on an instructor or on print or other types of mediated course materials? This is the key question in deciding whether product evaluation is possible for a given TEE question. If not, do not include the questions here.

- Some questions are labelled *PRODUCT ONLY in the Master List and should always be answered. They are labelled "PRODUCT ONLY" because they may be too difficult for a data collector, as defined in the introduction, to answer. The asterisk (*) on the "PRODUCT ONLY" designation distinguishes these questions from other PRODUCT ONLY questions in the Master List. If any of the designated questions cannot be answered in a product evaluation and they apply to the TEE, the TEE analyst should make arrangements to answer them in the process evaluation.

Use the questions remaining on your JPA to conduct the product evaluation in Tasks B2 and B3. Note that if there is more than one type of test used in the course, e.g., written, oral, and performance, you should label each question with the test type(s) that apply.

Task B2: Evaluate test materials.

B2.1 Bring together the course and TEE documentation you will need to conduct this task:

- The course objectives
- All tests associated with the course
- All test administrative directions
- Materials used for scoring the tests, such as keys or manuals which contain standards of performance for certain items
- Your course outline from Task A5
- Your edited copy of the product evaluation JPA
- The Master List of Evaluation Questions (Appendix A)

B2.2 Find your list of objectives (or tasks). You should have already classified each one by task level and content type in Task A4. If you have LOs, both TLOs and LOs should have been classified.

Referring to both your objective list and the test or group of tests that constitute the course final exam, locate the test questions that test each objective and write them on your list by the appropriate objectives. As you do so, classify each test question by task level and content type. Record those classifications along with the test question numbers.

B2.3 Using the lesson titles on your course outline as a general guide, and other course materials as needed, take copies of the tests and cross out the items or item numbers of the items that do not apply to tasks selected for evaluation. In Step B2.4, evaluate only the items which are not crossed off.

Guidelines for Worksheet B2

B2.4

Locate Worksheet B2 in Appendix H. Based on the number of test items you have to evaluate, make enough copies of Worksheet B2 to conduct the evaluation. You may wish to copy Worksheet B3 (Appendix H) at this time as well.

Conduct the evaluation by asking each question remaining on your JPA beginning with Question 1 and proceeding through Question 26. Record your ratings on Worksheet B2. As is also directed on the JPA, organize your work according to the following conventions:

- If you evaluate more than one test (i.e., entry tests, pretests, lesson tests, or end-of-course tests), ask all questions for each test before evaluating the next test.
- Questions 1 through 3 should be asked of each objective before going on to the next objective.
- Questions 4 through 18 should be asked for each test item before continuing on to the next item. Also the items which apply to each objective should be covered before going on to the next objective. Therefore, record objective numbers consecutively (TLOs, LOs, or both — LOs within TLOs) and the test items which apply to each one for those questions.
- Questions 19 through 26 should be asked once for an entire test. The word "TEST" may entered in the "ITEM #" column of Worksheet B1 to so indicate.

The Master List of Evaluation Questions (Appendix A) gives much more specific guidance for most questions than the product JPA. You should be sure you understand each question before relying exclusively on the JPA.

Be sure to record the Task/TLO#, Lesson #, Item #, and TEE Question # accurately. Otherwise, you will have difficulty interpreting the data in your analysis during Phase E.

In the Description column of your worksheet, supply a brief description for every problem rated which would not be self-explanatory by referring back to the evaluation question in the Master List.

Task B3: Evaluate presentation materials.

It makes little difference when you conduct this task, as long as it is done before Task E2: Summarize Product and Process Evaluation Data. Depending on the purpose of your TEE, which you and your sponsor selected in Task A1, you may wish to postpone this task (B3) until after performance scores are collected and analyzed in Phase E. You may then choose to conduct this task (and corresponding steps in Phase E) only for those tasks taught in the course which are found to have performance discrepancies. Indeed, it is not the best use of resources

to conduct this task for all tasks selected for evaluation, unless it is already known that the course is functioning quite poorly on most of the tasks taught. If you choose this route, conduct the process evaluation as usual, but analyze only the discrepant tasks on which you conduct the product evaluation when you analyze the presentation data.

B3.1 Gather the course documentation you will need to conduct this task:

- The course objective
- All lesson materials and manuals used by the students
- Any A/V equipment needed to hear or view the materials
- Lesson and course administrative directions

Guidelines for Worksheet B3

B3.2 Locate Worksheet B3 in Appendix H if you have not already done so, and make enough copies to conduct the evaluation.

The amended product evaluation JPA produced in Task B1 and the course outline with events to be evaluated from Task A5 are also required for this task.

B3.3 Conduct the evaluation by asking each question you specified on your JPA starting with Question 27 and proceeding through Question 93. Record each rating on Worksheet B3. In general, ask the questions once for each lesson which is included in the TEE. Ask each question which does not apply to whole lessons for each objective within the lesson before going to the next question. Whether you use TLOs alone or LOs grouped within TLOs depends on decisions made in Task A4. Use only the objectives that apply to training events selected in Task A5.

Many questions address presentation components within objectives, such as examples or practice. Ask these questions in groups as they appear in your JPA for each LO or TLO before going on to the questions at the TLO level.

Also, a few questions apply to the course as a whole, or at only one point in the course (e.g., Question 29). Use these questions only once for the entire course after you have asked the preceding questions of each lesson, TLO, LO, and presentation component.

Be sure to record the lesson number or title, task/TLO//, LO//, or LO action, the type of presentation component, and the TEE Question number accurately. Again, you will have difficulty interpreting the data during Phase E if you do not. Numbers and letters need be recorded only when they change.

In the Description column of your worksheet, supply a brief description for every problem rated which would not be self-explanatory by referring back to the evaluation question in the Master List.

PHASE C: PLAN TRAINING PROCESS EVALUATION

Overview of Phase C

TASKS:	RELEVANT WORKSHEET:
C1. Prepare process evaluation worksheets.	C1.1 through C1.15 (Appendix H)
C2. Make logistical arrangements to conduct the training process TEE.	C2 (Appendix H)

Guidelines for Phase C

Task C1: Prepare process evaluation worksheets.

Guidelines for Worksheets C1.1 to C1.8

C1.1 Locate your list of training event types identified in Task A5 and turn to Worksheets C1.1 through C1.8 in Appendix H. Make copies of those worksheets that apply to each of the training event types which you have identified. Note that a help session can be either classroom instruction, demonstration, practice, integrated practice, or a combination of these. There is no separate worksheet for help sessions.

C1.2 A general heading is shown on each worksheet which should be applicable to most training settings. You may wish to adapt the heading to your own training situation, however, following the rules below. The first set of points listed below is essential and should always be included:

- o Date
- o Data collector
- o Title, giving the name of the training event, and course title
- o TLO/lesson # and/or title
- o Class # or MOS # (if there is more than one class or MOS)
- o Instructor code to identify the instructor
- o Starting time
- o Training situation or environment
- o Whether practice is for individuals, crews, or larger units, if applicable

These points may be included:

- LO#, for complex tasks with training events directed at LOs or groups of LOs smaller than a task
- Ending time
- # of trainees involved

In addition, worksheet headings for tests should include the following points:

- Whether the test is for an individual, a crew, or a larger unit (as many of these as may apply)
- Who is scoring the test

In general, you should not include information that would not be useful in identifying the worksheet at a later time or that would not be useful in analyzing the training data.

You should enter items which will always be the same on the master copy of each worksheet (before reproduction). The course title or number is one such item. Also, alternate group (class) and MOS numbers can be entered, if applicable, and the instruction "circle" included above them.

C1.3

Referring to the Master List in Appendix A, go through the questions on each worksheet you have selected for the training events in your TEE and cross out those that are not applicable. Consider the following points in deciding which questions to eliminate:

- Is the subject matter such that for any given question each part of the instruction would be rated as adequate? That is, from what you know is it likely that there would every be anything wrong with any part of the instruction for that question? If not, the question should not be included in the TEE.
- Several questions contain an "if clause" restricting their use to certain types of subject matter or to certain conditions. Cross out questions that do not apply for these reasons.
- Are the training and/or course materials accessible enough so that the question can be answered satisfactorily from the observations possible in the training environment? Occasionally there are tasks which must be practiced or tested in environments inaccessible to an outside observer, such as the inside of a tank or an aircraft in flight with a limited number of crew positions.
- If the point in a question cannot be observed, ascertain whether you can gain the information in some other way. For example, you may be able to listen to the training in some way or you might be able to get instructor or trainee reactions on what happened that would be valid for some questions. (If so, make a list of all such questions for use in Step C1.6.) How important is the question with respect to the effort that will be required to get the data?

NOTE: If there are large number of questions which cannot be observed, you may wish to record their numbers as well, and make an assessment in your report in Phase F of their effect on the validity of the TEE.

- To what degree are the course presentation and test dependent on an instructor or on print or mediated course materials? If the question can be answered only by examining course materials, it should not be included here, but should be included in a product evaluation in Phase B.

Once you have marked the questions to be eliminated, you can give your worksheets a less cluttered appearance. Either black out the inapplicable questions or cut them out and tape the remaining questions back together (observing an appropriate page length), prior to copying the worksheets for use in data collection.

Guidelines for Worksheet C1.9

Worksheet C1.9 in Appendix H is a special worksheet that applies to Master List Questions 32, 75, and 76. As the TEE analyst, you will be the only one to use it, since it is filled out by reviewing process data collection worksheets from a series of training events. It should be used during Task D2 or sometime prior to conducting Task E3.

NOTE: The steps remaining in this task concern the collection of trainee and instructor reaction data. The relative importance of trainee reactions/opinions is somewhat controversial in the evaluation field. Trainee opinions are the only data collected by some evaluators. Other evaluators give it so little weight that they do not collect it at all.

The authors of your guidelines take the position that trainees are not particularly qualified to make subjective judgments about the quality of training. They are, however, quite capable of observing what happened in the training and stating how it affected either the way they learned the material or their motivation for learning it. Therefore, trainee reactions which pinpoint individual learning problems or points in the instruction that substantially reduced motivation for learning are appropriate for TEE data collection. Also, when circumstances prohibit other observers from seeing or hearing the instruction, trainees should be asked what happened. Evaluators can then "rate" the instruction appropriately.

Except when trainee observations are the only data available, it is assumed that trainee reactions will be used as a supplement to other evidence in analyzing training discrepancies in Phase E.

In some TEE situations, you may not be able to collect trainee opinions at all because of policy. In others, you may not be able to use instruments from this guide but will have to rely on instruments prepared by other organizations. In some situations, you may not be able to interview samples of the trainees.

Thus, there seem to be four alternatives regarding the collection of trainee opinions as part of the TEE:

- No data at all can be collected from trainees.
- Interviews of trainees can be conducted.
- Instruments prepared by other organizations can be used.
- Data can be collected from instruments you prepare following the guidelines in this document.

C1.4 If you prepare the instruments described in the next few steps, contact the appropriate commands and insure that you will be able to implement reaction questionnaires and interview samples of the trainees and instructors, as indicated.

Guidelines for Worksheets C1.10 and C1.11

C1.5 Look at Worksheets C1.10 and C1.11, the trainee reaction instruments. They contain the same basic questions, but have different headings and are structured so they can be used as either a written questionnaire (C1.10) or an interview guide (C1.11). If you have time and the cooperation of the training organization, the collection of trainee reaction data can provide a useful supplement to the data collectors' observations. In some cases, the only way to observe certain aspects of the training will be to ask trainees (or instructors) what happened in the training using Master List questions (see Step C1.6.) In any case, trainee reaction data is likely to be useful only if the trainees have been assured that their responses will not be revealed to their instructors!

In this step make a final decision on whether or not to collect trainee reaction data and if so, which method to use, either questionnaire or interview. Larger samples of trainees can potentially be employed with written questionnaires, but in interviews you can ask about whatever details you feel are the most important.

The questions shown on Worksheets C1.10 and C1.11 deal with the student's perceptions of what happened in training and how it affected his learning or motivation to learn.

C1.6 For each situation which you cannot observe directly, provide a special worksheet. Use a copy of each worksheet you have amended in Step C1.3 which would normally be used to observe that situation. Simply include the words "TRAINEE INTERVIEW FORM" at the top of the worksheet before reproducing it. Note that only the TEE analyst or a well-trained associate analyst will be used to give these interviews, since each question must be reworded as it is being asked.

Guidelines for Worksheets C1.12 and C1.13

C1.7 If you plan to collect instructor reactions, use Worksheet C1.12 or C1.13, the Instructor Reaction Questionnaire, and interview forms. Step C1.5 generally applies to their use. There are two major differences:

- The questions the instructor is able to answer relate to the accuracy of the content and the adequacy of the materials in terms of their ability to help him teach the course.
- You may prefer to obtain all instructor reactions via interviews, particularly if there are only one or two instructors involved in the tasks you selected to analyze.

If you plan to ask Master List questions of instructors in hard-to-observe situations, follow the procedure in Step C1.6, but include the title "INSTRUCTOR INTERVIEW FORM" prior to reproducing the form. Again, only the TEE analyst or a well-trained associate analyst should conduct the interviews.

Note that instructors are usually subject matter experts, and that a number of TEE questions (which apply in both observable and hard-to-observe situations) may require a subject matter expert's help. You may wish to include some questions of that nature on instructor reaction instruments, especially if you have no associate analyst. Those worksheets would then be used with every applicable training event, and the Master List questions on them would be left off of the regular data collection worksheets (C1.1 to C1.8).

C1.8 If circumstances warrant, tailor your own process evaluation worksheets to the training settings you will observe. As an example, if only one class was in residence for the course you were to evaluate, you might decide to evaluate the entire course yourself or with the assistance of an associate analyst (defined in the introduction). Several questions have been left out of the process data collection worksheets simply because they require data collectors to classify content type, a skill deemed difficult to train for most personnel. You would want to include some of these questions on your worksheets in the situation described. (They are marked with an ANALYST ONLY designation found in the upper right-hand corner of many Master List questions in Appendix A.)

Task C2: Make logistical arrangements to conduct the training process TEE.

C2.1 Find Worksheet C2 in Appendix H, your course outline showing training events selected for observation in Task A5, and a course schedule. List the training events you selected for observation on Worksheet C2.

You may not need to observe every event selected, although that is the best course of action to insure the validity of the TEE. You must observe at least the following events for those tasks selected for evaluation:

- A "Final Test" for each task selected for evaluation. If it involves both written and practical tests, both should be observed.
- At least 50% of the demonstrations for each instructor involved. A large number of small group demonstrations may be listed as one event on your worksheet. The overall event must be observed for each task where it occurs.

- As much practice as is practical for each task selected. Each instructor giving feedback and each different piece of equipment should be observed an equal amount of time. Practice must be observed for each task when it occurs.
- As much classroom instruction as possible; an equal number of events for each instructor.
- As many of the other training event types as possible or those that are necessary to fulfill any specific directions for the TEE desired by your sponsor.

When your purpose is to certify training prior to an operational test (OT) of a developing weapons system, it is more important to observe a large percentage or all of the training events for their entire duration. On the other hand, when you are observing ongoing training that appears to be functioning fairly well and which is consistent across instructors, complete observation of every training event becomes less important.

C2.2 From the course schedule or in an interview with an instructor or course manager, record the date, class #, time, location, objective #, and contact for each event. (See the guidelines at the end of this task.) It may be necessary in some TEEs to do so as the TEE is conducted. Also make a list of the instructors and assistant instructors and assign each one a code number.

C2.3 Communicate your plans for an on-site visit to the personnel in charge of the training to be observed. Ask that arrangements be made for you to have access to the training and testing events you selected to observe. It is a good idea to relate the following to the training deliverers:

- Your primary role is to evaluate the training design and methods - it is not to evaluate the trainees or the instructors.
- You selected the training and testing events that are the most appropriate to your TEE. Not all events will necessarily be observed, but the ones you selected are "musts."
- You will not interfere with the conduct of the training and the testing.
- You will insure that the trainees and instructors remain anonymous, if at all possible.
- You will need to be able to interview the instructors from time to time and at least a sampling of the trainees (if these activities are a part of your TEE).
- Who you will give your findings to and what they will be used for.

- C2.4 Review Phase A Worksheet A1 information. Make sure that you have the "Resource Material" listed. If you do not have the training material to be used in the actual training and the test instruments, contact the "Source" listed on the worksheet to obtain them.
- C2.5 Review the training and testing materials to familiarize yourself with the content of the training. Concentrate on those materials that relate to the performance tasks and training events that you have planned to evaluate in detail (selected in task A5).

Guidelines for Worksheet C2

Here are some guidelines for using Worksheet C2.

ITEM	GUIDELINES
COURSE	The name of the course for your TEE
DATE/TIME	Specific time of the training or testing event you'll observe
CLASS #	The number of the class or company to be observed, e.g., 82-3 or A-3-1
TYPE OF EVENT	Event types specified on your course outline from Task A5
OBJECTIVE #	The TLO or LO numbers on your objectives list or course outline
CONTENT	The lesson title from your course outline. Include the lesson or task number if you so desire.
LOCATION	Specific place where the event will occur (Installation, Building, Target Range, etc.)
CONTACT	Name of instructor or person in charge of the event
MATERIALS	List of trainee materials, test instruments, etc. which will be used in the training event
NOTES	Space for you to make any reminders to yourself such as: <ul style="list-style-type: none"> -- need for obtaining materials in advance -- need to set up observation with the contact, etc.

PHASE D: CONDUCT TRAINING PROCESS EVALUATION

Overview of Phase D

You will collect three major types of information during this phase:

- Direct observation data. This is information about the training environment, use of materials, and trainee/instructor activities which can be collected during the training and testing. You will train data collectors to use the worksheet you prepared in Task C1 to obtain this data, unless you intend to collect it yourself or with your associate analyst.
- Trainee and instructor characteristics. This is information about trainees and/or instructors that may influence training results. Training data should always be obtained if possible; instructor data are optional - particularly if the course is taught by only one or two people. It is recommended that general, or group, trainee data be collected. For example, rather than record and document the educational level of each trainee, you might quickly review records and record general information, such as "trainees range from 8th grade to 2nd-year college; almost all are high school graduates." If you find that some trainees are doing very poorly and others very well - and you suspect lack of education as a reason for difficulty - you might get more detailed educational data to make a comparison and check your hypothesis. If the course involves crew training, you'll need to describe the characteristics of the trainees for each job the crew performs.
- Trainee and instructor reaction data. This is information, gathered at the end of training and testing events, about trainee and instructor opinions of the training. Sample reaction instruments are provided in the guidelines which you will have selected in Task C1 if this type of data is to be collected in your TEE.

Here are the tasks of Phase D:

TASKS:	RELEVANT WORKSHEET:
D1. Train data collectors	Training materials in the Data Collector's Manual and Appendix F
D2. Collect data on training and testing events	C2 filled out previously, worksheets created in Task C1
D3. Collect trainee and instructor characteristics data	D3.1 D3.2

Guidelines for Phase D

Task D1: Assemble and Train Data Collectors.

D1.1 It is assumed that a number of data collectors can be made available to you during this phase if needed. (They will be needed only if the number of training events to be observed at any given time demands it.) If you decide to use them, you should request them through your sponsor far enough in advance for them to be available. If you can obtain one subject matter expert (SME) for the course you are evaluating, it will be to your advantage. In general, however, your data collectors should not be SMEs, but should be familiar with standard Army Training Procedures. It will also be very helpful if your data collectors can read well enough to understand the questions in the Master List without much difficulty. The number of data collectors needed depends on the logistics of the course and the nature of your TEE. Consider the following points:

- The number of training events selected for observation in Task A5
- Whether more than one class is in training for the course and how their schedules overlap
- Your deadline for completing the TEE
- The fact that some data collectors will not collect adequate data

D1.2 In order to proceed at this point you must have completed all tasks in Phases A and C. Gather the appropriate documentation and obtain sufficient copies of the items needed for your data collectors to observe each training event. You should have:

- Your course outline from Task A5 showing the training events selected for observation
- Enough copies of the worksheets constructed in Task C1 to conduct the process TEE
- Worksheet C2 and enough copies of the training materials listed on it for the data collectors to use during observations
- The list of instructors and their code numbers from Task C2
- A Data Collector's Manual for each data collector

D1.3 Begin the training by explaining:

- What a TEE is
- What will happen to the results and how they might be used
- The importance of the data collectors performing their tasks correctly

Explain what the data collectors will be required to do. Discuss:

- Observation of training events, in which ratings and observations are made
- General daily procedures (outlined in Step D2.1)
- The mechanics of how to use the worksheets and how they are tied to the Data Collector's Manual. Introduce each worksheet you plan to use.

D1.4 Compile a list of data collectors if one is not available to you, and pass out the Data Collector's Manual, one to each data collector.

Pass out copies of the names and code numbers of the instructors. Show the data collectors where their names and the instructors' numbers go on the worksheets.

D1.5 Conduct training on technical terminology used in the data collection worksheets. The evaluation questions to be used in the TEE contain some of the terms found in the Glossary of this User's Guide. The applicable Glossary terms are found in the Data Collector's Manual (in logical rather than alphabetical order). Explain each of these terms and discuss them with the data collectors. Allow time for them to study or discuss this information, either individually or in groups. After that, call on the data collectors to explain the terms in their own words. Review the terms further if necessary. Finally, it is suggested that you give them a written quiz to insure mastery of the terms.

D1.6 Unless the questions on your worksheets deal with only one task level, conduct the training on how to classify task levels (see the Data Collector's Manual). Instruction on how to classify content type is also included in your version of this instruction in Appendix F, but the data collectors will not normally need to learn to classify content types. It is therefore not included in their manual. Allow time for the data collectors to read the instruction on task level and do the practice items with feedback. Then, go over each of the Objectives for Discussion on Task Level. Ask the data collectors to classify each one and tell you why they classified them as they did. The feedback to your self test in Appendix F corresponds to these objectives. Finally, ask the data collectors to write the task level of each of the objectives titled Final Practice on Task Level. Discuss each answer. The feedback to your additional practice objectives in Appendix F corresponds to those objectives.

D1.7 If your data collectors are not subject matter experts (SMEs), have your associate analyst or another SME give a short series of lectures on the tasks to be evaluated. He should not go into great detail, but should help everyone to become familiar with the task actions, conditions, and standards. This knowledge will be necessary to properly fill out the data collection worksheets.

D1.8 Go over each question included on your worksheets by explaining the question and giving an example or two of how to make a rating from

the course under evaluation. Examples can be found in the Master List of Evaluation Questions. Give examples for as many questions as you can from the Master List and your own familiarity with the course. Your associate analyst should be able to help in supplying examples. After each TEE question is covered, ask questions of your data collectors and answer any questions they ask.

D1.9 Demonstrate how to give trainee interviews and how to administer questionnaires, if they are a part of your TEE. Help data collectors to understand the following considerations:

- Trainee reaction instruments which include Master List questions should be administered immediately after the events to which they apply. Otherwise the trainees will be likely to forget what actually happened or the memory of other events will interfere. The standard reaction instruments (Worksheets C1.10 and C1.11) however, should be administered only once or twice, near the middle and/or at the end of the course.
- You should get the standard reactions from only a sample of trainees for a sample of training events. The same students should not be used more than once or twice (they could be used a second time a few weeks later).
- When administering questionnaires, trainees should be required to stay until everyone is finished. Otherwise, some trainees will tend to rush through the questionnaire and give less complete answers.
- When using questionnaires, the trainees' anonymity should be insured, if possible. Reactions are very easy to "fake" and trainees often want to please evaluators by expressing what they think others want to hear. This tendency can be reduced somewhat by having trainees express their reactions anonymously.
- Be sure that data collectors will label each batch of questionnaires with the information called for in the headings to your other worksheets.
- When administering questionnaires which include Master List questions you should also be sure the trainees understand the extent of the training event they are being questioned about. That is, they should answer only for the one training event (or events if you desire) which have just taken place.

NOTE: (1) From test results and class participation you should have begun to form an idea of who your good data collectors are and those who will not collect adequate data. You should make a few confidential notes on your data collectors list.

NOTE: (2) Normally only the TEE analyst or associate analyst would administer reaction instruments to instructors.

D1.10

Give your data collectors practice in making ratings using your worksheets, if at all possible. Arrange to observe training events not selected for your TEE or from another course. Go with small groups of data collectors and have them fill out worksheets that apply to the event. Have every data collector observe each type of event to be evaluated in your TEE at least once if possible. Make your own ratings for each event as well.

Collect the worksheets after each event and compare them to your own ratings. Make notes on patterns you see which diverge from your ratings and attempt to explain them in terms of the following:

- rating what is taught rather than how it is taught
- misunderstanding of questions
- a good or bad impression of the students rather than their performance
- the data collectors being too lenient or too hard

After each type of event has been rated in practice and you have evaluated the ratings, meet with each group if numbers permit, or with the entire group of data collectors. Discuss your evaluation of their ratings with them.

You may wish to repeat this step one or more times, depending on how close the data collectors' ratings were to your own.

D1.11

The following "training plan" for a data collector's workshop is provided as a guide. The workshop should be scheduled for three consecutive days, i.e., Monday-Wednesday, Tuesday-Thursday, or Wednesday-Friday. Try not to break the workshop up over a weekend. Schedule for three full days. You may not use all of the third day but the first time you fail to schedule all of it will be the one time you will need it. Arrange the workshop in a fashion similar to the following:

- Day 1. Morning. Introduction and Overview of TEE System
 - Introduce personnel.
 - State the purpose of the workshop.
 - Collect background information on all attendees.
 - Distribute materials (e.g., Data Collector's manual, worksheets, etc.).
 - Provide overview of TEE System (based on discussion in Section I of TEE Evaluator's Handbook).
- Day 1. Afternoon. Terminology and Familiarization
 - Supervise self-instruction on terminology (using materials from Data Collector's Manual).

- Discuss terminology and conduct oral and written quizzes. Provide feedback and remediation.
 - Supervise self-instruction on classification of task levels (using materials from Data Collector's Manual).
 - Discuss classification of task levels and conduct oral and written quizzes. Provide feedback and remediation.
 - Provide overview of worksheets and discuss Master List Questions.
- Day 2. Morning. Guidance on Ratings and Recording Data
 - Review each Master List Question and provide detailed rating guidance.
 - Discuss the "mechanics" of recording data on each worksheet.
 - Answer questions on all materials and procedures covered up to this point in workshop.
 - Introduce procedures for use of questionnaires.
 - Day 2. Afternoon. Supervised Training Observation and Data Collection
 - Prepare data collector for exercise in observing training, recording data, and administering questionnaires.
 - Supervise sample data collection.
 - Evaluate worksheet entries recorded by each data collector.
 - Discuss observations and data entries from exercise.
 - Provide remediation as necessary.
 - Day 3. Morning. Data Collection Practice
 - Organize data collector into groups and send out for training observation and data collection. Allow for coverage of each worksheet if possible. Also include the administration of questionnaires.
 - Review each data collector's responses.
 - Day 3. Afternoon. Final Review and Selection
 - Discuss each data collector's observations and data entries individually.
 - Summarize the workshop experience for the group.
 - Select data collectors for TEE.

Task D2: Collect data on training and testing events.

D2.1 Prior to each day of observation, make any necessary final arrangements with your points of contact and prepare to issue the next day's assignments to your data collectors or to make observations yourself. Arrange the necessary course materials which you or your data collectors will need (as noted on Worksheet C2) and supply sufficient copies of the appropriate data collection worksheets for each training event to be observed. You may wish to prepare written assignments for data collectors showing the date, time, class #, type of event, objective #s, content, location, and contact for the events. You could photocopy Worksheet C2 and cut it into strips containing the data for each event. Write the data collectors' names on the assignments if you do this, but in any event be sure to keep your own record of the data collector(s) assigned to each event in the Notes column of Worksheet C2.

As discussed in Step C2.1, decide how many segments of different demonstration and practice events on the same tasks can practically be observed and include such instructions in your assignments to data collectors. Also, it is best for data collectors to stay for an entire training event, although that is absolutely necessary only in the case of a few questions related to practice events, e.g., "Do all students practice?" Also, if applicable, be sure that the conventions for trainees and instructor reaction instruments covered in Step D1.9 are followed.

At first, assign data collectors in groups of 2 or 3. If possible the group should contain at least one "reader" and one subject matter expert. At the end of each day you can compare ratings within groups in an attempt to identify your best data collectors, those who do an adequate job, and those who do not collect good data. You should use these judgments in making future assignments. Your best data collectors might be trusted to cover events alone (where the amount of observation permits). Poor data collectors, however, should not be assigned to events alone unless the events would otherwise be missed altogether. It could be unwise, however, to drop data collectors from the TEE unless that would clearly be a less desirable fate than continuing, since it may adversely affect the performance of other data collectors.

D2.2 Give the assignments to your data collectors with all necessary explanations and have them report back to you when they finish. Upon their return, collect their worksheets and insure that all heading information is correct and that worksheets are filled out completely. Question your data collectors about problems with these considerations and have them correct them and any other obvious flaws. Discuss their "2" and "3" ratings and insure that their comments are sufficiently complete. You will probably find that some data collectors are able to verbally report events, but may not be able to write them down. These persons may still be usable provided that you are able to work closely with them.

D2.3 As the worksheets are turned in or after they have been collected each day, examine each worksheet and decide whether the data are usable or not. If data are not usable, you may be able to assign other data collectors to observe the event if it has not already ended, such as events which are carried over to the next day. Do this only if it is needed to cover events required in Task C2.

File unusable data separately.

- D2.4 You have probably decided to use Worksheet C1.9, which is used to rate questions which involve a series of training events. If so, whenever such a series is completed for a task (e.g., events containing a statement, examples, and practice), sit down with the applicable data collection worksheets and fill out Worksheet C1.9. You may wish to have the associate analyst or a data collector do this, in which case it is best to assign the same person to do so for the entire TEE.

Task D3: Collect trainee and instructor characteristics data.

Guidelines for Worksheet D3.1

- D3.1 Make as many copies of Worksheet D3.1 as you have DUTY POSITIONS in the course.
- D3.2 Check the TYPE of course: Initial, refresher, or transition training.
- D3.3 Record DUTY POSITION and MOS and the NUMBER of trainees in each.
- D3.4 Use documentation and other sources/records to characterize the trainees in the course. Note on Worksheet D3.1 that there is a "Specified" column and an "Actual" column. Any discrepancies you find between the specified characteristics of the trainee and those that actually attended may become important later when you are trying to determine reasons for performance deficiencies.

CATEGORY	GUIDELINES
Grade	(Self-explanatory)
Academic	Highest educational level achieved
Age	(Self-explanatory)
Years In Army	(Self-explanatory)
Previous job experience	What other duty positions have the trainees held or should have held?
Special aptitudes/ qualifications	Are there any special requirements specified for entry into the course?
Method of selection for this training	For example, did the trainee need to pass an entry test? Be qualified in some other Duty Position?
Course grades from similar MOS	If the course is transition training from an older MOS, how did the trainee perform in his previous training?
Commander's performance reports/ recommendations	If motivation, flexibility, or other characteristics are important, these can be a valuable indicator of trainee qualifications.

CATEGORY**GUIDELINES****Other**

Your documentation may list other requirements for the trainee over and above those listed on the worksheet. Or, you may wish to note other facts about the trainee which bear on the TEE.

Guidelines for Worksheet D3.2

- D3.5 Make as many copies of Worksheet D3.2 as there are instructors for the course.
- D3.6 Record the instructor code numbers on each copy of the worksheet.
- D3.7 Record the number of times the instructor has given the course.
- D3.8 Use the guidelines below to record "Specified" and "Actual" characteristics of the instructors.

CATEGORY**GUIDELINES**

- Grade (Self-explanatory)
- Age (Self-explanatory)
- Years in Army (Self-explanatory)
- Training in
training delivery What formal instructor training should/did
the instructor undergo?
- Experience in
training delivery How long has the instructor been an instructor?
Note any other applicable training experience either
specified and/or actual.
- Experience in
subject matter Has/should the instructor have had field experience
in the tasks of the course? To what degree is/should
the instructor be an expert in the tasks of the
course?
- Involvement with
course development Did the instructor personally develop the course
or work with course developers in the design of
the course?
- Involvement with
hardware
development Was the instructor involved in designing or
developing parts of the weapon system?
- Special aptitudes/
Qualifications Are any unusual abilities, skills, or experiences
required?

PHASE E: ASSESS TRAINEE PERFORMANCE

Overview of Phase E

This phase has four major purposes:

1. Assess how well trainees can perform the tasks selected for evaluation upon completion of training.
2. Judge the adequacy of the above assessments.
3. Summarize observations of the training and training materials as an aid to identifying performance discrepancies and as input to the revision process.
4. Identify tasks on which performance standards are not met ("performance discrepancies").

You should remember that assessment of the quality of trainee performance will almost always be an estimate. Accurate assessment of the quality of performance requires direct observation of the performance in the real-world situation. In most TEEs, this is impossible. Trainee performance will be assessed under circumstances which approximate, with varying degrees of realism, the actual conditions under which the trainees are ultimately expected to perform.

It should be made clear that measures of student performance provide the most accurate and meaningful assessment of the adequacy of training. Other TEE observations may be used to supplement decisions based on performance (if performance is marginal or the measure is not completely valid). However, such observations should usually be considered as a secondary source of information for evaluation purposes. On the other hand, those observations are the primary source in identifying the required revisions in training, once the discrepant task performances are identified. The primary output of TEE Phase E is a list of tasks for which the standards have not been met -- "performance discrepancies" -- and a list of potential problem areas for each task -- "training deficiencies." Each deficiency will have been rated as minor or serious as it would impact test adequacy or student performance.

Here are the TEE tasks of Phase E:

TASKS:	RELEVANT WORKSHEET:
E1. Collect and summarize test data.	E1 (Appendix H)
E2. Summarize product and process evaluation data.	E2.1 (Appendix H) E2.2 (Appendix H) E2.3 (Appendix H)
E3. Identify task and team function performance discrepancies.	E3.1 (Appendix H) E3.2 (Appendix H) E3.3 (Appendix H)

Guidelines for Phase E

Task E1: Collect and summarize test data.

The most important test data treated in this task are from the trainees' first attempt at the final test for the course or each course unit. If there is not final test or series of final unit tests, you should try to obtain scores from performance tests on lessons, if they were given, and combine these into a final test for the purposes of the TEE. In any case, the use of one composite set of data per trainee is advised.

We make these assumptions regarding test data:

- The trainee's performance/outputs have been "scored," and you have access to the raw data.
- Their performance in some sort of operational event was recorded, as opposed to a written examination (unless, of course, written performance was the only "level of reality" assessed).
- Personnel other than yourself collected the test data.
- Most of the scoring was of the "Pass/Fail" or "Go/No Go" variety, or the scoring that was done can be easily converted to such.
- The scorers made their assessments based on the same performance or output standards.
- Scores from at least 10 trainees are available.

E1.1 Obtain and assemble the raw data produced in the final test. We assume that it will be in the form of "Go/No Go" or "Pass/Fail" scoring. If not, convert the scores to that type of scoring. If the test is a written test or has separate items for the same task or TLO, you will have to identify the items for each task and the corresponding pass/fail criteria for each task (when the test is scored only as a whole) in order to convert to Go/No Go scoring.

E1.2 Worksheet E1 presents one format for summarizing the data for later analysis. Make as many copies of Worksheet E1 as you need to summarize the test performance for each task and/or team function being evaluated.

Use the guidelines in the table following Step E1.3 below in filling out Worksheet E1. If both individuals and crews were scored, use worksheets for individual tasks separate from those for team functions.

E1.3 Repeat Steps E1.1 and E1.2 for any other types of tests you are evaluating.

Guidelines for Worksheet E1

WORKSHEET ITEM	GUIDELINES/NOTES
Course	Course title whose selected tasks you are evaluating.
Test Period	The dates of the test.
Test Conditions/ Situation	Describe the conditions in which the test was conducted. Was it in the classroom situation? Full-scale operational trial?
Type of Test	Check appropriate box.
Code Number	Give the code numbers of the instructors and/or scorers who were involved in the test of the tasks you are evaluating.
Positions	Job title(s) of the trainees or members of the crews involved in the test. If different positions have different tasks, group the tasks for each position or use separate sheets for each.
Individual or Crew Numbers	Assign a code number to each trainee who was scored, or a number or letter to the crews. List all trainees or crews that were scored in the first column of the worksheet.
Tasks Selected for Evaluation	Record the number for each task or team function selected in Task A3 (one per column across the top of the chart). Copy as many as necessary. Enter the word "TEST" after the individual tasks and/or after the team functions. For each individual or crew, record the result of the test for the first trial of each task scored: A check for "Go" or "Pass." An X for "No Go" or "Fail."
Number "NO GO"	Count the number of "No Go" ("X") for each task or team function. If there is evidence that a trainee received a "Go" only after hints or coaching, convert that score to a "No Go."
Number of Crews/ Individuals Tested	The total number of individuals or crews tested in the tasks you are analyzing. (Enter one figure and circle it if fits all tasks.)
% NO GO	Divide the number NO GO by the number tested for each task or team function.
"TEST"	In a column labelled "test," summarize individual and crew scores for the test as whole.

NOTE: See the examples of Worksheet E1 on the next two pages.

Date: 15 Jan. 81Evaluator: J. Jensen

WORKSHEET E1: SUMMARY OF TEST SCORES FOR TASKS OR TEAM FUNCTIONS

Course: 16 R AITTest Period: 12 Jan. 81Class #: 81-1Test Condition/Situation: Artillery Range, Live Ammunition,
Expendable Targets

Type of Test:

Individual ☒Final ☒Written ☐Crew ☐Within-Course ☐Hands-On ☒Code No: 4, 7Entry Test ☐Pretest ☐Position: Driver, Gunner, Commander

Individual and/ or Crew Members	Tasks Selected for Evaluation									
	4	7	10	15	21		Test			
1	X	✓	✓	✓	✓		✓			
2	✓	✓	X	✓	✓		X			
3	✓	✓	✓	X	✓		✓			
4	X	✓	✓	✓	✓		✓			
5	✓	✓	✓	X	✓		✓			
6	✓	✓	✓	X	✓		✓			
Number "No Go"	2	0	1	3	0		1			
Number of Crews/ Individuals Tested	⑥									
% No Go	33	0	17	50	0		17			

Date: 15 Jan 81
 Evaluator: J. Jensen

WORKSHEET E1: SUMMARY OF TEST SCORES FOR TASKS OR TEAM FUNCTIONS

Course: 16 R AIT Test Period: 12 Jan 81
 Class #: 81-1
 Test Condition/Situation: Artillery Range, Live Ammunition, Expendable Targets

Type of Test: Individual ☐ Crew ☒
 Final ☒ Within-Course ☐
 Written ☐ Hands-On ☒ Code No: 4,7
 Entry Test ☐
 Pretest ☐

Position: _____

Individual and/ or Crew Members	Tasks Selected for Evaluation									
	Team 30	Team 40	Team 48		Test					
A	✓	X	✓		X					
B	✓	✓	✓		✓					
Number "No Go"	0	1	0		1					
Number of Crews/ Individuals Tested	(2) →				2					
% No Go	0	50	0		50					

Task E2: Summarize Product and Process Evaluation Data.

E2.1 Locate any trainee reaction instruments (Worksheet C1.10 or C1.11) filled out in the process evaluation. For each trainee, make ratings of the reactions using the boxed checked, the items listed below each question, and the criteria below as the basis for your judgments. Write the ratings directly on each worksheet.

Note that in this step and in Step E2.2 the words above the response boxes on the interview forms are not the same as those in the guidance below and on the questionnaires. The boxes which hold the same positions as those on the questionnaires, however, should be treated as if they were labelled respectively: strongly disagree, disagree, neutral, agree, and strongly agree (with reference to the guidance in these steps).

Provide one rating for Questions 1, 2, and 3 with respect to how motivated you think the student is and how that affected his performance:

- If he generally agrees or strongly agrees on Questions 1 and 2 and disagrees or strongly disagrees on Question 3, rate 1.
- If he is neutral or disagrees on Questions 1 and 2 and is neutral or agrees on Question 3, rate 2.
- If he strongly disagrees on Questions 1 and 2, strongly agrees on Question 3, and gives good reasons for it, rate 3.
- If the responses strongly contradict each other, consider throwing out the data for that trainee as invalid.
- If the responses do not match any of the above situations, decide which of the patterns most closely matches and use that rating.

Provide one rating for Question 4 based on the combined effect you think any items listed there might have had on that student's performance. If you can, relate items listed to the Master List of Evaluation Questions and review the guidance for the applicable questions.

- If the student checked strongly disagree, disagree, or neutral and nothing is listed, rate 1.
- If he checked neutral, agree or strongly agree and the TEE question's guidance points to a rating of 2 or the items listed taken together seem to fit that category, rate 2.
- If he checked agree or strongly agree and nothing is listed, rate 2.
- If he checked agree or strongly agree and the items listed justify it, rate 3.

- E2.2 Locate any instructor reaction instruments (Worksheet C1.12 or C1.13) filled out in the process evaluation. For each instructor, make ratings of the reactions using the boxes checked for each task listed below each question. If no tasks are listed, make no rating, unless it is clear that the instrument was given after a training event that applied to only one task.

Rate each of questions 1 through 5 as follows for each task listed:

IF THE INSTRUCTOR CHECKED:	THEN RATE:
Strongly agree or Agree	1
Neutral or Disagree	2
Strongly disagree	3

- E2.3 Go through all of the above mentioned trainee and instructor reaction worksheets and all of the product and process data collection worksheets and summarize the ratings for each question in each training event that had two or more ratings by different individuals. Do this by averaging the ratings and rounding to the nearest whole rating. If the average is exactly "1.5" or "2.5," consider the information in the description column in deciding whether to round up or down. If there is nothing written there, make the decision randomly so that you round up as often as you round down.

Write the average ratings on blank copies of the appropriate worksheets. Fill in as much of the heading as necessary for quick reference and keep it with the corresponding worksheets that were summarized.

In summarizing data in the next two steps, you must distinguish between product and process data. The questions on the product and process worksheets are automatically separated by product and process; however, the questions on trainee and instructor reaction instruments may not be. Use the following guidance to make that distinction:

- On the trainee reaction instrument:
 - Questions 1 through 3 should be considered process questions.
 - Question 4 can be either product, process, or both depending on the response.
- On the instructor reaction instruments:
 - Questions 1 through 4 are product questions.
 - Question 5 can be either or both depending on the responses.

- Label questions (from the Master List) on the trainee and instructor reaction instruments.
 - If they evaluate training materials, label them product.
 - If they evaluate the process of training, label them process.

Guidelines for Worksheets E2.1 and E2.2

E2.4 In this step, the rating data for the tests are summarized, i.e., data from Master List Questions 1 through 26. You should perform this task first for product evaluation data recorded on copies of Worksheet B2, and again for process evaluation data recorded on Phase C worksheets which apply to testing events.

Fill in the headings to Worksheets E2.1 and E2.2. Make one copy of Worksheet E2.1 for each task TLO and/or LO evaluated and enter the test item number of the items evaluated.

Using the summary ratings from Step E2.3 above, or raw data where only one rater was involved, go through the worksheets and record the Master List question number and the rating for each rating of 2 or 3 on the sheet for the appropriate task. Do not record "1" ratings.

Note that the left side of Worksheets E2.1 and E2.2 is for product data; the right side is for process data.

Record ratings from questions which apply to test items under the appropriate item numbers, and to task/TLOs or LOs in the space at the bottom of Worksheet E2.1. Record ratings from TEE questions that apply to tests as a whole on Worksheet E2.2.

Guidelines for Worksheet E2.3

E2.5 In this step, the rating data from Master List Questions 27 through 93 (the presentation section) are summarized. As in the previous step, you should perform this task first for product evaluation data and again for process data.

Fill in the heading to Worksheet E2.3. Make one copy for each task/TLO and/or LO evaluated.

Again, use the summary ratings from Step E2.3, except in places where only one rater was involved. Go through the applicable worksheets and record the Master List question number and the rating for each rating of "2" or "3" on the sheet for the appropriate task. Do not record "1" ratings. Record ratings related to presentation components, to a series of presentation components, to training events, to LOs, or task/TLOs on the top part of the worksheet under the heading to that effect. Record ratings applicable to lessons, sets of LOs or tasks, or to the course on the bottom part of the worksheet on the sheet for each applicable task.

Enter the instructor code(s) for the primary instructor(s) for each task in the blank at the bottom of the worksheet.

Examples of Task E2 worksheets are found on the following pages.

Date: 15 Jan. 81
 Evaluator: J. Jensen
 Course: 16 R AIT
 Test: Final

WORKSHEET E2.1: SUMMARY OF TEST ADEQUACY DATA FOR OBJECTIVES

Task/TLO or LO: <u>7</u>			Page <u>1</u> of <u>1</u> for this objective		
PRODUCT			PROCESS		
Questions by test item:			Questions by test item:		
item # <u>7</u> 5-3 6-2 14-2	item # <u>8</u> 6-2 14-2	item # <u>9</u> 5-2 14-2	item # <u>7</u> 18-2	item # <u>8</u> 18-2	item # <u>9</u> 18-2
item # _____	item # _____	item # _____	item # _____	item # _____	item # _____
item # _____	item # _____	item # _____	item # _____	item # _____	item # _____
Questions by objective (TLO or LO): 1-2 2-2 3-2			Questions by objective (TLO or LO):		

Date: 15 Jan. 81
 Evaluator: J. Jensen
 Course: 16 RAIT
 Test: Final

WORKSHEET E2.2: SUMMARY OF TEST ADEQUACY DATA FOR THE TEST

PRODUCT	PROCESS
19-2	26-3
21-2	

Date: 15 Jan. 81

Evaluator: J. Jensen

Course: 16 RAIT

Lesson: Loading

WORKSHEET E2.3: SUMMARY OF PRESENTATION DATA

TASK/TLO or LO:	
PRODUCT	PROCESS
Questions by presentation components, series of components, LO, or task/TLO: 35-2 39-2 42-3	Questions by presentation component, series of components, training event, LO, or task/TLO: 53-2 42-3 86-3
Questions by lesson (each one that applies to this LO or task/TLO, by set of LOs or tasks/TLOs (of which this LO or task/TLO is one), or by course: 32-2 36-2 91-2	Questions by lesson (each one that applies to this LO or task/TLO, by set of LOs or tasks/TLOs (of which this LO or task/TLO is one), or by course: 32-2

Instructor Code: 4

Task E3: Identify task and team function performance discrepancies.

Once performance data and training observations have been summarized, the next step is to analyze them to see if there are any **PERFORMANCE DISCREPANCIES**. A discrepancy occurs whenever there is difference between the trainees' expected performance and what they actually did in the test situation. Identification of these discrepancies and the summary of a few other types of relevant data are the purposes of this task.

An important general consideration is the selection of a minimum standard for use in defining task discrepancies. Such a standard is the percentage of trainees permitted to fail while still considering task performance acceptable. You and your organization need to decide what the minimum standard is for each task. However, the following is recommended and is generally accepted in Army training:

Suggested Standard: Less than 20% of the crews/
individuals receive "NO GO"
in the first test trial

This task will be conducted for tasks, team functions, or both. If you have both, conduct the task once for tasks and once for team functions.

Guidelines for Worksheet E3.1

E3.1 On Worksheet E3.1, enter the task numbers and "% NO GO" data from Worksheet E1 for each task being evaluated. If you have both final exam and within-course test data, enter it for both. If there is only a final exam, use only the columns under the final exam heading.

Look at copies of Worksheets E2.1 and E2.2 and make a judgment on test adequacy for each task. Enter it in the columns so labeled for the final and any within-course test according to the guidelines in the table below. Also, circle serious deficiencies on Worksheets E2.1 and E2.2. Note that the deficiencies noted for the test as a whole apply to each and every task. Also, when considering the "seriousness" of deficiencies, take into account whether it applies to the whole task or only influences certain test items or LOs, and if so, how many items or LOs in the task are affected.

IF:	THEN ENTER:
There are no deficiencies or not many deficiencies, and any deficiencies shown do not appear to be serious*	✓
There are numerous deficiencies listed and/or one or more deficiencies appear to be serious*	X
The deficiencies listed do not clearly fit either of the above descriptions	?

*Refer to Appendix G to ascertain the seriousness of deficiencies. It contains guidance for each Master List question.

The three marks shown above have the following meanings which you should also keep in mind as you judge the test for each task. They will also apply to judgments of the training for each task in later steps (judged either by performance scores or observations of the presentation).

- ✓ - The test or training is probably adequate. From the observations made, there is nothing to indicate that the test is invalid or that the training is discrepant.
- X - The test or training is probably inadequate. From the observations made, there is enough evidence to indicate that the test is probably invalid or that a training discrepancy probably exists.
- ? - It is not known whether the test or training is adequate or not.
 - In the case of a test, there are some deficiencies, but it is not clear whether they are serious enough when taken together to make the test invalid.
 - In the case of training, either the test is inadequate or questionable (when performance scores are judged) or there are some presentation deficiencies, but it is not clear whether they are serious enough to cause a training discrepancy (when presentation ratings are judged).

E3.2 Go down the "Task" column for the final and any within-course test and record whether the performance scores in each indicate task discrepancies or not. Use the following guidelines. Note that they assume a 20% standard and should be adjusted accordingly if you use another standard.

IF TEST ADEQUACY IS:	AND % NO GO IS:	THEN RECORD:
✓	0 TO 19%	✓
✓	20 TO 100%	X
? or X	-----	?

E3.3 Go down the "Combined Task Rating" column and record a combined rating for each task. If there is no within-course data separate from final exam data, skip this step and use the final exam task ratings instead of a combined rating later on.

Use the following guidelines to ascertain the combined task ratings:

IF FINAL EXAM TASK COLUMN IS:	AND WITHIN-COURSE TEST TASK COLUMN IS:	THEN RECORD:
✓	✓, X, or ?	✓
X	✓	?
	X or ?	X
?	✓, X, or ?	Same as within course test

- E3.4** Look over copies of Worksheet E2.3 and make a presentation rating in the "Presentation Rating" column of Worksheet E3.1 for each task using the guidelines below. At the same time circle serious deficiencies on Worksheet E2.3 for future reference.

IF:	THEN ENTER:
There are no deficiencies or not many deficiencies, and any deficiencies shown do not appear to be serious*	✓
There are numerous deficiencies listed and/or one or more deficiencies appear to be serious*	X
The deficiencies listed do not clearly fit either of the above descriptions.	?

*Refer to the guidance in Appendix G to ascertain seriousness for each Master List question.

Again, you should keep in mind the meaning of each mark as you make these judgments:

- ✓ - The training is probably adequate. From the observations made, there is nothing to indicate that the training is discrepant.
- X - The training is probably inadequate. From the observations made, there is enough evidence to indicate that a training discrepancy probably exists.
- ? - It is not known whether the training is adequate or not. There are some presentation deficiencies, but it is not clear whether they are serious enough to cause a training discrepancy.

Note that these presentation ratings are less accurate than performance scores on an adequate test, which fact is taken into account in the next step.

E3.5

When you have combined task ratings from within course tests (or task ratings from a final exam alone) and presentation ratings, combine the two into a final task using the guidelines below. Enter the rating in the last column of Worksheet E3.1.

IF COMBINED TASK RATING IS:	AND PRESENTATION RATING IS:	THEN RECORD:
✓	✓ or ?	✓
	X	?*
X	✓	?*
	X or ?	X
?	✓	✓
	X	X
	?	?*

*In these cases you should examine your evaluation methods and/or the training and try to explain why there is a discrepancy between the performance scores and the presentation ratings. Look for reasons why the test adequacy and presentation ratings might be wrong. If you find errors, go back through the appropriate data collection and data summary worksheets and make corrections. Finally, enter the correct rating here.

Guidelines for Worksheet E3.3**E3.6**

If related crew/team and individual performances were both scored or if individual tasks can be clustered into superordinate functions, summarize the data further by team function or by superordinate functions for groups of individual tasks.

Locate Worksheet E3.2. On the top line in Box #1 of separate copies of the worksheet, list the function numbers for the team or superordinate individual functions evaluated in the TEE. If you are clustering tasks into individually performed or other sub-team functions, you may need to define those functions, giving them names (actions) and numbers, if that has not been done.

Below Box #1 on each worksheet, list the subordinate functions, tasks, and any communication skills hierarchically, one in each box. In this hierarchical listing, the functions, tasks, or skills on the row below for any box should be such that their successful performance is required before the task or function in the box above them can be performed acceptably. Do not list tasks at any given point on the worksheet that do not pass this test.

You may not need to use all of the boxes on any worksheet. On the other hand, you may need to use a number of worksheets for some functions. To continue listing tasks downward, list the bottom box numbers and the sheet number in the top (reference) box on additional worksheets. Also list the sheet numbers of the additional worksheets in the reference boxes on the bottom row of the sheet from which they are continued.

To expand horizontally, reference additional worksheets in the reference boxes provided on the upper and lower right. On the additional sheets, reference the correct superordinate box in the reference box at the top. You can cross out Box #1 and use the next row if there is more than one additional task. You may wish to tie all of the worksheets together with one sheet showing the top-level functions taught in the course.

On the second line of each box, list the final rating (i.e., \checkmark , X, or ?) for each task, individual function, team function, and any communication/coordination skills from the right-hand column of Worksheet E3.1.

In the blank to the right of each box which has subordinate functions, tasks, or skills below it, rate the relationship of the performances shown in the superordinate box to those in the subordinate boxes below it. Use the guidance in the table below in doing so. The meaning of these ratings is explained following the table.

IF SUPERORDINATE BOX IS:	AND SUBORDINATE BOXES HAVE:	THEN RATE THE RELATIONSHIP:
\checkmark	1/2 or more \checkmark 's and no X's	OK
	One or more X's	\downarrow
	More than 1/2 ?'s	?
X	All \checkmark 's	\uparrow
	One or more X's	X
	One or more ?'s and no X's	?
?	More than 1/2 X's	X
	Other sets of ratings	?

Key to Ratings of Hierarchical Performance Relationships:

- OK - Performance on the superordinate function and subordinate functions or tasks is acceptable.
- ↑ - Performance on the superordinate function is discrepant, while performance on all subordinate functions or tasks is acceptable. Some unmeasured communication/coordinate skill or other aspect of the function which involves more skill than the simple sum of the task performances is discrepant.
- ↓ - Performance on the superordinate function is acceptable, while performance on one or more subordinate functions or tasks is discrepant. Some individual or event made up for the discrepant task performance(s).
- X - Performance on the superordinate function is discrepant along with one or more subordinate functions or tasks. It is unknown whether the discrepancy on the superordinate function is due to the discrepancies on the subordinate function(s) or task(s) alone, or whether some skill involved in the superordinate function is also discrepant.
- ? - Performance on the superordinate function and/or enough of the subordinate functions or tasks is unknown such that the nature of the hierarchical performance relationship is unknown.

Examples of Task E3 worksheets are shown on the following pages.

Course: 16 R A I T

Date: 31 Jan. 81
 Evaluator: J. Jensen
 Course: 16 R AIT

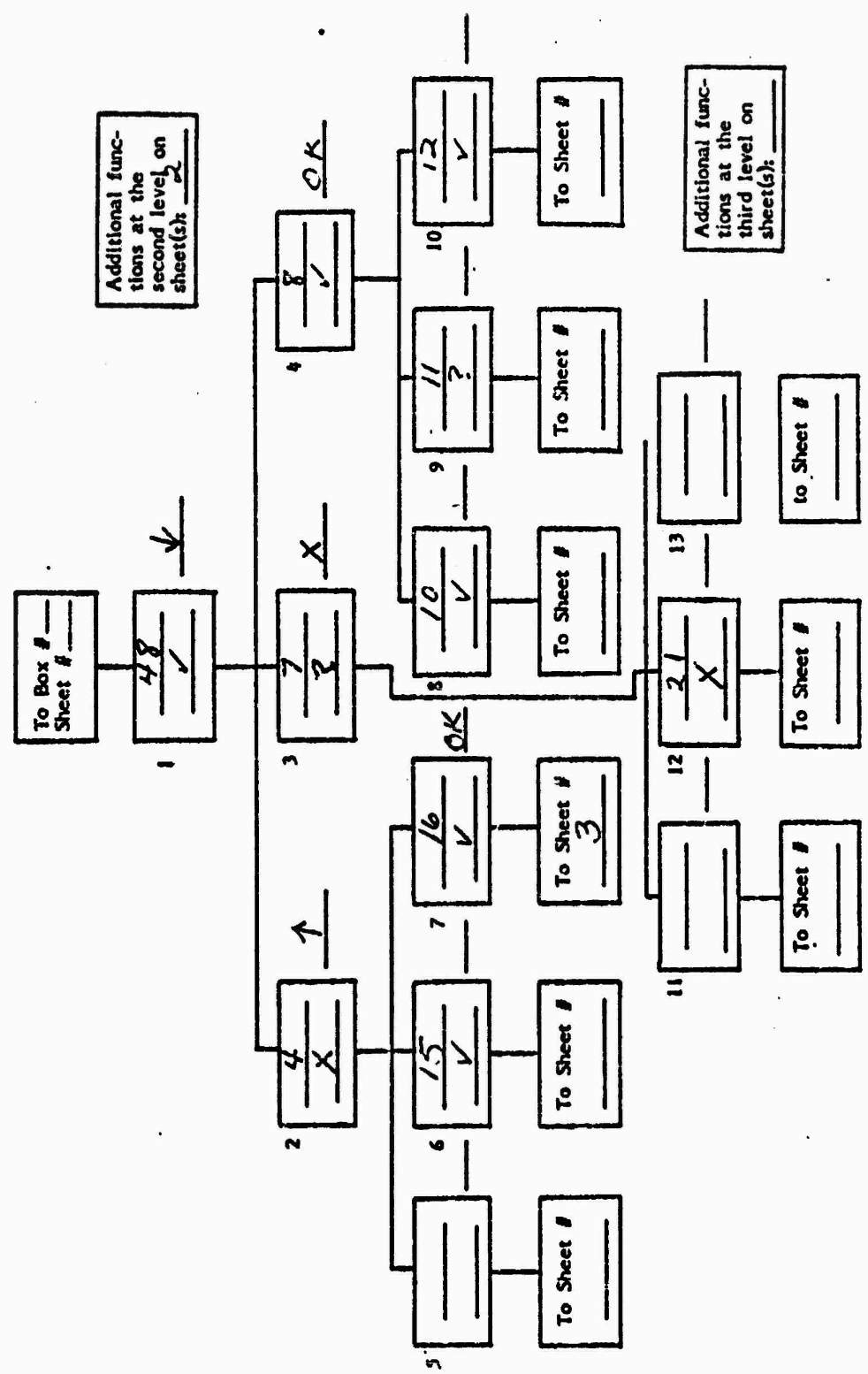
WORKSHEET E3.2: DATA SUMMARY BY TRAINEE

Trainee Code	Entry Test No Go (X)	Pre-Test Go (+)	Within-Course No Go (X)	Final Exam No Go (X)
1	X		X	X
2		+		
3	X			X
4				
5			X	
6	X		X	
7		+		
:				
20	X			
# No Go	10	(#Go) 3	11	9
% No Go	50	(%Go) 15	55	45
Test Adequacy	✓	?	✓	✓

Trainee Characteristics Deficiencies: ST scores for commander position do not meet specifications and many lack recommended # years in Army.

Date: 1 Feb. 81
 Evaluator: J. Jensen
 Course: 16 R AIT
 Sheet #: 1

WORKSHEET E3.3 DATA SUMMARY BY FUNCTION



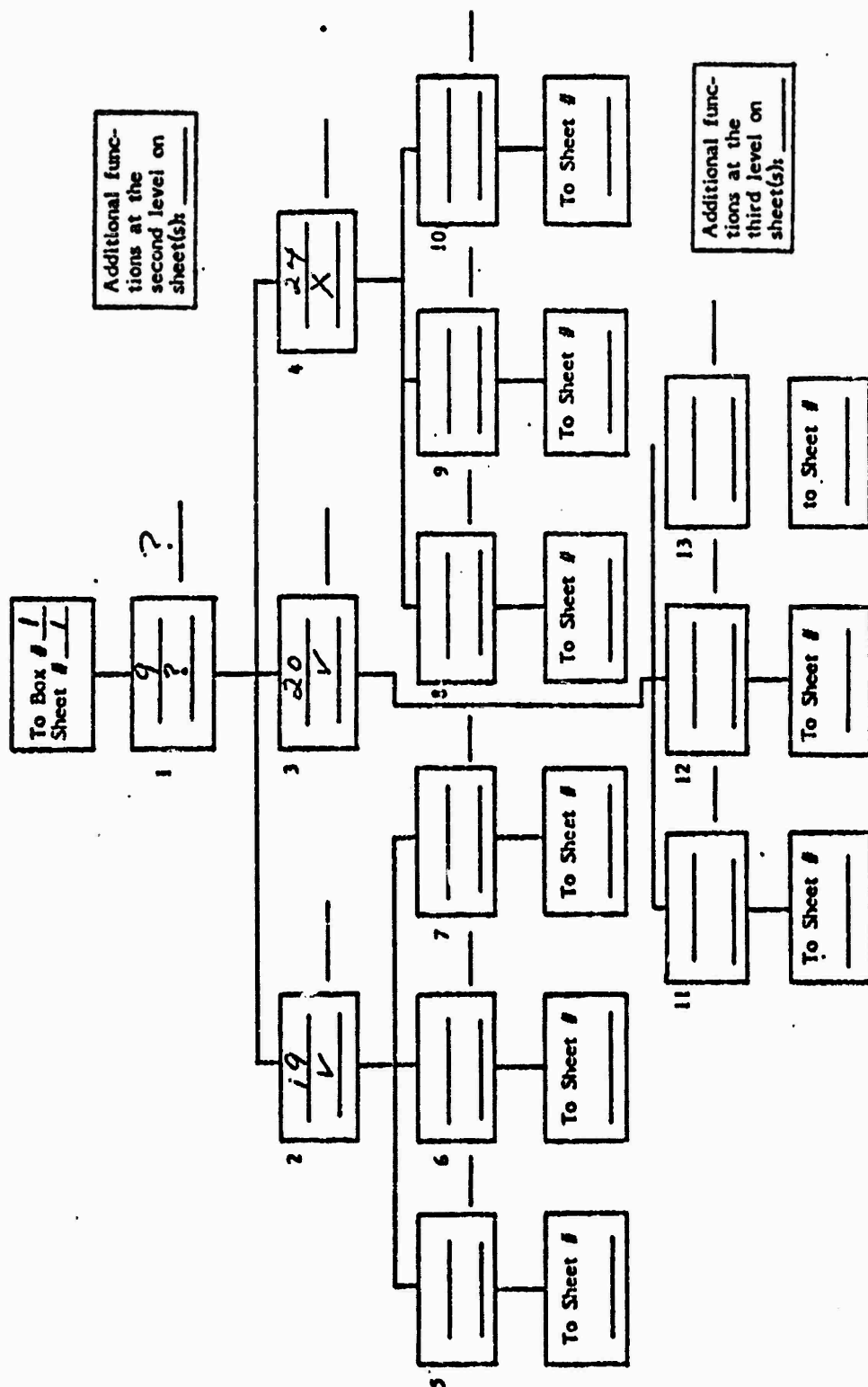
Date: 1 Feb 1981

Evaluator: J. Jensen

Course: 16 R A I T

Sheet #: 2

WORKSHEET E3.3 DATA SUMMARY BY FUNCTION



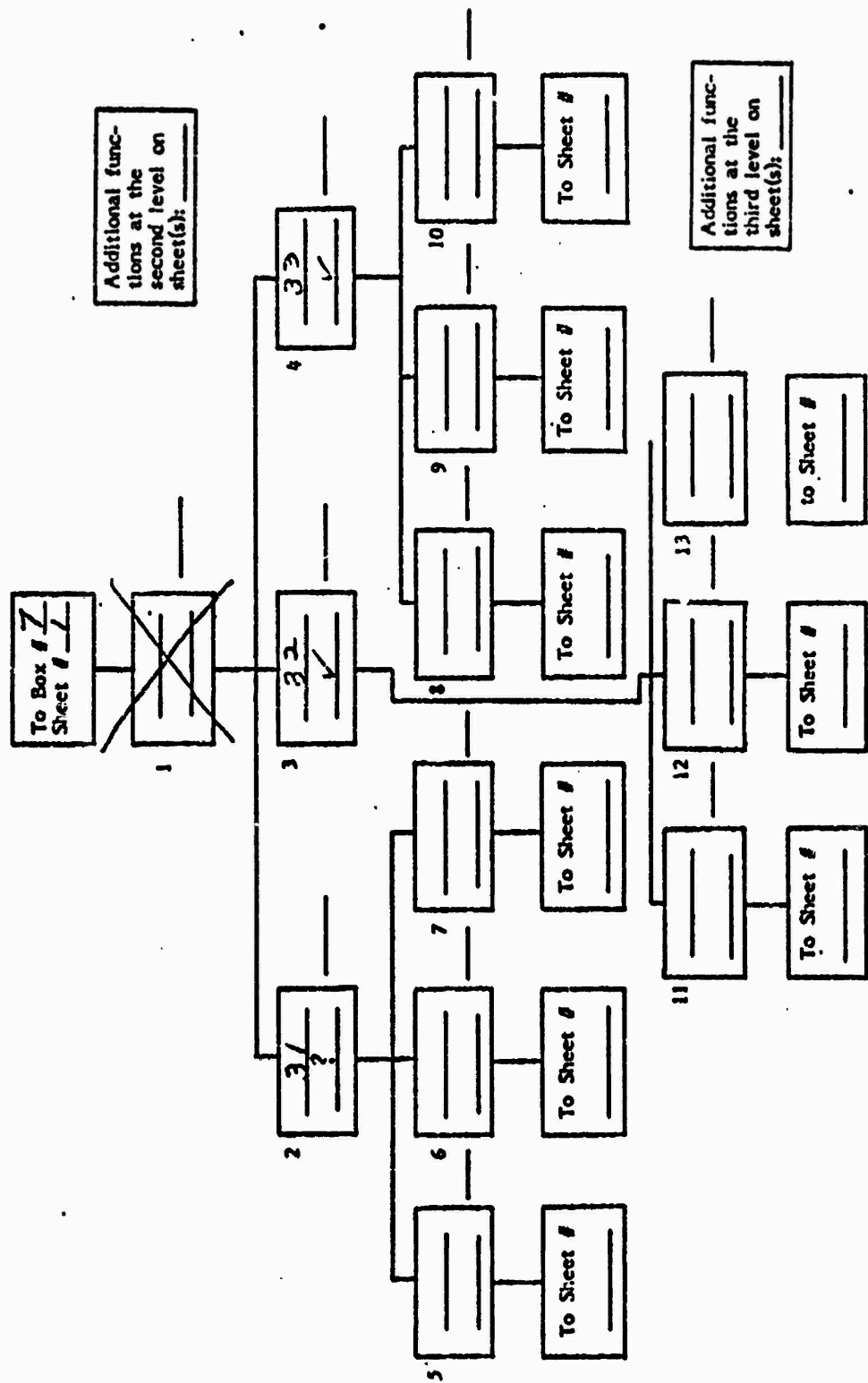
Date: 1 Feb. 1981

Evaluator: J. Jensen

Course: 16 R AIT

Sheet #: 3

WORKSHEET E3.3 DATA SUMMARY BY FUNCTION



PHASE F: DOCUMENT THE TEE

Overview of Phase F

The purpose of Phase F is to summarize the findings of your work, prepare a report documenting the effort, and organize the raw worksheets for future use.

There are no formal worksheets accompanying these guidelines for Phase F. Blank sheets of paper are your "worksheets."

Guidelines for Phase F

Task F1: Prepare report summarizing TEE conduct and findings.

F1.1 Before interpreting the TEE results, look for gaps in your data. Estimate what data should have been collected and were not. Decide if it is feasible to collect additional data before preparing and submitting the report.

Interpret the data summaries in Worksheets E3.1 and E3.3. Make notes on the conclusions you reach for inclusion in your report.

Examine Worksheet E3.1 considering the following points:

- In general, are the tests valid and reliable?
- How is the training for the tasks or team functions in the course? How many are acceptable, marginal, or discrepant?
- Based on the adequacy of the tests and training presentation, are there enough problems to warrant revising one or both of them? Is the course so bad that a second TEE would be in order following extensive revisions?

Look over your copies of Worksheets E2.1 and E2.2 for each lesson:

- Which lessons need the most work in order to be made acceptable?
- Do you see any relationship between the worst lessons and individual instructor codes, or between any such codes and instructor deficiencies rated on Worksheet D3.2?

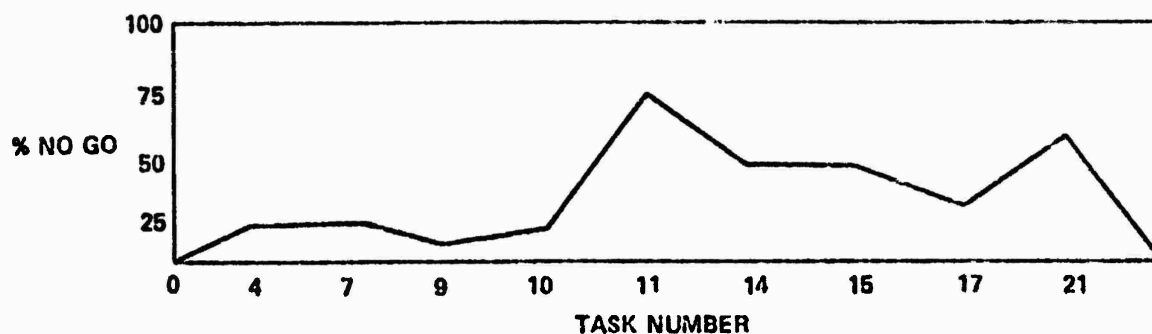
For Worksheet E3.3:

- In general, does the training for team functions need to be improved or do most team function discrepancies stem only from failures on their subordinate tasks? If not, are the measures of communication and coordination skills adequate?

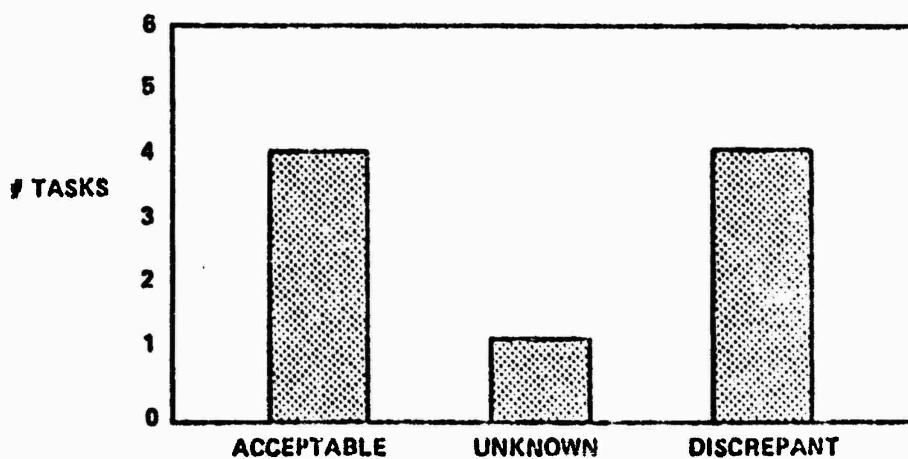
F1.2

In writing your report, you will want to present some of the data in graphic or tabular formats. Shown below are some examples of ways you can display the data.

To show the contrast among performance scores or test adequacy ratings for tasks or team functions or the final ratings for tasks, the following types of graphs can be used:

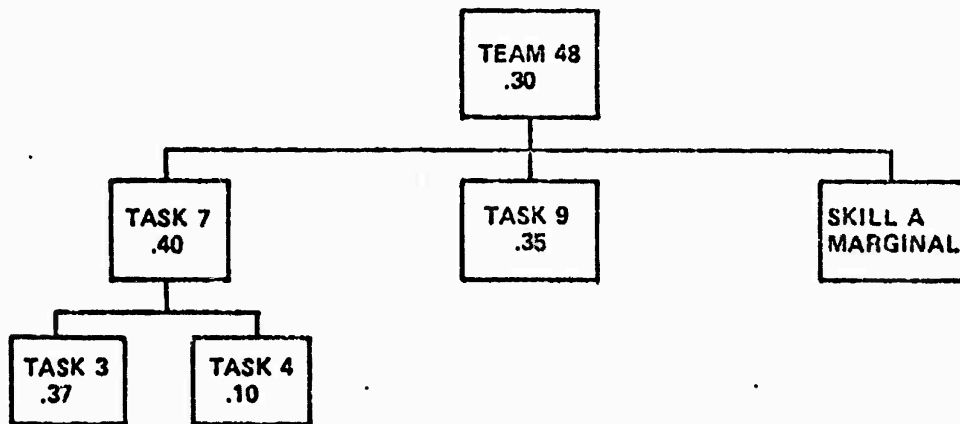


PERFORMANCE SCORES ON TASKS



COURSE OUTLOOK SHOWING FREQUENCY OF TASK RATINGS.

A useful format for displaying performance relationships between team functions and subordinate tasks or communication and coordination skills, or for tasks and subordinate LOs is:



PERFORMANCE SCORE HIERARCHY SHOWING % NO GO AND SKILL RATINGS.

It is important to present data in numerical form. Tables are used for that purpose. For example:

EVALUATION DATA BY TASK				
TASK	% NO GO	TEST ADEQUACY	PRESENTATION RATING	FINAL TASK RATING
1	33	X	?	DISCREPANT
3	20	?	✓	ACCEPTABLE
5	16	✓	?	UNKNOWN
7	0	?	X	UNKNOWN
9	25	✓	?	DISCREPANT
14	22	?	✓	ACCEPTABLE

F1.3

The report should contain these major sections:

- a. Review of the request for a TEE, and a review of any findings of any previous TEEs performed on the course.
- b. Brief presentation of the TEE process, including the general TEE purposes selected in Task A1 as reasons for the approach taken.
- c. Brief summary of the steps you took in performing the TEE, noting any reasons why you deviated from the usual/expected approach.
- d. Presentation of the basic facts about the course including:
 - Number trained
 - Number of instructors
 - Number of classroom hours
 - Goal of the course
 - Any special conditions of the course
- e. Presentation of performance data
 - Number of 1st-time "Go's" on final and within-course tests by task
 - Discussion of the adequacy of the test(s)
- f. Discussion of each task and team function that showed below-standard performance (those rated discrepant and perhaps some related unknown).
 - General reasons why the task or team function failed
 - Amount of effort required to revise instruction for each task, team function, or lesson
- g. Final recommendations
 - Should an effort be made to revise the course?
 - Your overall evaluation of the course
 - Others

Task F2: Preserve TEE documentation.

For two reasons, the course materials, the product and process data collection worksheets, summary worksheets, the final report, and other TEE documentation should be properly organized and stored where they can be accessed for future use. First, if the course is to be revised in any way, these TEE documents will identify the most serious problems and lead developers to the revisions that need to be made. Second, if another TEE is ever conducted for the course, the documentation of this TEE will be a valuable resource.

You should file TEE documents and worksheets by TEE task in clearly marked folders. You will want to have separate files for many of the TEE steps.

Appendix A.
MASTER LIST OF EVALUATION QUESTIONS

Appendix A

MASTER LIST OF EVALUATION QUESTIONS

TESTING QUESTIONS

Test Consistency with Objectives

ANALYST ONLY

1. Is the test FORMAT appropriate to the TASK LEVEL and CONTENT TYPE of the OBJECTIVE? Appropriate formats are shown in the table below.

RATING: (by objective—TLO and LOs):

If Task Level Is:	And Content Type Is:	And Test Format Is:	Then Rate
REMEMBER	FACT for RECALL, CONCEPT, PROCEDURE, RULE, or PRINCIPLE	short answer, fill-in or listing	1
		performance (for a later USE-UNAIDED objective)	2
		performance (for a later USE-AIDED objective)	3
		matching, true-false, or multiple choice	2
	FACTS FOR RECOGNITION	matching, true-false, or multiple choice	1
		performance	3
		short answer, fill-in, or listing	2
USE-UNAIDED or USE-AIDED	CONCEPT	performance, matching, true-false, multiple choice, short answer, or fill-in	1
		listing	2
	PRINCIPLE, RULE, or PROCEDURE	performance, true-false multiple choice, short answer, or fill-in	1
		listing or matching	2

EXAMPLE:

OBJECTIVE: "The student will state the rule for finding total inductance on a series circuit."

TEST ITEM: "Which of the following is the correct rule for finding total inductance in a series circuit?"

- A. $E = IR$
B. $RL_C = Z$

- C. $R = IE$
D. None of the above

In this example, the objective is at the Remember task level and content type is Rule. The test item format is multiple choice. Looking across the rating table for Q.1, we see that this combination requires a rating of "2." (It is obvious why this format is bad; the multiple choice format changes the conditions and action.)

ANALYST ONLY

2. Are there test items for the TLO or all of its critical parts/LOs?

NOTE: As defined in Section 4 of the Guidelines for evaluating objectives in Task A4, critical parts/LOs have the following characteristics:

- They are some of the most measurable and observable elements of the task.
- They have serious consequences of inadequate performance.
- They are common sources of failure.
- They are actions which the soldiers of the target population do not already know how to do and must therefore be taught.

RATING: If there are test items for the TLO or all of its critical parts/LOs, rate 1.

If there are no test items for the TLO and for some critical parts/LOs, rate 2.

If there are no test items for the TLO and for most of the critical parts/LOs, rate 3.

NOTE: For entry tests, treat the top level of entry skills as TLOs.

ANALYST ONLY

3. Is there a test item for each critical part of each LO?

The critical parts of LOs are defined below.

For the REMEMBER TASK LEVEL each piece of information is critical. Each of the following should be tested:

- Facts
- Concept characteristics
- Procedural steps
- Steps and conditions for branching in a rule
- Guidelines in a principle

For the USE-AIDED and USE-UNAIDED TASK LEVELS, the parts of the OBJECTIVE's ACTION are critical:

- For CONCEPTS, are all CRITICAL CHARACTERISTICS tested? Can you be sure the student knows each one and can you identify which ones he does not know?
- For PROCEDURES, is each step performed?
- For RULES and PRINCIPLES, is each step performed? Are there items for all possible branches or decisions, or at least those that would commonly occur on the job?

RATING: If there are test items for all critical parts, rate the LO 1.

If there are test items for many but not all critical parts, rate the LO 2.

If there are test items for only a few critical parts or for no parts, rate the LO 3.

ANALYST ONLY

4. Does the TASK LEVEL of the test item match the TASK LEVEL of its OBJECTIVE?

The task level of the test item should match the task level of the objective. This means that the action verb in the test item should be the same as the action verb in the objective, or at least the same behavior must be required. If it isn't, the test item is measuring something different from what was required in the objective.

Compare the ACTIONS of the test item and the OBJECTIVE. Record the corresponding rating indicated in the following table.

RATING (by item):

Test Item TASK LEVEL

OBJECTIVE TASK LEVEL		REMEMBER	USE-UNAIDED	USE-AIDED
	REMEMBER	1	2	2
	USE-UNAIDED	2	1	3
	USE-AIDED	3	3	1

EXAMPLE:

OBJECTIVE: "The student will write from memory the steps of the procedure for field stripping the SGT YORK cannon."

TEST ITEM: "Using the SGT YORK-10 manual, field strip the SGT YORK cannon."

In this example, the objective task level is Remember. The test item task level is Use-Aided. Referring to the rating table for Q.4, you would rate this combination "3."

ANALYST ONLY

5. Does the content of the test item match the content of its OBJECTIVE?

For the REMEMBER TASK LEVEL the content of the items and the OBJECTIVE is the same when the items test the identical information specified by the OBJECTIVE.

For the USE-AIDED and USE-UNAIDED TASK LEVELS, the content of the items is the same as the OBJECTIVE when the ACTION of the items, or the combined ACTIONS of a group of items, is the same as the OBJECTIVE'S ACTION.

RATING: If the content is the same, rate 1.

If the content is slightly different, rate 2.

If the content is very different, rate 3.

EXAMPLE:

OBJECTIVE: "Given a globe valve, rags, prussian blue, gasket material, packing, and tools, the student will disassemble and reassemble the globe valve (within 30 minutes)."

TEST ITEM: "Which of the following materials are required for disassembling and reassembling the globe valve?"

- | | |
|------------------|---------------------|
| A. rags | C. gasket material |
| B. prussian blue | D. All of the above |

For USE level objectives, the content is the same when the action of the test item is the same as the objective's action. Since it is obvious that this test item does not address the objective at all, it should be rated "3."

6. Do the CONDITIONS of the test item match the CONDITIONS of its OBJECTIVE?

Are the CONDITIONS under which the test item is administered the same as those stated in the OBJECTIVE?

RATING: Give one rating for each item within each OBJECTIVE on each test. Make notes in the "Description" column indicating the nature of the discrepancy(ies).

If the item and OBJECTIVE CONDITIONS match exactly, rate the item 1.

If there is a minor mismatch, rate it 2.

If there is a severe mismatch, rate the item 3.

EXAMPLE:

OBJECTIVE: "Given any resistor with four color bands, the student will follow the procedure for determining ohmic value as indicated by the color bands."

TEST ITEM: "For each of the resistors pictured below, determine the value in ohms, and write the value in the space next to each resistor."

The objective says the student will be given resistors, while the test item gives pictures. This might be close enough if the pictures are actual size and in color. Since this is a minor mismatch, it would be rated "2."

7. Do the STANDARDS of the test item match the STANDARDS of its OBJECTIVE?

Are the STANDARDS for the individual test item the same as those stated in the OBJECTIVE? (For many forms of written tests given at the REMEMBER TASK LEVEL, the STANDARDS are based simply on selection of the correct answer. In such cases, this question may not be applicable.)

RATING: Give one rating for each item within each OBJECTIVE. Make notes in the "Description" column indicating the nature of the discrepancy(ies).

If the item and the OBJECTIVE'S STANDARDS match exactly, rate the item 1.

If there is a minor mismatch, rate it 2.

If there is a severe mismatch, rate the item 3.

EXAMPLE:

OBJECTIVE: "Given the formula for Ohm's Law, $E=IR$, and any two values typical of values encountered on the job, the student will solve for the third value correct to two decimal places."

TEST ITEM: "Ohm's Law is $E=IR$. If $I=200$ ma., and $R=47K$ ohms, then $E=$

The item should specify that accuracy to two decimal places is required. Since this is a minor mismatch, it would be rated "2."

Test Adequacy

8. For true-false, multiple choice, and matching items is only one answer correct?

For selected response items (true-false, multiple choice, and matching) there should be only one correct answer:

RATING: If there is only one correct answer, rate 1.

If more than one answer can be correct, rate 3.

EXAMPLE:

ITEM: "If you are driving down a steep grade, you would be likely to shift gears:

- a. down for power.
- b. up for power.
- c. down to decelerate.
- d. down to slow the vehicle.

Choices "c" and "d" are paraphrases of each other, giving two possibly correct answers. Therefore this item should be rated "3."

9. For short answer, fill-in, listing, and performance items, are all acceptable answers in the answer key?

For constructed response items (short answer, fill-in, listing, and performance) multiple correct answers may be acceptable.

RATING: If all correct answers are in the answer key, rate 1.

If some correct answers are not in the answer key, rate 3.

ANALYST ONLY

10. Does the test item provide opportunities for COMMON ERRORS to be made?

Do the possible responses to the item allow students to choose or commit most errors common in the real job task?

RATING: If yes, rate 1.

If no, rate 3.

NOTE: You may need the help of a subject matter expert to identify COMMON ERRORS.

11. Is the language of the test item easy for students to understand?

Considering the reading level and intelligence of the students, are any long sentences or difficult words used other than job-related words taught in the course.

RATING: If the language of the item is easy for the students, rate 1.

If the language is somewhat difficult, rate 2.

If the language of the item is very difficult, rate 3.

ANALYST ONLY

12. Is the test item different from previous PRACTICE and EXAMPLES? (This question applies only to items at the USE-AIDED or USE-UNAIDED TASK LEVELS, and the CONCEPT, RULE, or PRINCIPLE CONTENT TYPES.)

The test item should not be the same as previously used EXAMPLES or PRACTICE. (One exception is that items testing COMMON ERRORS may be the same.)

RATING: If the test item is different, rate 1.

If test item has been presented before as an EXAMPLE or in PRACTICE, and the TASK LEVEL of the OBJECTIVE is USE-AIDED, rate 2.

If the test item has been presented before as an EXAMPLE or in PRACTICE, and the TASK LEVEL of the OBJECTIVE is USE-AIDED, rate 3.

13. Is the answer to the test item given away by another item or group of items on the test?

RATING: If the answer is not given away, rate 1.

If other items give clues to the answer, rate 2.

If the answer can be found in other item(s), rate 3.

14. Is the answer to the test item dependent on answering a previous item or group of items correctly?

RATING: If the answer does not depend on other items, rate 1.

If previous items must be answered correctly in order to answer this item correctly, rate 3.

15. Are sketches and diagrams used in the test item easy to understand?

RATING: If sketches and diagrams are...

...easy to understand, rate 1.

...somewhat confusing, rate 2.

...very confusing, rate 3.

16. Is the test item tricky or misleading in that it points to an incorrect answer?

RATING: If the item is not misleading, rate 1.

If it is somewhat misleading, rate 2.

If the item is very misleading, rate 3.

PRODUCT ONLY

17. Is the test item well-constructed?

Select the appropriate set of criteria below depending upon the test item format being used. On Worksheet B2 write the name of the test format below the TEE question marker. Record it again if the format changes. Rate the item as indicated below, noting the letter(s) corresponding to the identified deficiency(ies) in the "Description" column. Note that critical criteria are marked with asterisks in the supplementary guidance to this question.

RATING: If the item is well constructed, i.e., it meets all the criteria, rate 1.

If the item is deficient on one or more non-critical criteria (but not on any critical criteria), rate 2.

If the item is deficient on one or more critical criteria, rate 3.

CRITERIA FOR WELL-CONSTRUCTED TEST ITEMS

● True-False

- *a. The item should include only one statement (idea) to be judged true or false.
- *b. Negative statements and double negatives should not be used.
- c. The item should be short.
- *d. The item should not be so obvious that it can be answered correctly on the basis of common sense alone.
- *e. Absolutes, like "none," "never," "all," and "every," should not be used.
- *f. The item should not contain the words "same," "any," or "generally."
- *g. The item should deal with things that are clearly either true or false.

EXAMPLE:

T	F	It is not appropriate to shift from a higher gear to a lower gear if added power is not necessary.
---	---	--

Learners reading this item must attempt to translate the statements into positive form before answering it. This violates criterion "b" above. Since the item is deficient on one critical (*) criterion, it should be rated "3."

● Multiple Choice

- a. All alternatives should have the same grammatical structure.
- b. The item stem should be worded positively, that is, words like "no" and "not" should not be used.
- c. Repetitive phrases should be placed in the stem, rather than in the alternatives.
- d. Numerical choices should be listed in order of magnitude.
- e. The item should not require a great deal of reading.
- *f. Wording of the stem should be clear and unambiguous, so that only the one correct answer is possible.
- *g. The article "a" or "an" should not be at the end of the stem.

- *h. All alternatives should be plausible to someone who doesn't know the answer.
- i. Alternatives like "A and B only" or "all of the above" should not be used.
- *j. Alternatives should be approximately the same length.
- *k. Extreme adjectives, such as "complete," "total," and "absolute" should be avoided.

EXAMPLE:

ITEM: The best reason for avoiding carbon tetrachloride in cleaning tools

- a. is because it is very expensive.
- b. is because it will harm the tools.
- c. is because it will affect the color of the tools.
- d. is because it is likely to produce flames, which exist in sufficient amount to harm those around it.

This item has two deficiencies. The phrase "is because it" belongs in the stem, not in the alternatives (criterion "c"), and alternative "d" is longer than the other three (criterion "j"). "Test-wise" students know that a longer answer is often correct because the test developer often spends more time writing the correct answers than the incorrect alternatives. Since the item is deficient on two criteria, one of which is critical (*), it is rated "3."




● Matching

- a. Directions should include statements of:
 - the contents of each column
 - the basis for matching
 - how often choices may be used
 - how many answers are possible for "givens"
- b. All choices should have the same grammatical structure.
- c. Numerical choice should be in order of magnitude.
- d. The item should not require a great deal of reading.
- e. Choices should be arranged in some sensible order, for example, alphabetically or logically.
- *f. Unless choices can be used more than once, extra entries should be included in the choice column.

- *g. None of the entries in either column should appear obviously different from each other. One title should be appropriate for all entries in a column.
- *h. Each alternative solution should be a plausible answer for all or most of the problems.

EXAMPLE:

ITEM: Match each target type below with its correct symbol.

- | | |
|--------------------|--|
| 1. ground target | a.  |
| 2. friend | b.  |
| 3. unknown hostile | c.  |

This item is deficient on two criteria: Directions do not indicate how often choices can be used (criterion "a"), and extra entries are not included in the choice column (criterion "f"). Since the item is discrepant on one critical (*) criterion, rate it "3."

● Fill-in

- a. The blank should be at or near the end of the sentence.
- *b. One and only one word or phrase should correctly complete the item.
- c. Multiple blanks should be avoided.
- *d. Blanks should require key words.
- *e. Answers should be specific rather than general in nature.
- *f. Items should measure key concepts, not nonessential details.
- *g. There should be no grammatical or logical cues to correct answers.

EXAMPLE:

ITEM: _____ is the symbol for 'jammed sector.'

This item does not have a blank near the end of the sentence (criterion "a"). Since this deficiency is non-critical, it is rated "2."

● Short answer

- a. The required answer should be short (phrases or one or two sentences).
- *b. Directions to the student should say how the items are to be scored without giving cues to the correct answers.
- *c. The scoring key should identify allowable synonyms or alternatives.
- *d. The question should be complete with enough information for the learner to generate an appropriate answer.
- *e. Credit should be given for each correct part of an answer.
- *f. Questions should be clear so that all learners will have the same interpretation.
- *g. A model answer should be written for each question as an aid to scoring, or a checklist of attributes of a good answer should be provided for use in scoring.
- h. Items should be assigned points according to their value.
- i. Point values should be made known before the test.
- j. Items should be scored anonymously (scorer should grade students' papers without knowledge of their identity).
- *k. Content should be scored, not grammar, punctuation, spelling, or penmanship (unless specified in the objective).
- l. One question should be scored across all students before preceeding to the next one.

EXAMPLE:

ITEM: Give the rule for computing the mean of a set of scores as a formula. No credit for partially correct answers.

KEY: $\bar{X} = \frac{\sum X}{N}$ or the mean = $\frac{\text{sum of the scores}}{\text{number of scores}}$

This item meets all of the above criteria. It should be rated "1."

● Listing

- *a. The directions should specify the number of things to be listed, (if appropriate for the objective, and if the number of things is not a clue.)
- *b. The directions should indicate how the item will be scored without giving clues to the correct answer.

- *c. If order is important, the scoring key should treat sequence separately.
- *d. The scoring key should identify allowable synonyms or alternatives.
- *e. Spelling should not be scored unless required by the objective.
- f. The scoring key should identify relative weights of different items on the list, if appropriate.

EXAMPLE:

ITEM: List the squad functions concerned with radar, in order.

- KEY:**
1. Set radar mode switch
 2. Select channel
 3. Select search sector
 4. Select display parameters
 5. Observe BIT results
 6. Administer organization maintenance

This item is deficient on several critical criteria. The directions do not specify the number of squad functions to be listed (criterion "a"); the directions indicate that order is important, but the key does not treat sequence separately from completeness (criterion "b"); the scoring key does not identify allowable synonyms or alternatives ("d"). Clearly, this item calls for a "3" rating.

● **Performance**

NOTE: A performance test question is the request that a task or parts of a task be performed. It is not an individual point on a checklist.

- *a. The test should score all aspects of task performance and qualities of the resulting task product that are specified in the objective and no others.
- *b. The directions should clearly explain what the student is to do and how the item will be scored (and/or the test administrator should clearly communicate that to the student).

Any checklists employed should follow the rules in c. & d.:

- c. Each step should be self-explanatory to anyone who would perform the task.
- d. Each step should be stated as a single action; important or complex decisions should be presented as separate steps.
- *e. The scoring key should specify all criteria the performance must meet, such as completeness, accuracy, quality, time limit, rate, etc.

- f. If steps in the performance are scored, a checklist should be provided.
- *g. Any rating scales used should be specific enough so that all raters will interpret them in much the same manner.
- *h. All raters should agree on judgments of task performance.

If more than one scorer rates the same students, multiple ratings can be compared.

Interviews with scorers on question "h." may also be an appropriate data source.

PROCESS,
PERFORMANCE ONLY

18. When steps are scored, does the instructor use a checklist?

RATING: If a checklist is filled in completely, rate 1.

If a checklist is used as a reference or filled in partially, rate 2.

If a checklist is not used, rate 3.

PRODUCT ONLY
TRUE-FALSE, MULTIPLE
CHOICE, OR MATCHING
ONLY

19. On selected response tests (i.e., true-false, multiple choice, or matching) is each correct answer position (e.g., a, b, c, or d) used about the same number of times?

If one or more correct answer positions are used more than others, it can give students clues which make the test easier than it ought to be.

RATING: If correct answer positions are used about the same number of times, rate 1.

If it would be obvious to the test taker that some correct answer positions are used more than others, rate 3.

PRODUCT ONLY
TRUE-FALSE, MULTIPLE
CHOICE, OR MATCHING
ONLY

20. On selected response tests (i.e., true-false, multiple choice, matching) are specific patterns of correct answer positions repeated across test items or are single positions repeated in blocks?

As is true when some correct answer positions are used more than others, using patterns (e.g., c, d, a, b, c, d, a, b); or repeating single positions in blocks (e.g., c, c, c, c, d, d, d, d); can give students clues and make the test easier than it should be.

RATING: If there are no answer patterns than can be seen easily in the test, rate 1.

If patterns of answers can be seen, rate 3.

-
21. Are test administration directions complete?

Instructions should be complete enough that test administrators don't have to make up their own directions, i.e., so different testers would tend to follow the same procedures.

RATING: If the directions are complete, rate 1.

If directions are provided, but are incomplete or unclear, rate 2.

If there are no administration directions, rate 3.

PROCESS ONLY

22. Do instructors follow the directions when administering the test? If there are no documented directions this question is not applicable.

RATING: If yes, rate 1.

If there are some variations from the test directions, rate 2.

If there are significant variations from the directions, rate 3.

-
23. Are adequate test instructions provided to the student?

Two types of instructions may be required:

1. Item instructions for groups of test items. These should be clear and should provide enough information to answer the items correctly. (Be sure to indicate which items the rating applies to on your worksheet.)

2. General instructions should state:

- the test's purpose
- any time limit.

- descriptions of test conditions
- descriptions of test standards
- how to respond to each item
- general regulations

There should be no questions in a student's mind as how to take the test or how to behave during the test.

RATING: If yes, i.e., adequate test instructions to the student are provided, rate 1.

If instructions are provided but are not completely clear, rate 2.

If no instructions are provided, rate 3.

PERFORMANCE ONLY

24. Does the FINAL TEST integrate tasks as they are integrated in the "real world?"

If real world CONDITIONS call for tasks to be performed together or during the same period of time the test should simulate those CONDITIONS.

RATING: If yes, i.e., all tasks performed together on the job are performed together on the test, rate 1.

If tasks are only partially integrated, rate 2.

If the tasks are tested separately, rate 3.

25. Are tasks and task steps tested in the same sequence as they are performed in the "real world?"

RATING: If yes, i.e., the sequence is the same, rate 1.

If some tasks or steps are slightly out of sequence, rate 2.

If the tasks or steps are in a very different sequence, rate 3.

PROCESS ONLY

26. Is the test free of external cues and help?

Were there any artificial cues or help? Instructors, evaluators, observers, and other students should not provide any assistance that will not be present in the real world.

RATING: If yes, i.e., no cue or help was given during the test (other than clarification of the directions), rate 1.

If some "hints" are given, rate 2.

If assistance was given that would "give away" many correct answers, rate 3. (Additionally, test item scores should be recorded as "NO GOs" for TEE purposes.)

PRESENTATION QUESTIONS

27. Are attention-getting/motivational techniques employed in the instruction?

Devices, such as cartoons, interesting subject matter-related stories, and analogies, can be used to arouse interest. There must also be appropriate positive rewards for learning and negative consequences for not learning. These rewards and consequences may be a normal part of many learning situations. For example, the possible satisfaction of passing the course or the disappointment of failing it is enough motivation for many students. Motivational devices in the instruction and/or special rewards and consequences are usually required because:

- the students often have little motivation for learning, such as many Category IV trainees.
- the students would consider the task evaluated in the TEE long and boring or difficult to learn.

RATING: If motivational devices are included in the instruction, rate 1.

If motivational devices are not included, rate 3.

PROCESS ONLY

28. Is the trainee attitude positive?

Do the trainees appear interested and actively participate in the instruction or do they do or say anything that shows that they don't care about the instruction or that they don't want to learn?

RATING: If students display a positive attitude toward instruction, rate 1.

If students appear indifferent, rate 2.

If students display hostility or frustration during the instruction, rate 3.

PRODUCT ONLY

29. Are course ENTRY SKILLS reviewed?

Skills and knowledge required of students entering the course should be reviewed if they are complex or likely to have been forgotten. (This TEE question is not applicable if a review of entry skills is not needed.)

RATING: If a review including PRACTICE is given, rate 1.

If a review is given without student PRACTICE, rate 2.

If no review is given, rate 3.

30. Is mastery of prerequisite skills verified prior to new instruction?

Prerequisite skills are subordinate skills which must be understood or mastered in order to learn a SUPERORDINATE SKILL taught later in the course. They can be verified by giving a test or asking a sample of the students how to perform them.

RATING: If prerequisite skills are verified, rate 1.

If prerequisites are not verified, rate 3.

31. Are the OBJECTIVES presented to the student?

Does the lesson call for a statement of terminal performance required of the students for the OBJECTIVE and/or is the statement given in the instruction?

RATING: If the OBJECTIVES are presented to the student, rate 1.

If no OBJECTIVES are stated, rate 3.

ANALYST ONLY

32. Are the basic PRESENTATION COMPONENTS present?

RATING: Rate the OBJECTIVE in accordance with the tables below. The first table shows the required components for each task level. The second table gives a potential rating.

32. (continued)

PRESENTATION COMPONENT

	Statement	Practice Remembering	Feedback for Practice Remembering	Examples	Practice Using	Feedback for Practice Using
REMEMBER	required	required	required	not required	not required	required
USE-UNAIDED	required unless the associated REMEMBER objective was taught recently*					
USE-AIDED	the aid replaces statement	not required	not required	required with aid	required with aid	required

*If these COMPONENTS are not actually present, consider them missing unless:

- They were taught within the past few days, or
- they were taught within the past few months and the training materials used are still available for students to review, or
- the students have had closely related MOS experience

In the table below, select the row within the appropriate task level that matches the training events used for the objective. The boxes have the following meanings:

"•" — Component present

Blank Box -- Component missing

REQUIRED PRESENTATION COMPONENT

Task Level	State- ment	Practice Remem- bering	Feedback	Examples	Practice Using	Feedback	Rating
REMEMBER	•	•	•				1
	•	•					2
	•						3
	•	•	•	•	•	•	1
	•	•		•	•	•	1
	•			•	•	•	1
				•	•	•	2
	•	•	•	•	•		2
	•	•		•	•		2
	•			•	•		2
				•	•		2
USE-UNAIDED	•	•	•		•	•	1
	•	•			•	•	1
	•				•	•	1
					•	•	2
	•	•	•		•		2
	•	•			•		2
	•				•		3
					•		3
	•	•	•	•			3
	•	•		•			3
	•			•			3
				•			3
	•	•	•				3
	•	•					3
	•						3
							3

In the table below, select the row within the appropriate task level that matches the training events used for the objective. The boxes have the following meanings:

"o" — Component present

Blank Box — Component missing

(continued)

REQUIRED PRESENTATION COMPONENT

Task Level	State- ment	Practice Remem- bering	Feedback	Examples	Practice Using	Feedback	Rating
USE-AIDED				•	•	•	1
				•	•		2
					•	•	1
					•		3
				•			3

ANALYST ONLY

33. Are STATEMENTS complete?

STATEMENTS should have the following parts:

- For FACTS: the complete fact or set of facts should be presented.
- For CONCEPTS: all critical characteristics and how they are combined should be given.
- For PROCEDURES: all steps should be given in the correct order.
- For RULES: all steps and branching decisions should be given in the correct order.
- For PRINCIPLES: all potential component CONCEPTS, PROCEDURES, RULES, and/or PRINCIPLES should be given (unless REMEMBERING them can be considered an ENTRY SKILL) along

with the PRINCIPLE itself (a general rule giving typically incomplete guidance on how to construct a HIGHER ORDER RULE from the component parts).

RATING: If all parts of the STATEMENT are present, rate 1.

If few parts are missing, rate 2.

If many parts are missing, rate 3.

ANALYST ONLY

34. Are STATEMENTS for CONCEPTS, PROCEDURES, or RULES adequate?

- For CONCEPTS: a decision rule or search strategy for classifying examples and non-examples should be given.
- For PROCEDURES: each step should have only one action.
- For RULES: when a formula is used, symbols must be defined.

RATING: If the STATEMENT is adequate, rate 1.

If one of the above rules is violated, rate 3.

35. Does STATEMENT HELP provide sufficient explanation?

NOTE: The purpose of STATEMENT HELP as defined here is to help in understanding the statement and in remembering it.

STATEMENT HELP may consist of:

- Explaining how the statement relates to something the student already knows, why it is important, how it fits into the course
- More explanation about what the statement means
- Representing the statement with pictures, symbols, or flowcharts

RATING: If STATEMENT HELP gives sufficient explanation, rate 1.

If STATEMENT help gives insufficient explanation (e.g., merely restates the STATEMENT in the same words), rate 2.

If STATEMENT HELP is confusing, rate 3.

Questions 36 through 43 apply to EXAMPLES. If the course consists only of OBJECTIVES at the REMEMBER TASK LEVEL or of the FACT CONTENT TYPE, these questions will not apply.

36. Does training include instruction on the use of required job performance aids?

Job performance aids should be adequately introduced and explained so that students will know how to use them. They should be clearly shown and referenced in examples and demonstrations.

RATING: If the job aid is explained, rate 1.

If the job is not explained, e.g., merely mentioned, rate 3.

ANALYST ONLY

37. Are EXAMPLES and NON-EXAMPLES adequate?

- For CONCEPTS: EXAMPLES should show all CRITICAL CHARACTERISTICS; for NON-EXAMPLES it should be clear that one or more of the CRITICAL CHARACTERISTICS is missing.
- For PROCEDURES, RULE, or PRINCIPLES: EXAMPLES should show an application (use) of the PROCEDURE, RULE, or PRINCIPLE.

RATING: If the EXAMPLE or NON-EXAMPLE follows the above criteria, rate 1.

If the above criteria are not followed, rate 3.

ANALYST ONLY

38. Is EXAMPLE HELP adequate?

EXAMPLE HELP is additional information to help the student understand. Some types of HELP for different CONTENT TYPES are given below:

- HELP for CONCEPTS: Highlight CRITICAL CHARACTERISTICS. Explain the reasons for classification. Illustrate the use of the decision rule or search strategy.
- HELP for PROCEDURES or RULES: Explain the steps. Give more information on how to perform each step. Give a demonstration of each step. Give flowcharts, tables, etc.
- HELP for PRINCIPLES: Highlight important causes, effects, relationships. Give additional information.

RATING: EXAMPLES which are more lengthy or complicated may require extensive EXAMPLE HELP in order to receive a rating of 1.

If EXAMPLE HELP provides sufficient explanation, rate 1.

If EXAMPLE HELP is confusing, rate 3.

ANALYST ONLY

39. Are EXAMPLES sequenced from easy to hard? (CONCEPTS only)

Difficulty in learning CONCEPTS can result either from a large number of CRITICAL CHARACTERISTICS or from CRITICAL CHARACTERISTICS which are hard to identify when they appear in an EXAMPLE. Sequencing of EXAMPLES from easy to hard can allow the student to learn gradually in instances where he may not be able to understand EXAMPLES as they would be encountered on the job.

RATING: If EXAMPLES are sequenced from easy to hard, rate 1.

If EXAMPLES are not sequenced, rate 3.

ANALYST ONLY

40. Are there enough EXAMPLES?

There should be enough EXAMPLES to cover the content area thoroughly.

- For CONCEPTS: At least one EXAMPLE for each CRITICAL CHARACTERISTIC.
- For PROCEDURES or RULES: One EXAMPLE for each important step; EXAMPLES for all possible branches or decisions.
- For PRINCIPLES: At least one EXAMPLE for each major type of HIGHER ORDER RULE that should be discovered.

RATING: If most or all of the required EXAMPLES are given, rate 1.

If several of the required EXAMPLES are not given, rate 3.

ANALYST ONLY

41. Are NON-EXAMPLES included? (CONCEPTS only)

For CONCEPTS, NON-EXAMPLES should be included for common NON-CRITICAL CHARACTERISTICS.

RATING: If NON-EXAMPLES are included, rate 1.

If NON-EXAMPLES are not included, rate 3.

42. Do DEMONSTRATIONS show how to correct/avoid common errors?

If there are errors that are typically made on the job, methods for avoiding or correcting them should be included.

Consult a subject matter expert if necessary to determine the likelihood of common errors.

RATING: If explanations are given on how common errors can be corrected or avoided, rate 1.

If not, rate 3.

ANALYST ONLY

43. Are steps in a DEMONSTRATION the appropriate size?

The number of steps or concepts that are demonstrated to trainees at one time should not be too small or large.

IF TASK INVOLVES:

STEP-SIZE SHOULD BE:

Fine judgments
Motor Skills
Difficult concepts
Unlearning similar concepts

Relatively SMALL

Straightforward sequence
Simple concepts

Relatively LARGE

IF TRAINEES ARE:

STEP-SIZE SHOULD BE:

Very new to the task
Low academic background

Relatively SMALL

Considerable experience in
the task
High academic background

Relatively LARGE

RATING: If step-size is appropriate, rate 1.

If step-size is too small, rate 2.

If step-size is too large, rate 3.

NOTE: Sometimes a step in a demonstration will cover too much ground and the soldiers will not be able to follow what the instructor is doing. When the instructor leaves the soldier behind by taking large steps during the demonstration, soldiers may indicate that they do not understand what the

instructor did, or ask a question that causes the instructor to backtrack and provide additional information. If the added information appears to increase soldier understanding, then the step size used in the demonstration was probably too large. If so, rate 3.

44. Are tasks and task steps DEMONSTRATED in the same sequence as they are performed in the real world?

RATING: If the order is the same, rate 1.

If the DEMONSTRATION is slightly out of sequence, rate 2.

If there is a very different sequence, rate 3.

Questions 45 through 68 deal with PRACTICE.

Questions 45 and 46 apply only to PRACTICE REMEMBERING and are therefore not appropriate for USE-AIDED OBJECTIVES.

Questions 47 through 52 apply only to PRACTICE USING and are not appropriate for REMEMBER OBJECTIVES.

Questions 51 and 52 are appropriate only to USE-AIDED OBJECTIVES.

Questions 53 through 64 deal with PRACTICE and FEEDBACK in general, but may be appropriate to any TASK LEVEL or CONTENT TYPE.

Questions 65 through 68 deal with TEAM PRACTICE and are appropriate only when members of a team PRACTICE their overall TEAM FUNCTION collectively.

45. Are memory aids used? (PRACTICE REMEMBERING only)

Memory aids may take several forms:

- Flowcharts
- Visuals such as graphics, patterns, and illustrations
- Verbal devices such as rhymes, stories, chains of related words, and keywords

RATING: If a memory aid is used, rate 1.

If a memory aid is not used, rate 3.

46. Does each PRACTICE REMEMBERING item have the same content and format as the test item?

Here, PRACTICE and test items should be identical so that differences in content, wording, illustrations, etc. do not become a source of confusion to the student.

RATING: If the PRACTICE REMEMBERING item is the same as the test item, rate 1.

If the items are the same in content but differ in any other way, rate 2.

If the items differ in content, rate 3.

47. Are PRACTICE USING items sequenced from easy to hard?

Tasks are often difficult to learn when their full CONDITIONS and STANDARDS are imposed on early PRACTICE items. In order to teach someone how to perform such Tasks, it is often necessary to make it easier to do at the beginning. To do this, the CONDITIONS or STANDARDS can be relaxed. The ACTION, however, should never be changed.

For example, the Task "field-strip an M-16 rifle in total darkness" is taught initially in the light.

RATING: If PRACTICE items are sequenced from easy to hard, rate 1.

If sequencing is not done, rate 3.

ANALYST ONLY

48. Do PRACTICE USING items provide opportunities for COMMON ERRORS to be made?

The test items should test COMMON ERRORS (see Question 10). The PRACTICE items should allow for those same errors to be made.

RATING: If PRACTICE USING items allow COMMON ERRORS to be made, rate 1.

If the items provide no opportunity for COMMON ERRORS to be made, rate 3.

ANALYST ONLY

49. Are PRACTICE items different from EXAMPLES? (USE-CONCEPT, USE-RULE, or USE-PRINCIPLE only)

PRACTICE with situations that have been seen before in EXAMPLES does not allow the correct type of learning to occur for USE OBJECTIVES.

RATING: If PRACTICE USING items have never been seen before, rate 1.

If PRACTICE items have been seen before, rate 3.

50. Does PRACTICE USING integrate tasks as they are integrated in the "real world?"

Make one rating per group of terminal learning objectives (TLOs) in terms of how well the PRACTICE situation matches that of the job. You may need to consult a subject matter expert. Be sure to record the task/TLO #s on your worksheet.

RATING: If PRACTICE integrates tasks as they are integrated in the "real world," rate 1.

If tasks are only partially integrated, rate 2.

If tasks are practiced separately, rate 3.

51. Are job performance aids (JPAs) usable?

The following points should be true of all JPAs:

- Each step is self-explanatory to anyone who would perform the task.
- Each step picks up where the previous step left off.
- Illustrations that plainly identify components to be manipulated or identified are included where applicable.

RATING: If the job aid is easy to use, rate 1.

If the job aid is hard to use, rate 2.

If the job aid is unusable, rate 3.

PROCESS ONLY

52. Do all students use the job performance aid (JPA)?

RATING: If all students use the JPA, rate 1.

If up to 20% of the students do not use the JPA, rate 2.

If more than 20% of the students do not use the JPA, rate 3.

53. Does the TASK LEVEL of the PRACTICE Item match that of the test item(s)? Compare the ACTIONS of the PRACTICE Item and test item(s) that go with it.

RATING:

		Test Item TASK LEVEL		
PRACTICE ITEM TASK LEVEL		REMEMBER	USE-UNAIDED	USE-AIDED
	REMEMBER	1	2	2
	USE-UNAIDED	2	1	2
	USE-AIDED	3	3	1

ANALYST ONLY

54. Does the **CONTENT TYPE** of the **PRACTICE** item match that of the test item(s)?

CONTENT TYPE refers to whether the objective deals with a **FACT**, **CONCEPT**, **PROCEDURE**, **RULE**, or **PRINCIPLE**.

RATING: If the **CONTENT TYPE** matches (e.g., **CONCEPT-CONCEPT**) rate 1.

If there is a mismatch (e.g., **CONCEPT-RULE**) rate 3.

55. Does the **FORMAT** of the **PRACTICE** item match that of the test item?

RATING:

Test Item Format

Practice Item Format		True/ False	Multiple Choice	Matching	Fill-In	Short Answer	Listing	Performance
	True/ False	1	2	2	2	2	2	2
	Multiple Choice	2	1	2	2	2	2	3
	Matching	2	2	1	2	2	2	3
	Fill-In	2	2	2	1	2	2	2
	Short Answer	2	2	2	2	1	2	2
	Listing	2	2	2	2	2	1	2
	Perfor- mance	2	2	2	2	2	2	1

56. Do the CONDITIONS of each FINAL PRACTICE item match those of the test item(s)?

Compare the CONDITIONS of FINAL PRACTICE to those of the test items that test it. This question applies only to the latest PRACTICE given before the test.

RATING: If CONDITIONS are the same, rate 1.
If CONDITIONS are slightly different, rate 2.
If CONDITIONS are very different, rate 3.

57. Do the STANDARDS of each FINAL PRACTICE item match those of the test item(s)?

Compare the STANDARDS imposed during FINAL PRACTICE to those used in the test items that go with it. This question applies only to the last PRACTICE given before the test.

RATING: If STANDARDS are the same, rate 1.
If STANDARDS are slightly different, rate 2.
If STANDARDS are very different, rate 3.

PROCESS ONLY

58. Is FINAL PRACTICE free of external cues or help?

FINAL PRACTICE should not contain anything that will not appear on the test or on the job. The instructors, evaluators, observers, and other students should not provide assistance that won't be present in the "real world." Extra hints given during practice will cause more students to fail the test (once they don't have the assistance to rely on when taking the test). This question applies only to the last PRACTICE given before the test.

RATING: If yes, i.e., no assistance is given during PRACTICE, rate 1.
If some hints are given that wouldn't be available on the job, rate 2.
If students are given excessive cues, prompts, or assistance such that many answers are given away, rate 3.

ANALYST ONLY

59. Are there PRACTICE items for each TLO or all of its critical parts/LOs?

NOTE: As defined in Section 4 of the Guidelines for evaluating objectives in Task A4, critical parts/LOs have the following characteristics:

- They are some of the most measurable and observable elements of the task.
- They have serious consequences of inadequate performance in terms of their impact on task performance.
- They are common sources of failure.
- They are actions which the soldiers of the target population do not already know how to do and must therefore be taught.

RATING: If there are PRACTICE items for the TLO or all of its critical parts/LOs, rate 1.

If there are no PRACTICE items for the TLO and only some critical parts/LOs, rate 2.

If there are no PRACTICE items for the TLO and for most of the parts/LOs, rate 3.

ANALYST ONLY

60. Is there a PRACTICE item for each critical part of each LO?

The critical parts of LOs are defined below.

For the REMEMBER TASK LEVEL each piece of information is critical. Each of the following should be tested:

- Facts
- Concept characteristics
- Procedural steps
- Steps and conditions for branching in a rule
- Guidelines in a principle

For the USE-AIDED and USE-UNAIDED TASK LEVELS, the parts of the OBJECTIVE'S ACTION are critical:

- For CONCEPTS, are all CRITICAL CHARACTERISTICS practiced? Can you be sure the student knows each one and can you identify which ones he does not know?
- For PROCEDURES, is each of the steps performed?
- For RULES and PRINCIPLES, is each of the steps performed? Are there items for all possible branches or decisions, or at least those that would commonly occur on the job?

- RATING:** If there is PRACTICE for all parts, rate 1.
If there is PRACTICE for many, but not all parts, rate 2.
If there is PRACTICE for only a few parts or for no parts, rate 3.
-

PROCESS ONLY

61. Do all students PRACTICE?

- RATING:** If yes, rate 1.
If up to 20% of the students do not PRACTICE, rate 2.
If more than 20% of the students do not PRACTICE, rate 3.
-

PROCESS ONLY

62. Do all students meet the required STANDARDS in FINAL PRACTICE?

This question applies only to the last practice given before the test.

- RATING:** If yes, rate 1.
If up to 20% of the students do not meet the required STANDARDS, rate 2.
If more than 20% of the students do not meet the STANDARDS, rate 3.
-

63. Is FEEDBACK provided for PRACTICE?

For both PRACTICE REMEMBERING and PRACTICE USING, students should be told whether they are right or wrong, and if wrong, what the correct answer is and why.

For step-by-step practice, FEEDBACK should be given for each step.

- RATING:** If FEEDBACK HELP (which explains answers) is given for wrong answers or correct answer only feedback is given for correct responses, rate 1.
If students are given only the correct answer after incorrect responses, rate 2.
If no FEEDBACK is provided, rate 3.
-

ANALYST ONLY

64. Is FEEDBACK HELP adequate?

Students sometimes make errors because they did not learn from the original presentation. Therefore, when possible, FEEDBACK should include additional

information or a different version of the information than was originally presented.

FEEDBACK HELP should include additional information to help the student understand. Some types of HELP for different CONTENT TYPES are given below:

HELP for CONCEPTS: Highlight CRITICAL CHARACTERISTICS.
Explain the reasons for classification.
Illustrate the use of the decision rule or search strategy.

HELP FOR PROCEDURES
or RULES: Explain the steps.
Give more information on how to perform each step.
Give a demonstration of each step.
Give flowcharts, tables, etc.

HELP FOR PRINCIPLES: Highlight important causes, effects, relationships.
Give additional information about how the principle applies, or why it doesn't.

RATING: If FEEDBACK HELP gives enough additional explanation, rate 1.

 If it gives insufficient explanation, e.g., if it consists of a repetition of the original presentation, rate 2.

 If FEEDBACK HELP is confusing, rate 3.

65. Is TEAM PRACTICE provided?

PRACTICE is the fundamental component of team training. TEAM PRACTICE allows for all of the members of a crew or team to get together and PRACTICE their TEAM FUNCTION.

RATING: If TEAM PRACTICE is provided, rate 1.

 If there is none, rate 3.

66. Are TEAM PRACTICE CONDITIONS the same as (or as close as possible to) those of the real task?

When the members of a crew or team come together to practice their TEAM FUNCTION collectively, it should be done under CONDITIONS as close to the real task as possible.

If PRACTICE CONDITIONS are not close to those in the real task, important collective skills such as communication and coordination among team members may not be practiced adequately.

RATING: If TEAM PRACTICE CONDITIONS are as close as possible to those of the real task, rate 1.

If CONDITIONS are slightly different, rate 2.

If CONDITIONS are very different, rate 3.

NOTE: Be sure to record the correct TEAM FUNCTION number in the Task/TLO # column on your product evaluation worksheet.

67. Is TEAM PRACTICE FEEDBACK provided?

Teams should at least be told whether their PRACTICE mission was successful or not, and if not, what they did wrong.

RATING: If FEEDBACK HELP is provided, rate 1.

If team members are told "how they did", but are not told what they did wrong, rate 2.

If no FEEDBACK is given, rate 3.

NOTE: Be sure to record the correct TEAM FUNCTION number in the Task/TLO # column on your product evaluation worksheet.

ANALYST ONLY

68. Is FEEDBACK HELP for TEAM PRACTICE adequate?

In order for team members to learn from their mistakes, they must be told how to correct them. Some types of HELP for different CONTENT TYPES are given below:

**HELP FOR PROCEDURES
or RULES:**

Explain the steps.
Give more information on how to perform each step.
Give a demonstration of each step.
Give flowcharts, tables, etc.

HELP FOR PRINCIPLES:

Highlight important causes, effects, relationships.
Give additional information about how the principle applies, or why it doesn't.

RATING: If FEEDBACK HELP gives enough additional explanation, rate 1.

If it gives insufficient explanation, rate 2.

If FEEDBACK HELP is confusing, rate 3.

Questions 69 through 72 deal with the clarity and comprehensibility of the instruction. Unless objectives vary a great deal on these points, ask these questions for whole LESSONS at a time.

PRODUCT ONLY

69. Are all PRESENTATION COMPONENTS separated and identified?

Each COMPONENT should be separated from the rest of the instruction, for example:

- Set off with a box.
- Different color, type face, or underlining.
- Placed on a separate page or in a special place on a page.
- For audio or film, pause before introducing the COMPONENT.

Each COMPONENT should be identified:

STATEMENTS, EXAMPLES, and PRACTICE must be identified so the student knows what they are, and can locate them. Labels can be used to identify different COMPONENTS:

Definition of . . .	Example	Practice
Procedure . . .	Demonstration	Test Yourself
Key Point		

These points are likely to affect student performance only if there is a limited amount of time to adequately complete the instruction or if the students are not good readers (when print is involved).

RATING: If each PRESENTATION COMPONENT is separated and identified, rate 1.

If some of the COMPONENTS are not clearly identified, rate 2.

If most or all of the COMPONENTS are not clearly identified, rate 3.

70. Is the technical quality of written or spoken material adequate?

Whether text appears in print, in some other visual medium, as narration, or as spoken in a lecture or demonstration, it should meet the following standards:

- a. Each COMPONENT should be directed at the primary audience.
- b. The instruction should be performance-oriented rather than topic-oriented. It should tell "what to do" or "how to do it", rather than telling about a task.
- c. Main points should stand out. They should not get lost in detail, so that secondary points appear equal to main points. COMPONENTS

should not be too wordy, either because there is too much detail (more than the essentials needed to perform the job), or because the material is redundant (with information being needlessly repeated).

- d. Information should be presented in an orderly manner so that it is not confusing. Check for:
- Redundancy between paragraphs or ideas
 - Missing information
 - Scattered information — information about the same main point not in one place
 - Remote references — references to text or illustrations in other places
- e. Visual aids should communicate something. They must function in one or more of the following ways:
- Substitute for text or narration
 - Lighten the burden of detail in text or narration
 - Reinforce or summarize information in text or narration
- f. Is there a run-together format? A solid mass of print should be "chunked" visually so that separate points can be easily identified. Items in audio visual presentations or lectures should also be distinguishable.
- g. Perspective — In visual media do visuals provide the viewer with an adequate frame of reference with which to judge size and distance?

RATING: Considering the criteria listed above, if most or all of the applicable criteria are met, rate 1.

If several applicable criteria are not met, rate 2.

If few applicable criteria are met, rate 3.

NOTE: Be sure to note what the specific problems are in the Description column of your worksheet.

NOTE: You should make this rating for an entire LESSON unless material for certain OBJECTIVES merits different ratings.

-
71. Is the wording of written or spoken material easy for the student to understand?

Verbal instruction should not contain too many hard words, or many long sentences. Technical words related to the subject matter are acceptable as

long as they are explained or the students have had previous training, so that they already know what they mean.

RATING: If the wording is easy to understand with few hard words or long sentences, rate 1.

If there are some hard words and long sentences, rate 2.

If there are many hard words and long sentences, rate 3.

72. Is the instructor's presentation or the narration easy to listen to?

For spoken material to be easy to listen to, its pace and pitch should be varied. It should not go on constantly at the same rate or at the same pitch so that it becomes monotonous. Also, continuous repetition of short patterns of pace and/or pitch which give speech a "sing-song" effect should be avoided.

In addition, speech should be understandable. It should not be too soft; speakers should not have speech impediments, or heavy accents, nor should they mumble.

RATING: If the instructor's speech or the narration is easy to listen to, rate 1.

If speech is dull and monotonous, rate 2.

If speech is hard to listen to, rate 3.

73. Is the instructor's presentation, the narration, or text material supported by visuals?

In order to maintain attention and interest and to aid students in understanding the material, verbal presentations should be supported by visuals. Visuals may include real equipment.

RATING: If the presentation is completely supported by visuals, rate 1.

If it is partially supported by visuals, rate 2.

If the presentation is not supported by visuals at all, rate 3.

74. Are visuals easily understood?

RATING: If visuals are easily understood, rate 1.

If visuals are understandable with effort, rate 2.

If visuals are very hard to understand, rate 3.

ANALYST ONLY

75. Are OBJECTIVES (TLOs and LOs) within each LESSON sequenced properly?

Are the OBJECTIVES which are prerequisites to other OBJECTIVES taught first? An OBJECTIVE is a prerequisite if it must be mastered in order for the other OBJECTIVE to be learned. Examples:

- Being able to add is a prerequisite to being able to multiply.
- The ability to locate a stationary object in a VULCAN sight is a prerequisite to learning how to track an approaching aircraft smoothly.
- Knowing the location and function of the controls and indicators on a tracked vehicle must come before learning how to drive one.

Tasks should also be taught in the order in which they normally occur on the job.

RATING: Rate each LESSON. If the TLOs and LOs within a lesson are sequenced properly, rate 1.

If the OBJECTIVES are not sequenced properly, rate 3.

ANALYST ONLY

76. Are the LESSONS sequenced within the course?

LESSONS that teach tasks which are SUBORDINATE SKILLS to tasks taught in other LESSONS should be taught first.

Look at each LESSON starting at the beginning of the course and ask what the students must already know in order to learn the TASKS in the LESSON (the LESSON prerequisites).

RATING: If the LESSON prerequisites were taught in previous LESSONS or are ENTRY SKILLS, rate 1.

If not, rate 3 and note what knowledge or skills should have been taught earlier in the Description column of your worksheet.

PRODUCT ONLY

77. Are the media appropriate for the OBJECTIVES?

Compare the media used with the appropriate media in the table below. Consider groups of OBJECTIVES that fall into the same general TASK LEVEL and CONTENT TYPE as defined in the table.

RATING: If the media are appropriate, rate 1.

If not, rate 3 and write the key words which are underlined in the right-hand column below in the Description column of your worksheet.

If:	And Task Level/ Content Type Is:	Then Acceptable Media Are: ^a	Problem With Mismatch
Consequences of task error are serious. ^b	USE	Large Equipment Portable Equipment Simulator (Required for final practice in addition to other media below used earlier in training.)	<u>No real practice.</u> Other media cannot provide the realism needed to PRACTICE the task adequately under these conditions.
Self-Instruction (the course manager does not give FEEDBACK ^c to students)	REMEMBER	Audio Filmstrip Motion Picture Printed Text Slide/Tape Training Aid TV Cassette Computer Programmed Text Interactive TV Training Device (supplemented with printed text) Portable Equipment (supplemented with printed text)	<u>Incomplete information.</u> Other media would not typically present enough information without the aid of an instructor.
	USE/MENTAL SKILLS ^d	Computer Programmd Text Interactive TV Training Device Motion Picture Slide/Tape TV Cassette Filmstrip Audio	<u>No FEEDBACK.</u> Other media typically cannot provide corrective FEEDBACK without an instructor.
	USE/MOTOR SKILLS ^e	Training Device (supplemented with printed text) Portable Equipment (supplemented with printed text)	<u>No hands-on practice.</u> Other media cannot provide the necessary motor manipulations.

If:	And Task Level/ (Content Type) Is:	Then Acceptable Media Are: ^a	Problem With Mismatch
Instructor-led instruction	REMEMBER	Instructor with any other media	-----
	USE/MENTAL SKILLS ^d	Instructor with any other media	-----
	USE/MOTOR SKILLS ^e	Instructor with: Portable Equipment, Large Equipment, Training Device, or Simulator	<u>No hands-on practice.</u> Other media cannot provide the necessary motor manipulations

^a Media definitions may be found in Appendix E at the end of these guidelines.

^b When the graduate is first required to perform the task on the job, are the consequences of error serious?

^c A course manager would do no more than grade tests. He would not give **FEEDBACK** on **PRACTICE**. The media must do that in this setting.

^d Mental skills are **CONCEPTS, PROCEDURES, RULES, or PRINCIPLES** which are performed primarily in the student's mind. A skill may have both mental and motor skills associated with it, but if the motor skills are so simple that anyone who knew the mental skills could perform them without training, the overall skill should be considered a mental skill. Sometimes a TLO is broken down into mental and motor LOs.

^e Motor skills are **PROCEDURES** which require the smooth timing of muscular movements. All motor skills have a mental component, but with motor skills the physical activity must be practiced in order to achieve proficiency.

NOTE: All of the media shown for each situation are not necessarily the best media in terms of costs and practicality; however they can provide the necessary learning characteristics for those conditions.

PRODUCT ONLY

78. Can the media used provide all necessary stimuli required by the OBJECTIVES?

Some OBJECTIVES make specific demands of the media used to teach them. In these cases, the media must be able to display certain types of stimuli in order for students to be able to learn the OBJECTIVE. These can include:

- visuals
- motion
- color
- audio
- tactile cues (stimuli that can be felt or touched)

Note that this question deals with stimuli that are absolutely required in order to teach or perform the OBJECTIVE. For example, in an aircraft recognition task, the use of visuals is a requirement. Students cannot learn to recognize different aircraft without seeing visual examples of them and without practicing recognition using visuals.

In order to learn how to load ammunition into the Vulcan ammunition storage drum, visual examples are not required. Color, motion, and audio would add realism and may be used, but they are not absolutely necessary. However, PRACTICE for that task would require tactile cues. The medium employed here would probably be the operational equipment or a training device and an instructor.

Consider each medium used for each TLO in the LESSON for the EXAMPLES and PRACTICE items.

RATING: If the medium can supply all of the required characteristics, rate 1.

If the medium cannot supply all of the required characteristics, rate 3.

PRODUCT ONLY

79. Are course administration directions complete?

Course administrative directions should be examined to insure that they are complete.

RATING: If the directions are complete, rate 1.

If the directions are partially incomplete, rate 2.

If directions are incomplete or nonexistent, such that instructors are left to use their own judgment, rate 3.

80. Do course administration directions make realistic demands of students and instructors?

RATING: If all demands are realistic, rate 1.

If some demands are unrealistic, rate 3 and note what they are.

PROCESS ONLY

81. Is the instructor/trainee ratio such that all students can see, hear, and receive **FEEDBACK**?

For the presentation of **STATEMENTS** and **EXAMPLES**, can every student see and hear what is being presented?

For **PRACTICE**, is there enough opportunity for the instructor to provide necessary **FEEDBACK** and **FEEDBACK HELP** to every student?

RATING: If the instructor/trainee ratio is such that all students can see, hear, and receive **FEEDBACK**, rate 1.

If a few students cannot see, hear, and receive **FEEDBACK**, rate 2.

If many students cannot see, hear, and receive **FEEDBACK**, rate 3.

EXAMPLE: If you see one or two soldiers stop what they are doing and wait until an instructor comes to help, rate this event a "2."

If you see several soldiers practicing without instructor supervision, or crowding around an instructor trying to get a clear view of a demonstration, or trying to get help from the same instructor at the same time, rate it a "3."

PROCESS ONLY

82. Does the instructor follow the methods in the Instructor Guide?

Compare the lesson plan and other applicable **LESSON** materials with the instructor's performance.

Be sure to note the nature of departures from **LESSON** materials in the Description column of your worksheet.

RATING: If the instructor follows the methods outlined in the **LESSON** materials, rate 1.

If he follows them to some extent, rate 2.

If the instructor follows the methods in the **LESSON** materials very little or not at all, rate 3.

PROCESS ONLY

83. Is all of the content in the LESSON materials covered?

Compare the lesson plan, student manual, operator's manual and other applicable LESSON materials with the content the instructor presents. Be sure to note the nature of departures from LESSON materials in the Description column of your worksheet. In self-paced settings, does the course manager insure that all of the LESSON materials are covered?

RATING: If all of the content found in the LESSON materials is covered, rate 1.

If much of the content is covered, rate 2, and indicate what was left out.

If very little of the content in the LESSON materials is covered, rate 3, and note what was omitted.

PROCESS ONLY

84. Did the instructor limit his teaching to the content in the LESSON materials?

RATING: If the instructor limited his presentation to the LESSON materials, rate 1.

If not, rate 3 and briefly note anything else he taught.

PROCESS ONLY

85. Is there enough space for all of the trainees?

- Can everyone see and hear?
- Where applicable, does everyone have an opportunity to practice?
- Is there adequate "elbow room?"

RATING: If there is enough space for all the trainees, rate 1.

If it is a little crowded, rate 2.

If it is very cramped or some students cannot fit in the space at all, rate 3.

PROCESS ONLY

86. Is the instruction free of distractions?

Do sound or visual distractions or interruptions prevent students from learning?

Listed below are some examples of distractions that commonly occur in the training environment:

- Noisy training site
- Other observers present
- Instructor or soldiers being trained leave before class is complete
- Soldiers do pushups in class to stay awake
- Equipment breakdowns
- Delays due to weather
- Delays due to missing equipment

RATING: If the instruction is free of distractions, rate 1.

If there are some distractions which are merely annoying, rate 2.

If distractions seriously interfere with or interrupt the instruction, rate 3.

PROCESS ONLY

87. Is the lighting appropriate for the training situation?

Is there too little or too much light for reading when required or to see audio-visual displays or equipment?

NOTE: If the "real world" performance CONDITIONS require low light, then advanced PRACTICE events may need to be in comparable lighting conditions.

RATING: If the lighting level is appropriate, rate 1.

If the lighting is a little too dim or too bright, so that students have trouble reading or seeing displays and equipment, rate 2.

If the lighting is so dim or bright that students cannot read or see displays and equipment, rate 3.

PROCESS ONLY

88. Is the temperature appropriate for the training situation?

Are the trainees so warm that they have trouble concentrating on the instruction, or so cold that they are more interested in keeping warm than in paying attention to the instructor?

NOTE: PRACTICE may need to occur under real world CONDITIONS.

RATING: If the temperature is appropriate, rate 1.

If the temperature makes students uncomfortable, rate 2.

If the temperature seriously interferes with learning, rate 3.

EXAMPLE: If a soldier is shivering or sweating a lot, or complains about being uncomfortable because of the weather, rate "2."

If weather conditions result in training being stopped or postponed, rate "3."

PROCESS ONLY

89. Is the instructor's attitude positive?

Does the instructor behave in a manner that enhances the students' motivation for learning?

- Does the instructor encourage questions?
- Is he helpful?
- Respectful of the trainees?
- Tolerant of failure?
- Available for assistance?

RATING: If the instructor's attitude is positive, rate 1.

If not, rate 3.

PROCESS ONLY

90. Are frequent breaks provided?

Are rest periods of at least 5-10 minutes provided every hour, and are longer breaks allowed once the instruction exceeds 3 or 4 hours?

RATING: If adequate rest periods are provided, rate 1.

If breaks are provided, but they are too short or infrequent, rate 2.

If breaks are not provided, rate 3.

PROCESS ONLY

91. Is the speed of presentation appropriate?

The rate at which STATEMENTS, EXAMPLES, or HELP are given should not be so fast that students cannot readily understand, or so slow that they become bored.

RATING: If the speed of presentation is appropriate, rate 1.

If too slow, rate 2.

If too fast, rate 3.

PROCESS ONLY

92. Was the allotted training time too long or too short?

Long training sessions in which the type of activity engaged in by the soldier does not change, combined with infrequent breaks, can result in soldiers becoming bored or fatigued. The allotted time is too long when soldiers meet all the training objectives well before the class is supposed to end (i.e., more than one fourth of the allotted time remains when the class ends).

Training sessions that are too short may not allow enough practice time or otherwise reduce the amount of training given. Unless there was sufficient training time for all soldiers to perform, unassisted, the tasks listed in the training objectives at least one time to standard, the allotted time was too short for the training objectives.

If the training manual or other material calls for too much or too little training time, then this is a problem with the training PRODUCT. If the instructor chose to spend too much or too little time, then this is a problem with the PROCESS of training.

RATING: If the training time is the appropriate length, rate 1.

If it is too long, rate 2.

If it is too short, rate 3.

PROCESS ONLY

93. Does equipment used in the training function properly?

If training devices (including real equipment used during the training) do not function as they should, the learning process can be degraded. For example, in a task involving meter calibration, if the equipment is not operating as it should, students will not be able to see the task demonstrated properly or practice the task under normal conditions.

RATING: If all of the equipment normally used during the training events work properly, rate 1.

If some of the equipment malfunctions, but the nature of tasks demonstrated, practiced, or tested is not substantially changed, rate 2 and note what went wrong in the Description column of your worksheet.

If equipment problems substantially change the nature of tasks demonstrated, practiced, or tested, rate 3 and note what went wrong in the Description column of your worksheet.

EXAMPLE: If the instructor announces that the equipment is not working and simulates the task, omits part of the training, postpones training, or calls someone to repair the equipment, rate "3."

94. Is there anything unusual about the LESSON materials, or do any incidents occur during training (that are not covered in other TEE questions) that would interfere with learning?

Describe any critical incidents on your worksheet.

RATING: If anything occurs which would adversely affect student learning, which is not covered in other TEE questions, rate 3.

Appendix B

SHORT FORMS OF MASTER LIST QUESTIONS

- | | |
|--|---|
| 1. Is the TEST FORMAT appropriate for the OBJECTIVE? | (See table in job aid.) |
| 2. Are there test items for the TLO or all of its critical parts/LOs?
(See job aid for critical parts.) | 1 = Test items for TLO or all parts/LOs
2 = No test items for TLO and for some parts/LOs
3 = No test items for TLO and for most parts/LOs |
| 3. Is there a test item for each critical part of each LO?
(See job aid for critical parts.) | 1 = Items for all parts
2 = Items for many, but not all parts
3 = Items for only a few parts or for no parts |
| 4. Does the TASK LEVEL of the test item match the TASK LEVEL of its OBJECTIVE? | (See table in job aid.) |
| 5. Does the content of the test item match the content of its OBJECTIVE? | 1 = Same
2 = Slightly different
3 = Very different |
| 6. Do the CONDITIONS of the test item match the CONDITIONS of its OBJECTIVE? | 1 = Exact match
2 = Minor mismatch
3 = Severe mismatch |
| 7. Do the STANDARDS of the test item match the STANDARDS of its OBJECTIVE? | 1 = Exact match
2 = Minor mismatch
3 = Severe mismatch |
| 8. For true-false, multiple choice, and matching items is only one answer correct? | 1 = Only one answer is correct
3 = More than one answer can be correct |
| 9. For short answer, fill-in, listing, and performance items are all acceptable answers in the answer key? | 1 = All correct answers are in answer key
3 = Some correct answers are <u>not</u> in answer key |
| 10. Does the test item provide opportunities for COMMON ERRORS to be made? | 1 = Yes
3 = No |
| 11. Is the language of the test item easy for students to understand? | 1 = Easy
2 = Somewhat difficult
3 = Very difficult |
| 12. Is the test item different from previous PRACTICE and EXAMPLES? (USE-CONCEPT, USE-RULE, or USE-PRINCIPLE only) | 1 = Different
2 = Presented before, USE-UNAIDED
3 = Presented before, USE-AIDED |

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| 13. Is the answer to the test item given away by other item(s)? | 1 = Answer not given away
2 = Other items give clues
3 = Answer can be found in other item(s) |
| 14. Is the answer to the test item dependent on answering previous item(s) correctly? | 1 = Answer not dependent on other items
3 = Previous items must be correctly answered |
| 15. Are sketches and diagrams used in the test item easy to understand? | 1 = Easy to understand
2 = Somewhat confusing
3 = Very confusing |
| 16. Is the test item tricky or misleading? | 1 = Not misleading
2 = Somewhat misleading
3 = Very misleading |
| 17. Is the test item well constructed? (See job aid for criteria list for the test format used.) | 1 = Meets all criteria
2 = Deficient on noncritical criteria
3 = Deficient on critical criteria |
| 18. When performance steps are scored, does the instructor use a checklist? | 1 = Fills in completely
2 = Uses as a reference or fills in partially
3 = Does not use |
| 19. Is each correct answer position used about the same number of times? (true-false, multiple choice, or matching items only) | 1 = Yes
3 = No |
| 20. Are specific patterns of correct answer positions repeated across test items or are single positions repeated in blocks? (true-false, multiple choice, or matching items only) | 1 = No patterns easily seen
3 = Patterns can be seen |
| 21. Are test administration directions complete? | 1 = Directions are complete
2 = Directions provided, but incomplete or unclear
3 = Directions are not provided |
| 22. Do instructors follow the directions when administering the test? | 1 = Yes
2 = Some variations from directions
3 = Significant variations from directions |
| 23. Are adequate test instructions provided to the student? | 1 = Yes
2 = Instructions provided, but unclear
3 = No instructions provided |

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| 24. Does the FINAL TEST integrate tasks as they are integrated in the "real world?" | 1 = Yes
2 = Partially
3 = No, tasks are tested separately |
| 25. Are tasks and task steps tested in the same sequence as they are performed in the "real world?" | 1 = Yes
2 = Slightly out of sequence
3 = Very different sequence |
| 26. In the test free of external cues or help? | 1 = Yes
2 = Hints given
3 = Answers are given away |
| 27. Are motivational techniques employed? | 1 = Yes
3 = No |
| 28. Is the trainee attitude positive? | 1 = Positive
2 = Indifferent
3 = Hostile or frustrated |
| 29. Are course ENTRY SKILLS reviewed? | 1 = Review with practice
2 = Review with no practice
3 = No review |
| 30. Is mastery of prerequisite skills verified prior to new instructions? | 1 = Yes
3 = No |
| 31. Are OBJECTIVES presented to the student? | 1 = Yes
3 = No |
| 32. Are the basic PRESENTATION COMPONENTS present? | (See guidance and tables in handbook.) |
| 33. Are STATEMENTS complete? | 1 = STATEMENT complete
2 = Few parts missing
3 = Many parts missing |
| 34. Are STATEMENTS for CONCEPTS, PROCEDURES, or RULES adequate? (See job aid criteria.) | 1 = Completely adequate
3 = Some or all features omitted |
| 35. Does STATEMENT HELP provide sufficient explanation? | 1 = Help provides sufficient explanation
2 = Help gives insufficient explanation
3 = Help is confusing |
| 36. Does training include instruction on the use of required job performance aids? | 1 = Yes
3 = No |
| 37. Are EXAMPLES and NON-EXAMPLES adequate? | 1 = Yes
3 = No |

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| 38. Is EXAMPLE HELP adequate? | 1 = Help provides sufficient explanation
2 = Help gives insufficient explanation
3 = Help is confusing |
| 39. Are EXAMPLES sequences from easy to hard? (CONCEPTS only) | 1 = Yes
3 = No |
| 40. Are there enough EXAMPLES? (See job aid for criteria.) | 1 = Yes
3 = No |
| 41. Are NON-EXAMPLES included? (CONCEPTS only) | 1 = Yes
3 = No |
| 42. Do DEMONSTRATIONS show how to correct/avoid common errors? | 1 = Yes
3 = No |
| 43. Are steps in a DEMONSTRATION the appropriate size? (See job aid.) | 1 = Yes
2 = Step size is too small
3 = Step size is too large |
| 44. Are tasks and task steps DEMONSTRATED in the same sequences as they are performed in the "real world?" | 1 = Yes
2 = Slightly out of sequence
3 = Very different sequence |
| 45. Are memory aids used? (PRACTICE REMEMBERING only) | 1 = Used
3 = Not Used |
| 46. Does each PRACTICE REMEMBERING item have the same content and format as the test item? | 1 = Same
2 = Same content, different format
3 = Different content |
| 47. Are PRACTICE USING items sequenced from easy to hard? | 1 = Yes
3 = No |
| 48. Do PRACTICE USING items provide opportunities for COMMON ERRORS to be made? | 1 = Yes
3 = No |
| 49. Are PRACTICE items different from EXAMPLES? (USE-CONCEPT, USE-RULE, or USE-PRINCIPLE only) | 1 = Different
3 = Presented before |
| 50. Does PRACTICE USING integrate tasks as they are integrated in the "real world?" | 1 = Yes
2 = Partially
3 = No, tasks are practiced separately |

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| 51. Are job performance aids (JPAs) usable? (See criteria in job aid.) | 1 = Easy to use
2 = Hard to use
3 = Unusable |
| 52. Do all students use the job performance aid (JPA)? | 1 = Yes
2 = Up to 20% do not use JPA
3 = More than 20% do not use JPA |
| 53. Does the TASK LEVEL of the PRACTICE item match that of the test item(s)? | 1 = Yes
(2 and 3 — See table in job aid.) |
| 54. Does the CONTENT TYPE of the PRACTICE item match that of the test item(s)? | 1 = Yes
3 = No |
| 55. Does the FORMAT of the PRACTICE item match that of the test item(s)? | 1 = Yes
(2 and 3 — See table in job aid.) |
| 56. Do the CONDITIONS of each FINAL PRACTICE item match those of the test item(s)? | 1 = Yes
2 = Slightly different
3 = Very different |
| 57. Do the STANDARD of each FINAL PRACTICE item match those of the test item(s)? | 1 = Yes
2 = Slightly different
3 = Very different |
| 58. Is FINAL PRACTICE free of external cues or help? | 1 = Yes
2 = Hints given
3 = Answers are given away |
| 59. Are there PRACTICE items for each TLO or all of its critical parts/LOs? | 1 = PRACTICE items for the TLO or all parts/LOs
2 = No PRACTICE items for the TLO and for some parts/LOs
3 = No PRACTICE items for the TLO and for most parts/LOs |
| 60. Is there a PRACTICE items for each critical part of each LO? (See job aid for critical parts.) | 1 = PRACTICE for all parts
2 = PRACTICE for many, but not all parts
3 = PRACTICE for only a few parts or for no parts |
| 61. Do all students PRACTICE? | 1 = Yes
2 = Up to 20% of students do not PRACTICE
3 = More than 20% of the students do not PRACTICE |

- | | |
|---|--|
| 62. Do all students meet the required STANDARDS in FINAL PRACTICE? | 1 = Yes
2 = Up to 20% of students do not
3 = More than 20% of students do not |
| 63. Is FEEDBACK provided for PRACTICE? | 1 = FEEDBACK HELP is given
2 = Correct answer only is given
3 = No feedback is given |
| 64. Is FEEDBACK HELP adequate? | 1 = Help gives enough explanation
2 = Help gives insufficient explanation
3 = Help is confusing |
| 65. Is TEAM PRACTICE provided? | 1 = Yes
3 = No |
| 66. Are TEAM PRACTICE CONDITIONS the same as (or as close as possible to) those of the real task? | 1 = Yes
2 = Slightly different
3 = Very different |
| 67. Is TEAM PRACTICE FEEDBACK provided? | 1 = FEEDBACK HELP is given
2 = Success/Failure feedback only is given
3 = No feedback is given |
| 68. Is FEEDBACK HELP for TEAM PRACTICE adequate? | 1 = Help gives enough explanation
2 = Help gives insufficient explanation
3 = Help is confusing |
| 69. Are all PRESENTATION COMPONENTS separated and identified? | 1 = Yes
2 = Some are not
3 = Most or all are not |
| 70. Is the technical quality of written or spoken material adequate? (See job aid for criteria. Make notes on specific problems.) | 1 = Most criteria met
2 = Several criteria not met
3 = Few criteria met |
| 71. Is the wording of written or spoken material easy for the students to understand? | 1 = Yes, few hard words and long sentences
2 = Some hard words and long sentences
3 = Many hard words and long sentences |
| 72. Is the instructor's presentation or the narration easy to listen to? | 1 = Yes
2 = Dull and monotonous
3 = Hard to listen to |

- | | |
|---|--|
| 73. Is the instructor's presentation or the narration supported by visuals? | 1 = Completely
2 = Partially
3 = Not at all |
| 74. Are visuals easily understood? | 1 = Yes
2 = Understandable with effort
3 = Very hard to understand |
| 75. Are the OBJECTIVES (TLOs and LOs) within each LESSON sequenced properly?
(Prerequisites taught first.) | 1 = Yes
3 = No |
| 76. Are the LESSONS sequenced properly within the course? | 1 = Yes
3 = No |
| 77. Are the media appropriate for the objectives? (See table in job aid.) | 1 = Yes
3 = No (note key words, underlined in table, on worksheet.) |
| 78. Can the media used provide all necessary stimuli? | 1 = Yes
3 = No |
| 79. Are the course administration directions complete? | 1 = Yes
2 = Partially incomplete
3 = Incomplete or non-existent |
| 80. Do course administration directions make realistic demands of students and instructors? | 1 = All demands are realistic
3 = Some demands are unrealistic
(Note what they are.) |
| 81. Is the instructor/trainee ratio such that all students can see, hear, and receive feedback? | 1 = Yes
2 = A few students cannot see, hear, and receive feedback
3 = Many students cannot see, hear, and receive feedback |
| 82. Does the instructor follow the methods in the Instructor Guide? | 1 = Yes
2 = Follows to some extent
3 = Follows very little or not at all |
| 83. Does the instructor teach all of the content in the LESSON materials? | 1 = Yes
2 = Much of the content
3 = Very little of the content
(If 2 or 3, note what was left out.) |
| 84. Did the instructor limit his teaching to the content in the LESSON materials? | 1 = Yes
3 = No (Please note what other things he taught.) |

85. Is there enough space for all of the trainees?
- 1 = Yes
2 = A little crowded
3 = Very cramped or some students can't fit in the space at all
86. Is instruction free of distractions?
- 1 = Yes
2 = Distractions are annoying
3 = Distractions seriously interfere with the instruction
87. Is the lighting appropriate for the training situation?
- 1 = Yes
2 = Students have trouble reading or seeing displays & equipment
3 = Students cannot read or see displays & equipment
88. Is the temperature appropriate for the training situation?
- 1 = Yes
2 = Temperature makes students uncomfortable
3 = Temperature seriously interferes with learning
89. Is the instructor's attitude positive?
- 1 = Yes
3 = No
90. Are frequent breaks provided? (5-10 minute breaks every hour)
- 1 = Yes
2 = Breaks too short or infrequent
3 = Breaks not provided
91. Is the speed of presentation appropriate?
- 1 = Yes
2 = Too slow
3 = Too fast
92. Was the allotted training time too long or too short?
- 1 = Appropriate length
2 = Too long
3 = Too short
93. Does the training device/equipment used in training function properly?
- 1 = yes
2 = Minor malfunctions, little change from intended task performance
3 = Major malfunctions, substantial change from intended task performance
94. Is there anything else unusual about the LESSON materials, or do any other critical incidents occur during training that would interfere with learning? (Describe each one below. Rating = 3)

Appendix C

JOB PERFORMANCE AID FOR USE IN PRODUCT EVALUATION

Appendix C

JOB PERFORMANCE AID FOR USE IN PRODUCT EVALUATION

TEST SECTION

NOTE: Before proceeding you should have classified each test item and its matching OBJECTIVE by TASK LEVEL and CONTENT TYPE.

On the following questions, rate each OBJECTIVE before going on to the next objective:

1. Is the TEST FORMAT appropriate for the OBJECTIVE?

Appropriate formats are shown in the table below:

RATING: (by objective—TLO and LOs):

If Task Level Is:	And Content Type Is:	And Test Format Is:	Then Rate	
REMEMBER	FACT for RECALL, CONCEPT, PROCEDURE, RULE, or PRINCIPLE	short answer, fill-in or listing	1	
		performance (for a later USE-UNAIDED objective)	2	
		performance (for a later USE-AIDED objective)	3	
		matching, true-false, or multiple choice	2	
	FACTS FOR RECOGNITION	matching, true-false, or multiple choice	1	
		performance	3	
		short answer, fill-in, or listing	2	
	USE-UNAIDED or USE-AIDED	CONCEPT	performance, matching, true-false, multiple choice, short answer, or fill-in	1
			listing	2
		PRINCIPLE, RULE, or PROCEDURE	performance, true-false multiple choice, short answer, or fill-in	1
listing or matching			2	

2. Are there test items for the TLO or all of its critical parts/LOs?

- 1 = Test items for TLO or all parts/LOs
2 = No test items for TLO and for some parts/LOs
3 = No test items for TLO and for most parts/LOs

NOTE: As defined in Section 4 of the Guidelines for Evaluating Objectives in Task A4, critical parts/LOs have the following characteristics:

- They are some of the most measurable and observable elements of the task.
- They have serious consequences of inadequate performance in terms of their impact on task performance.
- They are common sources of failure.
- They are actions which the soldiers of the target population do not already know how to do and must therefore be taught.

NOTE: For entry tests, treat the top level of entry skills as TLOs.

3. Is there a test item for each critical part of each LO?

- 1 = Items for all parts
2 = Items for many, but not all parts
3 = Items for only a few parts or for no parts

The critical parts of LOs are defined below.

For the REMEMBER TASK LEVEL each piece of information is critical. Each of the following should be tested:

- Facts
- Concept characteristics
- Procedural steps
- Steps and conditions for branching in a rule
- Guidelines in a principle

For the USE-AIDED and USE-UNAIDED TASK LEVELS, the parts of the OBJECTIVE's ACTION are critical:

- For CONCEPTS, are all CRITICAL CHARACTERISTICS tested? Can you be sure the student knows each one and can you identify which ones he does not know?
- For PROCEDURES, is each step performed?
- For RULES and PRINCIPLES, is each step performed? Are there items for all possible branches or decisions, or at least those that would commonly occur on the job?

On the following questions, rate each test item before going to the next item:

4. Does the TASK LEVEL of the test item match the TASK LEVEL of its OBJECTIVE?

Compare the ACTIONS of the test item and the OBJECTIVE. Record the corresponding rating indicated in the following table.

RATING (by item):

		Test Item TASK LEVEL		
OBJECTIVE TASK LEVEL		REMEMBER	USE-UNAIDED	USE-AIDED
	REMEMBER	1	2	3
	USE-UNAIDED	2	1	3
	USE-AIDED	3	2	1

- | | | |
|-----|---|---|
| 5. | Does the content of the test item match the content of its OBJECTIVE? | 1 = Same
2 = Slightly different
3 = Very different |
| 6. | Do the CONDITIONS of the test item match the CONDITIONS of its OBJECTIVE? | 1 = Exact match
2 = Minor mismatch
3 = Severe mismatch |
| 7. | Do the STANDARDS of the test item match the STANDARDS of its OBJECTIVE? | 1 = Exact match
2 = Minor mismatch
3 = Severe mismatch |
| 8. | For true-false, multiple choice, and matching items is only one answer correct? | 1 = Only one answer is correct.
3 = More than one answer can be correct. |
| 9. | For short answer, fill-in, listing, and performance items are all acceptable answers in the answer key? | 1 = All correct answers are in answer key.
3 = Some correct answers are not in answer key. |
| 10. | Does the test item provided opportunities for COMMON ERRORS to be made? | 1 = Yes
3 = No |
| 11. | Is the language of the test item easy for students to understand? | 1 = Easy
2 = Somewhat difficult
3 = Very difficult |
| 12. | Is the test item different from previous PRACTICE and EXAMPLES? (USE-CONCEPT, | 1 = Different
2 = Presented before, USE-UNAIDED |

- | | USE-RULE, or USE-PRINCIPLE
only) | | |
|-----|---|-----|--|
| 13. | Is the answer to the test item given away by other item(s)? | 3 = | Presented before, USE-AIDED |
| | | 1 = | Answer not given away. |
| | | 2 = | Other items give clues. |
| | | 3 = | Answer can be found in other item(s). |
| 14. | Is the answer to the test item dependent on answering previous item(s) correctly? | 1 = | Answer not dependent on other items. |
| | | 3 = | Previous items must be correctly answered. |
| 15. | Are sketches and diagrams used in the test item easy to understand? | 1 = | Easy to understand |
| | | 2 = | Somewhat confusing |
| | | 3 = | Very confusing |
| 16. | Is the test item tricky or misleading? | 1 = | Not misleading |
| | | 2 = | Somewhat misleading |
| | | 3 = | Very misleading |
| 17. | Is the test item well-constructed? | 1 = | Meets all criteria |
| | | 2 = | Deficient on non-critical criteria |
| | | 3 = | Deficient on critical criteria |

Select the appropriate set of criteria below depending upon the test item format being used. On Worksheet B1 write the name of the test format below the TEE question number. Record it again if the format changes. Rate the item as indicated below, noting the letter(s) corresponding to the identified deficiency(ies) in the "Description" column. Note that the critical criteria are marked with asterisks in the supplementary guidance to this question.

CRITERIA FOR WELL CONSTRUCTED TEST ITEMS

o True-False

- *a. The item should include only one statement (idea) to be judged true or false.
- *b. Negative statements and double negatives should not be used.
- c. The item should be short.
- *d. The item should not be so obvious that it can be answered correctly on the basis of common sense alone.

- *e. Absolutes, like "none," "never," "all," and "every" should not be used.
- f. The item should not contain the words "some," "any," or "generally."
- *g. The item should deal with things that are clearly either true or false.

- Multiple Choice

- a. All alternatives should have the same grammatical structure.
- b. The item stem should be worded positively, that is, words like "no" and "not" should not be used.
- c. Repetitive phrases should be placed in the stem, rather than in the alternatives.
- d. Numerical choices should be listed in order of magnitude.
- e. The item should not require a great deal of reading.
- *f. Wording of the stem should be clear and unambiguous, so that only the one correct answer is possible.
- *g. The article "a" or "an" should not be at the end of the stem.
- *h. All alternatives should be plausible to someone who doesn't know the answer.
- i. Alternatives like "A and B only" or "All of the above" should not be used.
- *j. Alternatives should be approximately the same length.
- *k. Extreme adjectives, such as "complete," "total," and "absolute" should be avoided.

- Matching

- a. Directions should include statements of:
 - the contents of each column
 - the basis for matching
 - how often choices may be used
 - how many answers are possible for "givens"
- b. All choices should have the same grammatical structure.
- c. Numerical choice should be in order of magnitude.
- d. The item should not require a great deal of reading.

- e. Choices should be arranged in some sensible order, for example, alphabetically or logically.
- *f. Unless choices can be used more than once, extra entries should be included in the choice column.
- *g. None of the entries in either column should appear obviously different from each other. One title should be appropriate for all entries in a column.
- *h. Each alternative solution should be a plausible answer for all or most of the problems.

- Fill-in

- a. The blank should be at or near the end of the sentence.
- *b. One and only one word or phrase should correctly complete the item.
- c. Multiple blanks should be avoided.
- *d. Blanks should require key words.
- *e. Answers should be specific rather than general in nature.
- *f. Items should measure key concepts, not nonessential details.

- Short answer

- a. The required answer should be short (phrases or one or two sentences).
- *b. Directions to the student should say how the items are to be scored without giving clues to the correct answers.
- *c. The scoring key should identify allowable synonyms or alternatives.
- *d. The question should be complete with enough information for the learner to generate an appropriate answer.
- *e. Credit should be given for each correct part of an answer.
- *f. Questions should be clear so that all learners will have the same interpretation.
- *g. A model answer should be written for each question as an aid to scoring, or a checklist of attributes of a good answer should be provided for use in scoring.

- h. Items should be assigned points according to their value.
- i. Point values should be made known before the test.
- j. Items should be scored anonymously (scorer should grade students' papers without knowledge of their identity).
- *k. Content should be scored, not grammar, punctuation, spelling, and penmanship (unless specified in the objective).
- l. One question should be scored across all students before preceeding to the next one.

- Listing

- *a. The directions should specify the number of things to be listed, (if appropriate for the objective, and if the number of things is not a clue.)
- *b. The directions should indicate how the item will be scored without giving clues to the correct answer.
- *c. If order is important, the scoring key should treat sequence separately.
- *d. The scoring key should identify allowable synonyms or alternatives.
- *e. Spelling should not be scored unless required by the objective.
- f. The scoring key should identify relative weights of different items on the list, if appropriate.

- Performance

NOTE: A performance test question is the request that a task or parts of a task be performed. It is not an individual point on a checklist.

- *a. The test should score all aspects of task performance and qualities of the resulting task product that are specified in the objective and no others.
- *b. The directions should clearly explain what the student is to do and how the item will be scored (and/or the test administrator should clearly communicate that to the student).

Any checklists employed should follow the rules in c. & d.:

- c. Each step should be self-explanatory to anyone who would perform the task.

- d. Each step should be stated as a single action; important or complex decisions should be presented as separate steps.
- *e. The scoring key should specify all criteria the performance must meet, such as completeness, accuracy, quality, time limit, rate, etc.
- f. If steps in the performance are scored, a checklist should be provided.
- *g. Any rating scales used should be specific enough so that all raters will interpret them in much the same manner.
- *h. All raters should agree on judgments of rating criteria. For example, all raters should agree that given steps were or were not performed or that the performance was fair, good, or excellent.
- *i. All raters should agree on definitions of aspects of performance and/or features of a task product.

On the following questions, rate each test as a whole:

- | | |
|--|--|
| 19. Is each correct answer position used about the same number of times? (true-false, multiple choice, or matching items only) | 1 = Yes
3 = No |
| 20. Are specific patterns of correct answer positions repeated across test items or are single positions repeated in blocks? (true-false, multiple choice, or matching items only) | 1 = No patterns easily seen
3 = Patterns can be seen |
| 21. Are test administration directions complete? | 1 = Directions are complete
2 = Directions provided, but incomplete or unclear
3 = Directions are not provided |
| 23. Are adequate test instructions provided to the student? | 1 = Yes
2 = Instructions provided, but unclear
3 = No instructions provided |
| 24. Does the FINAL TEST integrate tasks as they are integrated in the "real world?" | 1 = Yes
2 = Partially
3 = No, tasks are tested separately |
| 25. Are tasks and task steps tested in the same sequence as they are performed in the "real world?" | 1 = Yes
2 = Slightly out of sequence
3 = Very different sequence |

PRESENTATION SECTION

NOTE: Before proceeding you should have classified each PRACTICE item and its matching OBJECTIVE by TASK LEVEL and CONTENT TYPE.

On the following questions rate each PRESENTATION COMPONENT:

33. Are STATEMENTS complete?
- | | | |
|---|---|--------------------|
| 1 | = | STATEMENT complete |
| 2 | = | Few parts missing |
| 3 | = | Many parts missing |

STATEMENTS should have the following parts:

- For FACTS: the complete fact or set of facts should be presented.
- For CONCEPTS: all critical characteristics and how they are combined should be given.
- For PROCEDURES: all steps should be given in the correct order.
- For RULES: all steps and branching decisions should be given in the correct order.
- For PRINCIPLES: all potential component CONCEPTS, PROCEDURES, RULES, and/or PRINCIPLES should be given (unless REMEMBERING them can be considered an ENTRY SKILL) along with the PRINCIPLE itself (a general rule giving typically incomplete guidance on how to construct a HIGHER ORDER RULE for the component parts).

34. Are STATEMENTS for CONCEPTS, PROCEDURES, or RULES adequate?
- | | | |
|---|---|------------------------------|
| 1 | = | Completely adequate |
| 3 | = | Some or all features omitted |

- For CONCEPTS: a decision rule or search strategy for classifying examples and non-examples should be given.
- For PROCEDURES: each step should have only one action.
- For RULES: when a formula is used, symbols must be defined.

35. Does STATEMENT HELP provide sufficient explanation?
- | | | |
|---|---|--------------------------------------|
| 1 | = | Help provides sufficient explanation |
| 2 | = | Help gives insufficient explanation |
| 3 | = | Help is confusing |

37. Are EXAMPLES and NON-EXAMPLES adequate?
- | | | |
|---|---|-----|
| 1 | = | Yes |
| 3 | = | No |

- For CONCEPTS: EXAMPLES should show all CRITICAL CHARACTERISTICS; for NON-EXAMPLES it should be clear that one or more of the CRITICAL CHARACTERISTICS is missing.

- For PROCEDURES, RULES, or PRINCIPLES: EXAMPLES should show an application (use) of the PROCEDURE, RULE, or PRINCIPLE.

38. Is EXAMPLE HELP adequate?
- 1 = Help provides sufficient explanation
2 = Help gives insufficient explanation
3 = Help is confusing
39. Are EXAMPLES sequenced from easy to hard? (CONCEPTS only)
- 1 = Yes
2 = No
40. Are there enough EXAMPLES?
- 1 = Yes
3 = No

There should be enough EXAMPLES to cover the content area thoroughly.

- For CONCEPTS: At least one EXAMPLE for each CRITICAL CHARACTERISTIC
- For PROCEDURES or RULES: One EXAMPLE for each important step
EXAMPLES for all possible branches or decisions
- For PRINCIPLES: At least one EXAMPLE for each major type of HIGHER ORDER RULE that should be discovered

RATING: If most or all of the required EXAMPLES are given, rate 1.

If several of the required EXAMPLES are not given, rate 3.

41. Are NON-EXAMPLES included? (CONCEPTS only)
- 1 = Yes
3 = No
42. Do DEMONSTRATIONS show how to correct/avoid common errors?
- 1 = Yes
3 = No
43. Are steps in a DEMONSTRATION the appropriate size?
- 1 = Yes
2 = Step size is too small
3 = Step size is too large

The number of steps or concepts that are demonstrated to trainees at one time should not be too small or large.

IF TASK INVOLVES:

STEP-SIZE SHOULD BE:

Fine judgments
Motor Skills
Difficult concepts
Unlearning similar concepts

Relatively SMALL

Straightforward sequence
Simple concepts

Relatively LARGE

IF TRAINEES ARE:

STEP-SIZE SHOULD BE:

Very new to the task
Low academic background

Relatively SMALL

Considerable experience in
the task
High academic background

Relatively LARGE

- | | | |
|-----|---|--|
| 45. | Are memory aids used?
(PRACTICE REMEMBERING
only) | 1 = Used
3 = Not Used |
| 46. | Does each PRACTICE
REMEMBERING item have the
same content and format as the
test item? | 1 = Same
2 = Same content, different
format
3 = Different content |
| 47. | Are PRACTICE USING items
sequenced from easy to hard? | 1 = Yes
3 = No |
| 48. | Do PRACTICE USING items
provide opportunities for
COMMON ERRORS to be made? | 1 = Yes
3 = No |
| 49. | Are PRACTICE items different
from EXAMPLES? (USE-CONCEPT,
USE-RULE, or USE-PRINCIPLE
only) | 1 = Different
3 = Presented before |
| 50. | Does PRACTICE USING integrate
tasks as they are integrated in the
"real world?" | 1 = Yes
2 = Partially
3 = No, tasks are practiced
separately |

53. Does the TASK LEVEL of the PRACTICE item match that of the test item(s)?

Compare the ACTIONS of the PRACTICE item and test item(s) that go with it.

RATING:

Test Item TASK LEVEL

PRACTICE ITEM TASK LEVEL		REMEMBER	USE-UNAIDED	USE-AIDED
	REMEMBER	1	2	2
	USE-UNAIDED	2	1	2
	USE-AIDED	3	3	1

54. Does the CONTENT TYPE of the PRACTICE item match that of the test item(s)?
- 1 = Yes
3 = No

55. Does the FORMAT of the PRACTICE item match that of the test item(s)?

RATING:

Test Item FORMAT

Practice Item Format		True/ False	Multiple Choice	Matching	Fill-In	Short Answer	Listing	Performance
	True/ False	1	2	2	2	2	2	3
	Multiple Choice	2	1	2	2	2	2	3
	Matching	2	2	1	2	2	2	3
	Fill-In	2	2	2	1	2	2	2
	Short Answer	2	2	2	2	1	2	2
	Listing	2	2	2	2	2	1	2
	Perfor- mance	2	2	2	2	2	2	1

- | | | |
|-----|--|---|
| 56. | Do the CONDITIONS of each FINAL PRACTICE item match those of the test item(s)? | 1 = Yes
2 = Slightly different
3 = Very different |
| 57. | Do the STANDARDS of each FINAL PRACTICE item match those of the test item(s)? | 1 = Yes
2 = Slightly different
3 = Very different |
| 63. | Is FEEDBACK provided for PRACTICE? | 1 = FEEDBACK HELP is given
2 = Correct answer only is given
3 = No feedback is given |
| 64. | Is FEEDBACK HELP adequate? | 1 = Help gives enough explanation
2 = Help gives insufficient explanation
3 = Help is confusing |
| 65. | Is TEAM PRACTICE provided? | 1 = Yes
3 = No |
| 66. | Are TEAM PRACTICE CONDITIONS the same (or as close as possible) to those of the real task? | 1 = Yes
2 = Slightly different
3 = Very different |
| 67. | Is TEAM PRACTICE FEEDBACK provided? | 1 = FEEDBACK HELP is given
2 = Success/Failure feedback only is given
3 = No feedback is given |
| 68. | Is FEEDBACK HELP for TEAM PRACTICE adequate? | 1 = Help gives enough explanation
2 = Help gives insufficient explanation
3 = Help is confusing |

On the following questions rate each Task/TLO or LO:

32. Are the basic PRESENTATION COMPONENTS present?

RATING: Rate the OBJECTIVE in accordance with the tables below. The first table shows the required components for each task level. The second table gives a potential rating.

- If these COMPONENTS are not actually present, consider them missing unless:
 - They were taught within the past few days, or
 - They were taught within the past few months and the training materials used are still available for students to review, or
 - The students have had closely related MOS experience.

In the table below, select the row within the appropriate task level that matches the training events used for the objective. The boxes have the following meanings:

- | | | |
|-----------|----|-------------------|
| "●" | — | Component present |
| Blank Box | -- | Component missing |

REQUIRED PRESENTATION COMPONENT

Task Level	State- ment	Practice Remem- bering	Feedback	Examples	Practice Using	Feedback	Rating
REMEMBER	•	•	•				1
	•	•					2
	•						3
	•	•	•	•	•	•	1
	•	•		•	•	•	1
	•			•	•	•	1
				•	•	•	2
	•	•	•	•	•		2
	•	•		•	•		2
	•			•	•		2
				•	•		2
USE-UNAIDED	•	•	•		•	•	1
	•	•			•	•	1
	•				•	•	1
					•	•	2
	•	•	•		•		2
	•	•			•		2
	•				•		3
					•		3
	•	•	•	•			3
	•	•		•			3
	•			•			3
				•			3
	•	•	•				3
	•	•					3
	•						3
USE-AIDED				•	•	•	1
				•	•		2
					•		1
					•		3
				•			3

- | | | |
|-----|---|--|
| 36. | Does the training include instruction on the use of required job performance aids? | 1 = Yes
3 = No |
| 44. | Are tasks and task steps DEMONSTRATED in the same sequence as they are performed in the "real world?" | 1 = Yes
2 = Slightly out of sequence
3 = Very different sequence |
| 51. | Are JOB PERFORMANCE AIDS (JPAs) usable? | 1 = Easy to use
2 = Hard to use
3 = Unusable |

The following points should be true of all JPAs:

- Each step is self-explanatory to anyone who would perform the task.
 - Each step picks up where the previous step left off (PROCEDURES, RULES, and PRINCIPLES only).
 - Illustrations that plainly identify components to be manipulated or identified are included where applicable.
- | | | |
|-----|---|---|
| 59. | Are there PRACTICE items for each TLO or all of its critical parts/LOs? | 1 = PRACTICE items for the TLO or all parts/LO's
2 = No PRACTICE items for the TLO and for some parts/LOs.
3 = No PRACTICE items for the TLO and for most parts/LOs |
| 60. | Is there a PRACTICE item for each critical part of each LO? | 1 = PRACTICE for all parts
2 = PRACTICE for many, but not all parts
3 = PRACTICE for only a few parts or for no parts |

The critical parts of LOs are defined below.

For the REMEMBER TASK LEVEL each piece of information is critical. Each of the following should be tested:

- Facts
- Concept characteristics
- Procedural steps
- Steps and conditions for branching in a rule
- Guidelines in a principle

For the USE-AIDED and USE-UNAIDED TASK LEVELS, the parts of the OBJECTIVE'S ACTION are critical:

- o For CONCEPTS, are all CRITICAL CHARACTERISTICS tested? Can you be sure the student knows each one and can you identify which ones he does not know?
- o For PROCEDURES, is each of the steps performed?
- o For RULES and PRINCIPLES, is each of the steps performed? Are there items for all possible branches or decisions, or at least those that would commonly occur on the job?

77. Are the media appropriate for the objectives?

Compare the media used with the appropriate media in the table below. Consider groups of OBJECTIVES that fall into the same general TASK LEVEL and CONTENT LEVEL as defined in the table.

RATING: If the media are appropriate, rate 1.

If not, rate 3 and write the key words which are underlined in the right hand column in the Description column of your worksheet.

If:	And Task Level/ (Content Type) Is:	Then Acceptable Media Are: ^a	Problem With Mismatch
Consequences of task error are serious. ^b	USE	Large Equipment Portable Equipment Simulator (Required for final practice in addition to other media below used earlier in training.)	<u>No real practice.</u> Other media cannot provide the realism needed to PRACTICE the task adequately under these conditions
Self-Instruction (the course manager does not give FEEDBACK ^c to students)	REMEMBER	Audio Filmstrip Motion Picture Printed Text Slide/Tape Training Aid TV Cassette Computer Programmed Text Interactive TV Training Device (supplemented with printed text) Portable Equipment (supplemented with printed text)	<u>Incomplete Information.</u> Other media would not typically present enough information without the aid of an instructor.

If:	And Task Level/ (Content Type) Is:	Then Acceptable Media Are: ^a	Problem With Mismatch
	USE/MENTAL SKILLS ^d	Computer Programmd Text Interactive TV Training Device Motion Picture Slide/Tape TV Cassette Filmstrip Audio	<u>No FEEDBACK.</u> Other media typically cannot provide corrective FEEDBACK without an instructor.
	USE/MOTOR SKILLS	Training Device (supplemented with printed text) Portable Equipment (supplemented with printed text)	<u>No hands-on practice.</u> Other media cannot provide the necessary motor manipulations
Instructor-led instruction	REMEMBER	Instructor with any other media	-----
	USE/MENTAL SKILLS ^d	Instructor with any other media	-----
	USE/MOTOR SKILLS ^e	Instructor with: Portable Equipment, Large Equipment, Training Device, or Simulator	<u>No hands-on practice.</u> Other media cannot provide the necessary motor manipulations

^a Media definitions may be found in Appendix E at the end of these guidelines.

^b When the graduate is first required to perform the task on the job, are the consequences of error serious?

^c A course manager would do no more than grade tests. He would not give FEEDBACK on PRACTICE. The media must do that in this setting.

^d Mental skills are CONCEPTS, PROCEDURES, RULES, or PRINCIPLES which are performed primarily in the student's mind. A skill may have both mental and motor skills associated with it, but if the motor skills are so simple that anyone who knew the mental skills could perform them without training, the overall skill should be considered a mental skill. Sometimes a TLO is broken down into mental and motor LOs.

^e Motor skills are PROCEDURES which require the smooth timing of muscular movements. All motor skills have a mental component, but with motor skills the physical activity must be practiced in order to achieve proficiency.

78. Can the media used provide all necessary stimuli? 1 = Yes
3 = No

27. Are motivational techniques employed? 1 = Yes (Please describe them.)
3 = No

31. Are OBJECTIVES presented to the student? 1 = Yes
3 = No

70. Is the technical quality of written or spoken material adequate?

1 = Most criteria met
2 = Several criteria not met
3 = Few criteria met

- **Scattered information**—information about the same main point not in one place

- Remote references--references to text or illustrations in other places
- e. Visual aids should communicate something. They must function in one or more of the following ways:
 - Substitute for text or narration
 - Lighten the burden of detail in text or narration
 - Reinforce or summarize information in text or narration
- f. Is there a run-together format? A solid mass of print should be "chunked" visually so that separate points can be easily identified. Items in A/V presentations or lectures should also be distinguishable.
- g. Perspective--In visual media do visuals provide the viewer with an adequate frame of reference with which to judge size and distance?

RATING: Considering the criteria listed above, if most or all of the applicable criteria are met, rate 1.

If several applicable criteria are not met, rate 2.

If few applicable criteria are met, rate 3.

- NOTE:**
- (1) Be sure to note what the specific problems are in the Description column of your worksheet.
 - (2) You should make this rating for an entire LESSON unless material for certain OBJECTIVES merits different ratings.

- | | | |
|-----|--|--|
| 71. | Is the wording of written or spoken material easy for the student to understand? | 1 = Yes, few hard words and long sentences
2 = Some hard words and long sentences
3 = Many hard words and long sentences |
| 72. | Is the instructor's presentation or the narration easy to listen to? | 1 = Yes
2 = Dull and monotonous
3 = Hard to listen to |
| 73. | Is the instructor's presentation, the narration or text materials supported by visuals? | 1 = Completely
2 = Partially
3 = Not at all |
| 74. | Are visuals easily understood? | 1 = Yes
2 = Understandable with effort
3 = Hard to understand |
| 75. | Are the OBJECTIVES (TLOs and LOs) within each LESSON sequenced properly? (Prerequisites taught first.) | 1 = Yes
3 = No |

- | | | |
|-----|---|---|
| 91. | Is the speed of presentation appropriate? | 1 = Yes
2 = Too slow
3 = Too fast |
| 92. | Was the allotted training time too short or too long? | 1 = Appropriate length
2 = Too long
3 = Too short |

On the following questions make one rating for the course:

- | | | |
|-----|-----------------------------------|--|
| 29. | Are course ENTRY SKILLS reviewed? | 1 = Review with practice
2 = Review with no practice
3 = No review |
|-----|-----------------------------------|--|

76. Are the LESSONS sequenced properly within the course?

LESSONS that teach tasks which are SUBORDINATE SKILLS to tasks taught in other LESSONS should be taught first.

Look at each LESSON starting at the beginning of the course and ask what the students must already know in order to learn the TASKS in the LESSON (the LESSON prerequisites).

RATING: If the LESSON prerequisites were taught in previous LESSONS or are ENTRY SKILLS, rate 1.

If not, rate 3 and note what knowledge or skills should have been taught earlier in the Description column of your worksheet.

- | | | |
|-----|---|--|
| 79. | Are the course administration directions complete? | 1 = Yes
2 = Partially incomplete
3 = Incomplete or non-existent |
| 80. | Do course administration directions make realistic demands of students and instructors? | 1 = All demands are realistic
3 = Some demands are unrealistic. (Note what they are.) |
94. Is there anything else unusual about the LESSON materials that would interfere with learning? (Describe each one: Rating = 3.)

Appendix D

**JOB PERFORMANCE AID FOR
USE IN PROCESS EVALUATION**

Appendix D

JOB PERFORMANCE AID FOR USE IN PROCESS EVALUATION

23. Are adequate test instructions provided to the student?

Two types of instructions may be required:

1. Item instruction for groups of test items. These should be clear and should provide enough information to answer the items correctly. (Be sure to indicate which items the rating applies to on your worksheet.)
2. General instructions should state:
 - the test's purpose
 - any time limits
 - descriptions of test conditions
 - descriptions of test standards
 - how to respond to each item
 - general regulations

There should be no question in a student's mind as to how to take the test or how to behave during the test.

RATING: If yes, i.e., adequate test instructions to the student are provided, rate 1.

If instructions are provided but are not completely clear, rate 2.

If no instructions are provided, rate 3.

51. Are job performance aids (JPAs) usable?

The following points should be true of all JPAs:

- Each step is self-explanatory to anyone who would perform the task.
- Each step picks up where the previous step left off.
- Illustrations that plainly identify components to be manipulated or identified are included where applicable.

RATING: If the job aid is easy to use, rate 1.

If the job aid is hard to use, rate 2.

If the job aid is unusable, rate 3.

53. Does the TASK/LEVEL of the PRACTICE ITEM match that of the test item(s)?
Compare the ACTIONS of the PRACTICE item and test item(s) that go with it.

RATING:

Test Item TASK LEVEL

PRACTICE ITEM TASK LEVEL		REMEMBER	USE-UNAIDED	USE-AIDED
	REMEMBER	1	2	2
	USE-UNAIDED	2	1	2
	USE-AIDED	3	3	1

55. Does the format of the PRACTICE item match that of the test item?

RATING:

Test Item FORMAT

Practice Item Format		True/ False	Multiple Choice	Matching	Fill-In	Short Answer	Listing	Performance
	True/ False	1	2	2	2	2	2	2
	Multiple Choice	2	1	2	2	2	2	3
	Matching	2	2	1	2	2	2	3
	Fill-In	2	2	2	1	2	2	2
	Short Answer	2	2	2	2	1	2	2
	Listing	2	2	2	2	2	1	2
	Perfor- mance	2	2	2	2	2	2	1

70. Is the technical quality of written or spoken material adequate?

Whether text appears in print, in some other visual medium, as narration, or as spoken in a lecture or demonstration, it should meet the following standards:

- a. Each COMPONENT should be directed at the primary audience.

- b. The instruction should be performance-oriented rather than topic oriented. It should tell "what to do" or "how to do it," rather than telling about a task.
- c. Main points should stand out. They should not get lost in detail, so that secondary points appear equal to main points. COMPONENTS should not be too wordy, either because there is too much detail (more than the essentials needed to perform the job), or because material is redundant (with information being needlessly repeated).
- d. Information should be presented in an orderly manner so that it is not confusing. Check for:
 - Redundancy between paragraphs or ideas
 - Missing information
 - Scattered information--information about the same main point not in one place
 - Remote references--references to text or illustrations in other places
- e. Visual aids should communicate something. They must function in one or more of the following ways:
 - Substitute for text or narration
 - Lighten the burden of detail in text or narration
 - Reinforce or summarize information in text or narration
- f. Is there a run-together format? A solid mass of print should be "chunked" visually so that separate points can be easily identified. Items in A/V presentations or lectures should also be distinguishable.
- g. Perspective--In visual media do visuals provide the viewer with an adequate frame of reference with which to judge size and distance?

RATING: Considering the criteria listed above, if most or all of the applicable criteria are met, rate 1.

If several applicable criteria are not met, rate 2.

If few applicable criteria are met, rate 3.

NOTE: (1) Be sure to note what the specific problems are in the Description column of your worksheet.

(2) You should make this rating for an entire LESSON unless material for certain OBJECTIVES merits different ratings.

89. Is the instructor's attitude positive?

Does the instructor behave in a manner that enhances the students' motivation for learning?

- Does the instructor encourage questions?
- Is he helpful?
- Respectful of the trainees?
- Tolerant of failure?
- Available for assistance?

RATING: If the instructor's attitude is positive, rate 1.

If not, rate 3.

Appendix E
MEDIA DEFINITIONS

Appendix E

MEDIA DEFINITIONS

1. Audio. Equipment which delivers a pre-recorded audio message, which may be amplified for groups. The device involved may also have recording capability. Audio systems include audio tape systems, either cassette or reel-to-reel; stylus- or laser-read disc systems; and computer-generated audio.
2. Chart. A flat surface for presenting displays to a class, containing messages in print, handwriting, drawings, pictures, graphs, or other forms. A blackboard is included in the chart category.
3. Computer. The computer displays printed words, symbols, and diagrams, and may accept keyboard, light pen, or touch inputs as student responses. Suitably programmed, it can provide instruction adapted to the individual student's state of knowledge, display corrective feedback, and perform other adaptive and interactive operations. New varieties of instructional use are foreseen as auditory inputs and outputs become available.
4. Filmstrip. Projection of pictures which are sequentially printed on a strip of film. Such projection may or may not be synchronized with an audio message from a tape player. The function of this equipment is the same as that of slide projection, with and without synchronized audio. It is, however, a separate medium, because it requires different materials and equipment and cannot be readily re-sequenced as slides can.
5. Instructor. As a source of instruction, the most versatile medium is an instructor. Four important functions of an instructor are: (a) delivery of audio messages, (b) directing individual student attention to particular features of a display; and (c) human modeling, by serving as a model for choices of personal action; and (d) providing corrective feedback to the individual student. Types of individuals that could fall into this category would be instructors, who can perform any of these functions, and assistant instructors, who typically perform limited functions, such as providing feedback.
6. Interactive TV. This medium combines a microcomputer with videodisc or videotape playback equipment. An interactive TV program, with sound, can become a highly useful "teaching machine" since its branching capabilities can provide feedback tailored to the individual student. It is different from a computer in that it can display motion-visuals and realistic still-visuals.
7. Large Equipment. Operating equipment that is large and non-portable, such as a helicopter, truck, or artillery piece.
8. Motion Picture. A film projection system displaying moving pictures on a screen, often accompanied by a synchronized audio track. Some systems permit large screen projection to large groups. Systems in this medium include 8mm projector systems (either regular or super 8), as well as 16mm and 35mm systems. Included in this category are both sound and silent projection systems although the latter is infrequently used.

9. Overhead Projection. Projection of transparencies (about 8 by 10 inches) displaying print, pictures, or diagrams onto a nearby screen. Overhead projection and the changing of transparencies may be done by the instructor at the front of a classroom or by using rear-screen projection. This category also includes the opaque projector.
10. Portable Equipment. A unitary device (rifle, protective mask), or a component of a real system (dial, carburetor), which is small enough to be readily lifted and transported. Portable equipment is often the medium of choice whenever direct practice of task performance is possible and desirable. Such equipment may sometimes have a specially built-in mechanism to provide corrective feedback to students, and thus may function in the manner of a training device.
11. Printed Text. Pages, cards, or other surfaces containing meaningful materials in printed form, for use by individual students. It is always possible for printed text to contain printed pictures or diagrams. Microfiche, microfilm, and other such reduced print media will be included in this category, even though they require additional equipment for their use.
12. Programmed Text. This medium is the basic form of programmed instruction, using printed cards or pages, usually collected into a booklet. A printed text (see item 11) takes on a programmed form when it requires frequent responses and provides feedback.
13. Simulator. Typically, equipment used for training or proficiency maintenance which reproduces many of the operating characteristics of the real equipment. An example is an aircraft flight simulator.
14. Slides. A medium without audio which projects still pictures from small slides onto a variety of possible screens, ranging from inches to yards across.
15. Slide/Tape. Projection of still pictures from small slides, accompanied by synchroized audio-tape messages. This category may include a combined slide projector/audio tape system with automatic cueing or separate slide and audio tape machines with synchronization provided through direct human assistance. Slide/tape systems may involve more than one projector. Although the Bessler Cue-See can provide motion visuals, it is included in the slide/tape category because its typical use is closer to slide/tape than it is to motion pictures.
16. Training Aid. A surface layout, model, or mockup, providing a display of parts and processes of a system on which instruction is being given. The simplest form of a training aid is a chart. However, training aids may display part of real equipment (rather than pictures), and even provide dynamic views of processes (as in a working model of a hydraulic system).

In contrast to training device (see item 17), a training aid makes no specific provision for corrective feedback to the student.
17. Training Device. Equipment on which mental skills procedures or motor skills can be practiced, and which provide corrective feedback to the student. (A training aid does not automatically provide corrective feedback.) A training device has its own operating principles and does not attempt to reproduce

those of the real equipment, as does a simulator. An example of a training device is a Link trainer.

18. TV Cassette. A device which makes possible the display of a pre-recorded program (picture and sound) on a TV receiver. The device may also have a recording capability. Delivery systems covered by this category include reel-to-reel videotape systems, videocassette systems, and videodisc playback systems.

Appendix F

**TRAINING MATERIALS FOR USE BY THE TEE ANALYST
AND ASSOCIATE ANALYST ON TASK LEVEL AND CONTENT TYPE**

Appendix F

TRAINING MATERIALS FOR USE BY THE TEE ANALYST AND ASSOCIATE ANALYST ON TASK LEVEL AND CONTENT TYPE

SELF-INSTRUCTION ON TASK LEVEL AND CONTENT TYPE

Study the material on the next eight pages and read the directions on the page following them titled "Classification Practice." Then do the practice items which follow it. Take the self-test in the next section and compare your answers to the Feedback after that. If you still feel uncertain of your ability to classify task level or content type, classify the objectives in the remaining section and compare your answers to the feedback there.

THE CLASSIFICATION SYSTEM:

The following classification system is used in all TEE procedures. It is applied to the three main parts of instruction: objectives, tests, and instructional presentations.

Each objective, test item, or piece of presentation, can be classified according to:

1. What the student must do, i.e., the TASK to be performed, and
2. The type of information the student must learn, i.e., the instructional CONTENT.

In the TEE guidelines, these two classification dimensions have been combined to form the TASK/CONTENT MATRIX.

THE TASK DIMENSION:

There are two main TASKS a student can perform:

1. He can REMEMBER information, or
2. He can USE the information to do something.

EXAMPLE:

Here are two test items:

1. The symbol for resistor is _____.
2. Using your knowledge of electronic theory, what would happen in the circuit shown below if the load resistance were shorted?

These two test items differ with respect to what the student is supposed to do (TASK). In number 1, the student has to REMEMBER something, and in number 2, the student has to apply or USE his knowledge in a new situation.

THE CONTENT DIMENSION:

There are five types of CONTENT:

	FACT	CONCEPT	PROCEDURE	RULE	PRINCIPLE
REMEMBER					
USE	Not Possible				

FACTS are simple associations between names, objects, symbols, locations, etc.

CONCEPTS are categories or classifications defined by certain critical characteristics.

PROCEDURES consist of ordered sequences of steps or operations performed on a single object or in a specific situation.

RULES also consist of ordered sequences of operation, but can be performed on a variety of objects or in a variety of situations.

PRINCIPLES are general rules which are used to select or create other principles, rules, procedures, or concepts and apply them to solve problems, i.e., describe why or how things happen or what will happen in a given situation.

EXAMPLES:

The following examples illustrate the five content areas for the REMEMBER task level:

REMEMBER FACT

1. The symbol for resistor is _____.
2. List the names of the parts in the wind-indicating instrument.

REMEMBER CONCEPT

1. List the critical characteristics of a jet pump.
2. Define the various kinds of clouds (cumulus, stratus, etc.).

REMEMBER PROCEDURE

1. List in order the steps for cleaning an M-16 rifle.
2. Describe the procedure for preparing and sending a radio message.

REMEMBER RULE

1. List the steps involved in calculating magnetic heading, given true heading magnetic variation, and compass deviation.
2. State the general rule for solving for circuit current, given voltage and resistance.

REMEMBER PRINCIPLE

1. State the principles of leadership.
2. Recall the reasons why hydraulic fluid contamination must be avoided.

NOTE: **FACTS** can only be remembered, but for the other content types, the student may be asked to **USE** his knowledge to classify, perform, solve or predict.

The following are examples of the **USE** task level for all content types except **FACTS**:

USE CONCEPT

1. Which of the pumps are jet pumps?
2. Given photographs of clouds, sort them according to type (cumulus, stratus, etc.)

USE PROCEDURE

1. Clean an M-16 rifle.
2. Prepare and send a radio message.

USE RULE

1. Calculate the magnetic heading from the two heading magnetic variations, and compass deviation.
2. Given the values for voltage and resistance, calculate the current flow.

USE PRINCIPLE

1. Describe several potential courses of action in a given management situation and select the best one.
2. Predict what is likely to occur if the hydraulic fluid were contaminated.

THE USE LEVEL CAN BE FURTHER DIVIDED INTO TWO TYPES:

1. **USE-UNAIDED** in which the student has no aids except his own memory.
2. **USE-AIDED** in which the student has a job aid for performing the task.

For this level, the nature of the aid depends on the content type:

For **USE-AIDED CONCEPTS** the aid should consist of a decision strategy, including each critical characteristic, and the decision to be made according to presence or absence of that characteristic. In simple cases, the aid may only include a list of characteristics; the decision strategy is then implied.

For **USE-AIDED PROCEDURES** the aid would be a list of steps to be performed.

For **USE-AIDED RULES** the aid would be at least a statement of the formula or rule to be applied, and could include guidelines for when and how to apply it.

For **USE-AIDED PRINCIPLES** the aid would also be at least a statement of the principle, and could include guidelines for when and how to apply it. It could list other relevant principles, rules, procedures, or concepts needed to apply the principle.

EXAMPLES:

USE-AIDED: A pilot's preflight checklist is a **USE-AIDED** procedure. The pilot does not have to remember the steps or their order because they are on the checklist. The pilot does need to perform the steps correctly.

USE-UNAIDED: "Field-strip an M-16 rifle."
Here, the student must remember the steps in the correct order, and perform them correctly.

In summary: The **REMEMBER** level involves "pure" remembering,

The **USE-UNAIDED** level involves remembering what is to be used, and then using it, and

The **USE-AIDED** level involves "pure" using.

THE ENTIRE TASK/CONTENT MATRIX IS SHOWN BELOW:

		CONTENT TYPE				
		FACT RECALL OR RECOGNIZE NAMES, PARTS, DATES, PLACES, ETC.	CONCEPT REMEMBER CHARACTERIS- TICS, OR CLASSIFY OB- JECTS, EVENTS OR IDEAS AC- CORDING TO CHARACTERISTICS	PROCEDURE SEQUENCE OF STEPS REMEM- BERED OR USED IN A SINGLE SITUATION OR ON A SINGLE PIECE OF EQUIPMENT	RULE REMEMBER OF USE A SEQUENCE OF STEPS WHICH APPLY ACROSS SITUATIONS OR ACROSS EQUIPMENTS	PRINCIPLE REMEMBER OR USE A GENERAL RULE WHICH SELECTS OTHER PRINCIPLES, RULES, PROCE- DURES, OR CONCEPTS, AND APPLIES THEM TO SOLVE PROBLEMS
TASK LEVEL	REMEMBER - RECALL OR RECOGNIZE FACTS, CON- CEPT DEFINITIONS, STEPS OF PROCEDURES OR RULES, STATEMENTS OF PRINCIPLE					
	USE-UNAIDED - TASKS WHICH REQUIRE CLASSIFYING, PERFORMING A PROCEDURE, USING A RULE, OR APPLYING A PRINCIPLE WITH NO AIDS EXCEPT MEMORY.					
	USE-AIDED - SAME AS USE-UNAIDED, EXCEPT JOB AIDS ARE AVAILABLE.					

- NOTE:
- (1) Any objective, test item, or piece of instruction will be classifiable in one and only one cell of the matrix above.
 - (2) This matrix is used throughout the TEE guidelines.

REVIEW:

Task level and content type are ascertained from these respective considerations:

1. What the student must do; that is, the TASK to be performed.
2. The type of information the student must learn; that is, the instructional CONTENT.

Content types and task levels are described again in the reformatted task/content matrix below:

CONTENT TYPE

		FACT	CONCEPT	PROCEDURE	RULE	PRINCIPLE
TASK LEVEL	REMEMBER	RECALL OR RE- COGNIZE NAMES, PARTS, DATES, PLACES, VO- CABULARY DEF- INITIONS, ETC.	REMEMBER THE CHARACTERISTICS OF EACH CON- CEPT AND THE GUIDELINES FOR CLASSIFICATION.	REMEMBER THE STEPS OF THE PROCEDURE.	REMEMBER THE FORMULA OR THE STEPS OF THE RULE.	REMEMBER THE RELATED PROCE- DURES, OR CON- CEPTS TO BE SELECTED FROM AND APPLIED OR THE STATEMENT OF THE PRINCIPLE.
	USE-UNAIDED		CLASSIFY OR CATEGORIZE OBJECTS, EVENTS, IDEAS, ACCORDING TO THEIR CHARAC- TERISTICS, WITH NO MEMORY AID.	APPLY THE STEPS OF THE PROCEDURE IN A SINGLE SIT- UATION OR ON A SINGLE PIECE OF EQUIPMENT, WITH NO MEM- ORY AID.	APPLY THE FORMULA OR RULE TO A VARIETY OF PROBLEMS OR SITUATIONS, WITH NO MEM- ORY AID.	USE THE PRIN- CIPLE TO DES- CRIBE WHY OR HOW THINGS HAPPEN OR WHAT WILL HAPPEN, WITH NO MEMORY AID.
	USE-AIDED		GIVEN CONCEPT CHARACTERIS- TICS AND GUIDE- LINES, CATE- GORIZE OBJECTS, EVENTS, IDEAS, ACCORDING TO CHARACTERIS- TICS.	GIVEN STEPS OF THE PROCEDURE, APPLY THE PRO- CEDURE IN A SINGLE SIT- UATION, OR ON A SINGLE PIECE OF EQUIPMENT.	GIVEN THE FORMULA OR RULE STEPS, APPLY THE FORMULA OR RULE TO A VARIETY OF PROBLEMS OR SITUATIONS.	GIVEN A STATE- MENT OF THE PRINCIPLE, DESCRIBE WHY OR HOW THINGS HAPPEN OR WHAT WILL HAP- PEN.

PROCEDURE FOR CLASSIFICATION

Step 1. Determine the TASK LEVEL.

- a. Decide whether the student is to REMEMBER or USE information.
- b. If the student is to USE information, decide whether the task level is USE-AIDED or USE-UNAIDED.

Step 2. Determine the CONTENT TYPE.

- a. If the student must recall or recognize names, parts, locations, functions, dates, places, etc., then the content type is FACT.
- b. If the student must remember characteristics of similar objects, events, or ideas, OR if the student must sort or classify objects, events, or ideas according to characteristics, then the content type is CONCEPT.
- c. If the student must remember a sequence of steps which apply to a single situation, OR if the student must apply the steps to a single piece of equipment or a single situation, then the content type is PROCEDURE.
- d. If the student must remember a sequence of steps and decisions which apply in a variety of situations, OR if the student must apply the sequence across a variety of situations or types of equipment, then the content type is RULE.
- e. If the student must remember a general rule which selects or creates other principles, rules, procedures, or concepts; remember such related content; or use the general rule to solve problems, then the content type is PRINCIPLE.

CLASSIFICATION PRACTICE

In this section, sample objectives and sample test items are given for you to classify according to the scheme just presented. In the space provided you can give your reasons for the classification.

Some of the objectives and test items will be difficult to classify. There are three reasons for this. First, many of them are not "good" ones; they are written in such a way that it may not be clear what behavior is required or what content is to be taught. (They are, however, fairly typical.) Second, all of them are taken out of context and may deal with unfamiliar topics. Therefore, they are difficult to classify because information about the job is not provided. Third, some examples were chosen deliberately to be hard to classify, so that classification problems could be illustrated.

For these reasons you should not expect to correctly classify all of these objectives and test items (or any others) immediately.

When you finish classifying each item yourself, turn the page for the FEEDBACK on that item. Look at the reasons for the item's classification and compare them to your own.

1. **OBJECTIVE:** Without the aid of references, list in the correct order the steps for shifting from a lower to a higher gear in a manual transmission car.

Task Level? _____

Content Type? _____

1. **OBJECTIVE:** Without the aid of references, list in the correct order the steps for shifting from a lower to a higher gear on a manual transmission car.

Task Level? REMEMBER

Since the student is "listing" a series of steps, rather than actually performing them, the task level is "Remember."

Content Type? PROCEDURE

This is clearly "Procedure" content because there is a sequence of steps (the steps involved in shifting gears); the problem to be solved always presents itself in the same way (or a requirement to shift to a higher gear); and there is only one way to upshift correctly.

2. OBJECTIVE: Calculate the cost of gas per mile to the nearest tenth of a cent given (1) miles driven, (2) gallons of gasoline used, (3) cost per gallon of gas, and the following formula:

$$\text{Cost of gas per mile} = C = \frac{M}{G}$$

where M = miles driven, to nearest mile

G = gallons of gasoline, to nearest tenth gallon

C = cost of gasoline per gallon

Task Level? _____

Content Type? _____

2. OBJECTIVE: Calculate the cost of gas per mile to the nearest tenth of a cent given (1) miles driven, (2) gallons of gasoline used, (3) cost per gallon of gas, and the following formula:

$$\text{Cost of gas per mile} = C = \frac{M}{G}$$

where M = miles driven, to nearest mile

G = gallons of gasoline, to nearest tenth gallon

C = cost of gasoline per gallon

Task Level? USE-AIDED

The student is asked to perform a task (calculate cost of gas per mile). He is not merely remembering something, he must "use" the formula to solve for the unknown value. Since the formula is provided to the student the task is "aided."

Content Type? RULE

The verb "calculate" and the formula provided indicate that an ordered series of steps is involved in solving this problem. What distinguishes this from a procedure is that these steps are designed to work for any class of problems. The number of miles driven, gallons of gasoline used, and cost per gallon of gas can vary widely, but the formula can still be used in all cases.

3. OBJECTIVE: Describe, without references, the critical characteristics distinguishing rockets from missiles, according to the course text.

Task Level? _____

Content Type? _____

3. OBJECTIVE: Describe, without references, the critical characteristics distinguishing rockets from missiles, according to the course text.

Task Level? REMEMBER

The student is asked to describe something without references, i.e., from memory, so the task level is "Remember."

Content Type? CONCEPT

The term "rocket" is a Concept name referring to a class of objects which have a jet engine and carry either liquid or solid propellants which make the engine independent of oxygen in the air.

4. OBJECTIVE: Without references, label the three basic components of the M-16 rifle.

Task Level? _____

Content Type? _____

4. OBJECTIVE: Without references, label the three basic components of the M-16 rifle.

Task Level? REMEMBER

The student must remember the basic components of the M-16 rifle. It is not necessary for this information to be applied.

Content Type? FACT

The content is a Fact. It is a simple association between symbols (component names) and objects (components of a rifle).

5. OBJECTIVE: Without reference to TM 9-2350-258-10, remove and replace a defective domelight lamp in the M48A5 tank, given a screwdriver, replacement lamp, and clean cloth.

Task Level? _____

Content Type? _____

5. OBJECTIVE: Without reference to TM 9-2350-258-10, remove and replace a defective domelight lamp on the M48A5 tank, given a screwdriver, replacement lamp, and clean cloth.

Task Level? USE-UNAIDED

The task level is "Use", since the task actually involves removing and replacing the defective lamp, not merely recalling how to do it. It is "unaided" because the student has no job aid (in this case the TM) to guide him in performing the task. Note that although he is given some items (screwdriver, lamp, and cloth) which are necessary for task performance, they are not job aids.

Content Type? PROCEDURE

The content is a Procedure. It is a set of sequential operations or steps performed on a single object (a M48A5 domelight) in a specific situation (domelight is defective). The task can be performed in only one way (according to the TM).

6. OBJECTIVE: Solve for total power in a DC parallel circuit.

Task Level? _____

Content Type? _____

6. OBJECTIVE: Solve for total power in a DC parallel circuit.

Task Level? USE-UNAIDED

The task level is Use because the student must solve problems. It is not aided because the formula for total power is not given.

Content Type? RULE

The word solve is a "keyword" for Rule. Here the student must remember the formula for total power and then use it to solve problems.

7. Test Item: Destroy classified documents under routine conditions given the outline in OPNAVINST 5510.1 and KAG-1.

Task Level? _____

Content Type? _____

7. Test Item: Destroy classified documents under routine conditions given the outline in OPNAVINST 5510.1 and KAG-1.

Task Level? USE-AIDED

What does the student have to do? He must "destroy" classified documents. However, he is given references which outline the steps that must be performed to accomplish this. Therefore, the task level is use-aided.

Content Type? PROCEDURE

The student must follow a specific series of steps for destroying classified documents under routine conditions - one situation. This implies that there are other specific procedures for emergency conditions. You could check with a subject matter expert to make sure.

8. Test Item: State the radar signal characteristics used in identifying circular, sector, conical and steady scans on an analysis scope.

Task Level? _____

Content Type? _____

8. Test Item: State the radar signal characteristics used in identifying circular, sector, conical, and steady scans on an analysis scope.

Task Level? REMEMBER

The student is asked to state (recall) the characteristics of four different types of scans. At this time he is not asked to actually categorize a signal as a certain type of scan. Therefore, the task level is Remember.

Content Type? CONCEPT

The way this test item is written, it sounds as if the student is remembering characteristics so that he can later classify signals.

9. OBJECTIVE: Recall the proper sequence of steps for testing a capacitor using a standard volt-ohm meter.

Task Level? _____

Content Type? _____

9. OBJECTIVE: Recall the proper sequence of steps for testing a capacitor using a standard volt-ohm meter.

Task Level? REMEMBER

Does the student have to remember something or actually perform the task? In this case he must only recall the steps. He is not asked to use the meter while testing a capacitor to see if anything is wrong with it.

Content Type? PROCEDURE

It seems like these steps would be the same regardless of the type of capacitor. The content type is Procedure.

10. Test Item: State Ohm's Law.

Task Level? _____

Content Type? _____

10. Test Item: State Ohm's Law.

Task Level? REMEMBER

State is a keyword for the Remember level. The student is not asked to use the information about Ohm's Law - only to Remember it.

Content Type? RULE

Ohm's Law is a formula (a rule) that can be used to solve for an unknown ($I = E/R$).

11. Test Item: Troubleshoot electronic circuits from PATRIOT components in which no current is flowing.

Task Level? _____

Content Type? _____

11. Test Item: Troubleshoot electronic circuits from PATRIOT components in which no current is flowing.

Task Level? USE-UNAIDED

The student is asked to perform a task. It is not just recalling something; he must remember how to troubleshoot a circuit and then do it. No aid is given.

Content Type? PRINCIPLE

The student must use his knowledge of the rules, procedures, and concepts of electronics to make predictions about likely causes of trouble, and to determine what tests to perform. The content type is Principle.

12. OBJECTIVE: Given the formula for capacitive reactance and the values of frequency and capacitance from a schematic, calculate capacitive reactance.

Task Level? _____

Content Type? _____

12. OBJECTIVE: Given the formula for capacitive reactance and the values of frequency and capacitance from a schematic, calculate capacitive reactance.

Task Level? USE-AIDED

What must the student do? He must "calculate" capacitive reactance given two values and the formula. In this case the formula is the memory aid. The task is use-aided.

Content Type? RULE

"Calculate" is another keyword for rule. Formulas and mathematical calculations are rules that can be applied to various situations and values.

13. OBJECTIVE: List the materials which are separable from lube oil by the Sharples oil purifier.

Task Level? _____

Content Type? _____

13. OBJECTIVE: List the materials which are separable from lube oil by the Sharples oil purifier.

Task Level? REMEMBER

The student is asked to state (recall) the materials which can or cannot be separated. He is not asked to do it. Therefore, the task level is Remember.

Content Type? FACT

There are only a few materials to remember and this objective can best be taught as a Fact. This FACT will provide information necessary for operating the Sharples purifier.

14. TEST ITEM (in a course for engineers who will eventually design equipment):

Explain how hydraulic systems work as described in class lectures and in Chapter 9 of the text.

Task Level? _____

Content Type? _____

14. TEST ITEM (in a course for engineers who will eventually design equipment):

Explain how hydraulic systems work as described in class lectures and in Chapter 9 of the text.

Task Level? REMEMBER

The student is asked to explain from memory what he learned about how hydraulic systems work. It is clearly Remember.

Content Type? PRINCIPLE

This test item asks the student to explain how hydraulic systems work. The "hows" are rules that could be used in conjunction with principles to solve problems related to hydraulic systems or in their design.

15. OBJECTIVE: Sort pictures of clouds into stacks by types, given labeled illustrations of identified cloud types.

Task Level? _____

Content Type? _____

15. OBJECTIVE: Sort pictures of clouds into stacks by types, given labeled illustrations of identified cloud types.

Task Level? USE-AIDED

This objective is an example of a pure "using" task. The illustrations of identified clouds are the aid. There is no need to remember the characteristics of each type cloud; they are given. The student is asked to categorize pictures of new examples of clouds based on the characteristics in the labeled clouds.

Content Type? CONCEPT

There are many variations in cloud formations. In order to label clouds the students must classify new examples according to their characteristics.

16. TEST ITEM: Use your oscilloscope to calibrate the IOXMX-2817V test prod.

Task Level? _____

Content Type? _____

16. TEST ITEM: Use your oscilloscope to calibrate the 10XMX-2817V test prod.

Task Level? USE-UNAIDED

The student must perform the task. He must "calibrate" the test prod. He is not told how to do it; he must perform the job from memory. The task is use-unaided. The oscilloscope is a tool necessary to perform the task, but is not an aid because it does not tell him how to do the task.

Content Type? PROCEDURE

When you are calibrating a specific single piece of equipment there are usually steps that you must perform in a certain order each time you do the job. This is probably a Procedure.

17. OBJECTIVE: Given an incoming signal, the EW operator will identify it as being emitted from a particular type radar on a particular type of platform.

Task Level? _____

Content Type? _____

17. OBJECTIVE: Given an incoming signal, the EW operator will identify it as being emitted from a particular type radar on a particular type of platform.

Task Level? USE-UNAIDED

The student will analyze the incoming signal and classify it according to specific characteristics. The task level is use. There is no memory aid, so the task is unaided.

Content Type? CONCEPT

From an analysis of the job, it turns out that there are many incoming signals which can be classified according to a small number of types of radars and platforms.

18. OBJECTIVE: Given diagrams that graphically represent how the steam cycle works, use them to discover how the auxiliary condensate system works.

Task Level? _____

Content Type? _____

18. OBJECTIVE: Given diagrams that graphically represent how the steam cycle works, use them to discover how the auxiliary condensate system works.

Task Level? USE-AIDED

What must the student do? The objective requires the student to use information about the steam cycle to explain how a new system works. The diagrams are given to "jog" the students' memory about how the basic steam cycle works. The objective is use-aided.

Content Type? PRINCIPLE

Here, principles employ other rules to make explanations, analyses, and predictions about how things work.

SELF-TEST ON TASK LEVEL AND CONTENT TYPE

Directions: Below each objective write its Task Level and Content Type. Note that these are not necessarily "good" objectives, but their task levels and content types should be clear.

1. Using TM-9-1410-530-14 and a PATRIOT launcher station prepared for reload in a simulated tactical field environment, perform missile reload.

Task Level: _____ Content Type: _____

2. Upon receipt of a warning order which changes the mission of your PATRIOT battalion in a field exercise, determine all specified and implied actions necessary to accomplish the mission.

Task Level: _____ Content Type: _____

3. Given the guidelines for determining message security classification, determine the security classification (Top Secret, Secret, Confidential, or Unclassified) for outgoing messages

Task Level: _____ Content Type: _____

4. Given a picture of a Vulcan operator's console, state the function of each control and indicator as described in TM 9-2350-300-10.

Task Level: _____ Content Type: _____

5. Recall in writing the critical characteristics of ten types of Soviet aircraft.

Task Level: _____ Content Type: _____

6. Given the formula for Ohm's Law, $E=IR$, and any two values typical of the values encountered on the job, solve for the third value correct to two decimal places.

Task Level: _____ Content Type: _____

7. Given an ammunition storage locker containing four different kinds of Vulcan rounds and requests for certain kinds of ammunition, identify the appropriate rounds to fill each request.

Task Level: _____ Content Type: _____

8. State the general guidance for applying the rules of war and the tactical standard operating procedures that govern the conduct of an IHAWK battery as contained in TM 430-7.

Task Level: _____ Content Type: _____

9. Given a globe valve, rags, prussian blue, gasket material, packing, and tools, disassemble and reassemble the globe valve.

Task Level: _____ Content Type: _____

10. In accordance with FM 44-1, ACP 125, and TC 32-20, take the prescribed actions in response to simulated enemy employment of electronic warfare which includes locating your transmitters, jamming, and imitative communications deception. There is no time to look at the reference documents during the exercise.

Task Level: _____ Content Type: _____

11. State the method for selecting the correct Vulcan firing mode as described in TM9-2350-300-10. Include the types of targets and conditions under which each mode is used.

Task Level: _____ Content Type: _____

12. Given an explanation of how to supply military troops from the text, illustrations to include Hitler's attack of Russia, the Battle of Midway, the Battle of the Bulge, and Sherman's march through Georgia, and a modern tactical scenario you have not seen before, discuss how the types of troops in the scenario should be supplied.

Task Level: _____ Content Type: _____

13. List the steps in boresighting the 20-MM M163A1 cannon.

Task Level: _____ Content Type: _____

KEY TO SELF-TEST ON TASK LEVEL AND CONTENT TYPE

The answers are given below followed by the reasons they are correct. The reasons are based on the definitions of the task levels and content types.

1. **USE-AIDED/PROCEDURE:** The objective is performed with the aid of the TM. The action involves a sequence of steps used on a single piece of equipment.
2. **USE-UNAIDED PRINCIPLE:** No job aids are specified by the objective. The action involves selecting the appropriate principles, rules, and procedures from Army doctrine and regulations, to be applied in accomplishing the unit's mission.
3. **USE-AIDED/CONCEPT:** The "guidelines" mentioned are a job aid. The action involves classifying events according to the critical characteristics of the different levels of classified information.
4. **REMEMBER/FACT:** The objective requires information to be recalled, i.e., the functions of parts. These functions are not to be recalled as characteristics of concepts, steps in a procedure or rule, or as parts of a principle and are therefore facts.
5. **REMEMBER/CONCEPT:** The objective requires information to be recalled. The items to be recalled are the critical characteristics of concepts.
6. **USE-AIDED/RULE:** The formula given in the objective is to be used as a job aid. The application of Ohm's law entails a sequence of steps which apply across a number of situations.
7. **USE-UNAIDED/CONCEPT:** No job aids are specified by the objective. The action involves classifying objects according to their characteristics.
8. **REMEMBER/PRINCIPLE:** The objective requires the recall of information. The items to be recalled are principles (the "general guidance") used to select other rules and procedures that would be applied in solving the problem, which in this case would be the performance of an IHAWK mission.
9. **USE-UNAIDED/PROCEDURE:** No job aids are specified by the objective. The action involves using a sequence of steps which apply to a single piece of equipment.
10. **USE-UNAIDED/RULE:** The subject matter must be understood well enough to be used without aids. The actions involved require the use of sequences of steps which apply across different situations.
11. **REMEMBER/RULE:** The objective requires the recall of information. The item to be recalled is a sequence of steps which apply across situations.

12. **USE-AIDED/PRINCIPLE:** The explanation and illustrations provide a job aid. Discussing troop supply in the scenario requires the use of information not just remembering it. The action required involves the use of some general rule with which rules, procedures, and concepts on the supply of military troops are selected and applied. (A student could feel that the objective describes a rule, which it would if the explanation from the text was well defined enough to prescribe specific courses of action for any situation. The fact that illustrations are given, however, suggests that the method is not that well defined and is therefore a principle.)
13. **REMEMBER/PROCEDURE:** The objective requires the recall of information. The items to be remembered are a sequence of steps which are used on a single piece of equipment.

ADDITIONAL PRACTICE OBJECTIVES ON TASK LEVEL AND CONTENT TYPE WITH FEEDBACK

Use the objectives below or additional practice on task level and content type. FEEDBACK classifying each objective and giving reasons for the classification follows. Note again that these are not necessarily "good" objectives, and some could actually be classified as "goals" or "missions."

1. State from memory the primary mission of the Chaparral Air Defense Guided Missile System as described in FM 44-4.
2. Describe the method used by personnel in a Chaparral radar platoon to detect targets at or near maximum range.
3. As commander of a Vulcan Battery in a field exercise, issue a warning order to the platoons. It should include friendly and enemy situations, tentative primary and alternate positions, tentative primary and alternate routes, and any special instructions that deviate from unit SOP.
4. In a simulated electronic warfare (EW) environment, recognize the different type of external jamming encountered: spot jamming, barrage jamming, accidental interference, and atmospheric.
5. Given TM 9-2350-300-10 perform before operations preventative maintenance checks and services (PMCS) on the Vulcan Carrier (M163A1 System).
6. Describe the features of the Vulcan, Chaparral, SGT YORK gun, STINGER, REDEYE, ROLAND, HAWK, IHAWK, Nike Hercules, and PATRIOT systems in order to be able to distinguish between them when referenced in later training.
7. State the actions a gunner must take immediately in the event of a potential cook-off, hang-fire, or stoppage when firing the Vulcan cannon.
8. Using target drones, towed targets, or BATS representing enemy aircraft, the Chaparral squad will detect, identify, acquire, engage, and kill targets, taking different types of courses at varying speeds and altitudes.
9. Given a coordinate square, a map with a legend identifying map symbols, and a programmed text on basic map reading methods, find the distance between two points specified by symbols in designated grid squares.

10. Given a manual containing guidelines for conducting an evaluation of an Army training course, evaluate the training.
11. Using a chart showing the characteristics of a properly maintained spark plug, sort spark plugs into two groups: acceptable and defective.
12. Given proper tools in a motor pool shop, replace a front wheel bearing on a 1/4-ton truck in less than 10 minutes.
13. List the points a battery air defense commander must consider in defending the battery against a ground attack assuming that early warning outposts detect the enemy in sufficient time to allow deployment of the battery to supplementary defensive positions. He must insure that:
 - The battery operations center is notified of impending attack without compromising any information of use to the enemy force.
 - A reaction force is assembled and tactically employed.
 - Battery assets available for defeating the enemy force are employed in a manner appropriate with terrain.
 - Weapon positions have engaged the enemy at maximum range.
 - Mixed antitank/antipersonnel forces are deployed to locations external to the battery position area if appropriate.

FEEDBACK

1. **REMEMBER/FACT:** The information must be recalled from memory. The mission is to be simply stated as a fact. It is not a concept characteristic or a step in a procedure, rule, or principle.
2. **REMEMBER/RULE:** The information is to be recalled rather than applied. The information is a sequence of steps that applies across situations, e.g., different terrain, different weather conditions, aircraft at different altitudes, etc.
3. **USE-UNAIDED/PRINCIPLE:** No job aid is specified in this performance objective, and none would typically be used in the field. The action involves the use of principles to select and apply other principles, rules, procedures, and concepts to determine and describe: the friendly and enemy situations, tentative positions and routes, and special instructions; and to transmit the order to the platoons.
4. **USE-UNAIDED/CONCEPT:** No job aid is specified for this performance objective. The action involves classifying events, i.e., the different types of jamming received, according to their characteristics.
5. **USE-AIDED/PROCEDURE:** The TM is specified as a job aid for use in performing the objective. The action involves a sequence of steps applied to a single piece of equipment.
6. **REMEMBER/CONCEPT:** The information is to be recalled rather than applied. The action involves describing the characteristics of the different systems in order for the student to be able to classify them properly in later training.
7. **REMEMBER/PROCEDURE:** The information must be recalled rather than applied. The action involves stating three sequences of steps which apply to a single piece of equipment.
8. **USE-UNAIDED/RULE:** No job aids are specified by the performance objective and the actions called for leave little if any time to refer to a job aid. The action involves performing a sequence of steps which apply across situations, the most important of which are specified.
9. **USE-AIDED/RULE:** The map legend and text are job aids for this performance objective. The action involves performing a sequence of steps that apply across situations, i.e., different symbols in different squares.
10. **USE-AIDED/PRINCIPLE:** The manual is a job aid; the objective requires a performance. The action requires use of principles ("guidelines") to select the appropriate principles, rules, procedures, and concepts of evaluation and apply them to the course.
11. **USE-AIDED/CONCEPT:** The chart is a job aid for this performance objective. The action involves identifying two classes of spark plugs according to their critical characteristics.

12. USE-UNAIDED/PROCEDURE: No job aid is listed in this performance objective. The action involves a sequence of steps used on a single piece of equipment.
13. REMEMBER/PRINICIPLE: The information is to be recalled rather than applied. The points to be recalled are the important principles, rules, and procedures which would be selected and applied in solving the problem of defending an air defense battery against ground attack.

Appendix G

GUIDELINES FOR DETERMINING THE
SERIOUSNESS OF TRAINING DEFICIENCIES

Appendix G

GUIDELINES FOR DETERMINING THE SERIOUSNESS OF TRAINING DEFICIENCIES ("2" AND "3" RATINGS ON MASTER LIST QUESTIONS)

(Used in conjunction with TEE Task E3)

- Note:
- (1) Ratings of "1" always indicate that the training or test is adequate on the point in question.
 - (2) When ratings are indicated below as serious, it means that the test item, test, presentation component, LO, TLO, or LESSON to which they apply is probably totally inadequate.
 - (3) The analyst should always be concerned with whether data collectors' ratings are correct and should not necessarily accept the judgments given in this Appendix without carefully weighing all factors involved in the training situation under evaluation which apply to the Master List questions under consideration.

General Considerations

The difficulty of a given task is often an important factor in ascertaining the seriousness of ratings on Master List questions. The difficulty is a result of the combined effect of two factors:

- How hard the task is to perform (or remember) in terms of its length, complexity, or requirements for fine motor manipulations.
- The aptitudes and abilities of the students who learn the task.

To illustrate the relationship between these two factors, note that some tasks which are difficult for average students may be relatively easy for very bright students. Some tasks are so difficult that even the best students will consider them difficult. Some are so easy that even the poorest students will have no trouble with them.

A good test to determine difficulty (which may require a subject matter expert's judgment) is to ask: Given only a statement of how to perform the task or of information to be remembered and a short period of time to study it, how many students would be able to perform the tasks or state the information successfully?

- If less than 1/2 of the students could do so, the task is hard.
- If 1/2 of the students or more could do so, the task is easy.

Testing Section

In this section a "serious" rating means one of three things. Either:

- o A substantial number of students (perhaps 20% or more) who should pass a test item or the test (because they have mastered the subject matter) will fail it (due to the testing deficiency noted);
- o A substantial number of students who should fail a test item or the test (because they have not mastered the subject matter) will pass it (due to the testing deficiency noted); or
- o A combination of the two problems above will cause a substantial number of students to either pass or fail who should not pass or fail, respectively.

1.-4.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	SERIOUS
HARD	2	SERIOUS
	3	SERIOUS

5.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR
3	SERIOUS

6.-7. Examine the CONDITION (6) or STANDARDS (7) which are not the same and make a judgment on the seriousness of the difference:

IF RATING IS:	THEN DEFICIENCY:
2	May or may not be serious
3	Is probably serious

8.-10. A "3" rating is serious for the item.

11.-12.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	SERIOUS
HARD	2	SERIOUS
	3	SERIOUS

13.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR
3	SERIOUS

14. A "3" rating is minor for one item; however, several "3" ratings on different test items can be serious for the test as a whole.

15.-17.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR
3	SERIOUS

18.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY FOR AN INSTRUCTOR TO REMEMBER	2	OK
	3	MINOR
HARD FOR AN INSTRUCTOR TO REMEMBER	2	MINOR
	3	SERIOUS

19.-20. A "3" rating is serious.

21.-22. A "2" or "3" rating is minor.

23. Examine the test instructions with which there are problems:

IF RATING IS:	THEN DEFICIENCY IS:
2	Is probably minor
3	May or may not be serious

24.

IF PERFORMING THE TASKS TOGETHER IS:	AND THE RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR
HARD	2	MINOR
	3	SERIOUS

25.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR
HARD	2	MINOR
	3	SERIOUS

26.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR
3	SERIOUS

Presentation Section

As a general rule in this section, do not consider any deficiency serious unless you feel that it is bad enough to cause many students (perhaps 20% or more) to fail the final test for the task. Judgments below, that require specific consideration of the particular deficiency you are dealing with, are noted by asterisks (*) and are sometimes given further consideration below the tables in which they appear. Occasionally, additional criteria are given there, such as directions to consider the effects of related presentation components.

27. Attention getting/motivational devices are required when:

- The student would consider the task evaluated long and boring or difficult to learn, and
- The students have so little motivation that the satisfaction of passing the course or the disappointment of failing would not provide enough motivation to overcome the problem in the point above.

If and only if motivational devices are required, a "3" rating is serious.*

28. A "3" rating is serious.*

29.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	OK
	3	MINOR
HARD	2	SERIOUS
	3	SERIOUS

30. A "3" rating is serious for the task to which it applies, but only if there is some other evidence that the students do not have the prerequisites.

31. A "3" rating is minor unless you have evidence that the lesson was so disorganized that it was unclear what terminal performance the students were supposed to do or learn during much of the presentation.

32.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	OK
	3	MINOR
HARD	2	MINOR*
	3	SERIOUS*

33. Look at the specific deficiency noted on the data collection worksheets. Ask yourself if the deficiency would have caused many students to fail the final test for the task considering the effects of other presentation components (i.e., did STATEMENT HELP, EXAMPLES, or PRACTICE and FEEDBACK make up for the deficiency in the STATEMENT?). If the deficiency is not corrected by other components, a "2" rating could be serious, and a "3" rating is probably serious. Both of these judgments depend on the probable effect of what is missing from the STATEMENT on student performance. If the deficiency is corrected, it is minor.

34. A "3" rating is serious.*

35.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	OK
	3	MINOR
HARD	2	MINOR*
	3	SERIOUS*

*Look at the specific deficiency noted on the data collection worksheets. Ask yourself if that deficiency would have caused many students to fail the final test for that task considering the effects of other presentation components (i.e., did PRACTICE and FEEDBACK or EXAMPLES make up for the deficiency in the STATEMENT HELP?). If the deficiency is not corrected it could be serious. If it is corrected it is minor.

36.

IF THE JPA IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY TO USE	3	MINOR
HARD TO USE	3	SERIOUS*

37. Look at the specific deficiency noted on the data collection worksheets. Ask yourself if the deficiency would have caused many students to fail the final test for the task considering the effect of other presentation components (i.e., did the STATEMENT, STATEMENT HELP, EXAMPLE HELP, or PRACTICE and FEEDBACK make up for the deficiency in the EXAMPLE or NON-EXAMPLE?). If the deficiency is not corrected by other components, a "3" rating is probably serious. That judgment depends on the probable effect of the deficiency on student performance. If the deficiency is corrected, it is minor.

38.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR*
	3	MINOR*
HARD	2	MINOR*
	3	SERIOUS*

*As in 33, 34, and 37, consider the effect of other components such as PRACTICE and FEEDBACK.

39.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	3	MINOR
HARD	3	MINOR*

*This deficiency would be serious only with very hard concepts and when other factors such as PRACTICE and FEEDBACK do not make up for it.

40.-42.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	3	MINOR
HARD	3	SERIOUS*

*Again consider the effect of other components.

43.-44.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR
HARD	2	MINOR
	3	SERIOUS*

*Consider the effects of other components.

45. Memory aids are required only when:

- The content to be memorized is long or complicated, and/or
- When the information is very new to the students, such that it cannot be easily related to existing knowledge.

If memory aids are required, a "3" rating is serious only when many students would still be likely to fail the test after the PRACTICE and FEEDBACK which is given.

46.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	SERIOUS*
HARD	2	MINOR*
	3	SERIOUS*

47.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	3	MINOR
HARD	3	SERIOUS*

48.-49.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	3	MINOR
HARD	3	SERIOUS*

50.

IF PERFORMING THE TASKS TOGETHER IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	OK
	3	MINOR*
HARD	2	MINOR*
	3	SERIOUS*

51.-52.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR*
HARD	2	MINOR*
	3	SERIOUS*

53.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR*
HARD	2	MINOR
	3	SERIOUS

54.

IF THE TASK TESTED IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	3	MINOR*
HARD	3	SERIOUS*

55.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR*
HARD	2	MINOR*
	3	SERIOUS*

56.-57. Examine the CONDITIONS (55) or STANDARDS (56) which are not the same and make a judgment on the seriousness of that difference:

IF TASK IS:	THEN DEFICIENCY:
EASY	May or may not be serious
HARD	Is probably serious

58.-61.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR*
	3	SERIOUS*
HARD	2	MINOR*
	3	SERIOUS

62.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR*
	3	SERIOUS
HARD	2	MINOR*
	3	SERIOUS

63.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	OK
	3	SEE NOTE
HARD	2	MINOR*
	3	SEE NOTE

NOTE: Return to question 32 and change your ratings and the determination of the seriousness of deficiencies for the task to reflect the fact that the **FEEDBACK** component is missing, if that is not already the case there.

64. This question applies only when there is a "1" rating on question 63.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	SERIOUS*
HARD	2	MINOR*
	3	SERIOUS

65. With respect to crew/team (but not individual) performance scores, a "3" rating is serious.
66. Examine the TEAM PRACTICE CONDITIONS which are not the same as real world CONDITIONS and make a judgment as to the seriousness of the difference:

IF RATING IS:	THEN DEFICIENCY IS:
2	May or may not be serious
3	Is probably serious

- 67.

IF THE TEAM FUNCTION:	AND RATING IS:	THEN DEFICIENCY IS:
Involves little more than performance of individual tasks at the same time.	2	OK
	3	MINOR
Requires a fair amount of communication and coordination among team members in order to accomplish it.	2	MINOR*
	3	SERIOUS*

68. This question applies only when there is a "1" rating on question 67.

IF THE TEAM FUNCTION:	AND RATING IS:	THEN DEFICIENCY IS:
Involves little more than performance of individual tasks at the same time.	2	MINOR
	3	MINOR*
Requires a fair amount of communication and coordination among team members in order to accomplish it.	2	MINOR*
	3	SERIOUS

69.-70.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR
HARD	2	MINOR
	3	SERIOUS*

71.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR*
HARD	2	MINOR*
	3	SERIOUS*

72.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	OK
	3	MINOR*
HARD	2	MINOR
	3	MINOR*

73.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
Easy to understand without visuals	2	OK
	3	MINOR*
Hard to understand without visuals	2	MINOR*
	3	SERIOUS

74.

IF THE DEFICIENCY ON QUESTION 73 IS:	AND THE RATING ON THIS QUESTION IS:	THEN DEFICIENCY IS:
OK (or a "1" rating)	2	MINOR
	3	MINOR*
MINOR	2	SERIOUS*
	3	SERIOUS
SERIOUS	2	SERIOUS
	3	SERIOUS

75.-76.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	3	MINOR*
HARD	3	SERIOUS

77. A "3" rating on this question should have been covered elsewhere; however, it is useful for purposes of revising the instruction. You should compare ratings for any deficiencies noted here:

IF DESCRIPTION IS:	SEE RATINGS ON QUESTION #s
NO REAL PRACTICE	32, 44-66
INCOMPLETE INFORMATION	34, 35, 37-43
NO FEEDBACK	62, 63, 65, 66
NO HANDS-ON PRACTICE	32, 46-66

78. A "3" rating is serious.

79.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR
3	MINOR*

80. Examine any unrealistic demands. A "3" rating may be serious if it adversely affects the student's ability to learn in the course.

81.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR*
3	SERIOUS

82.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR
3	MINOR*

83.

IF RATING IS:	THEN DEFICIENCY IS:
2	MINOR*
3	SERIOUS

84. A "3" rating will be minor unless the additional content seriously confuses the students on the course content.

85.-86. A "2" rating is minor.
A "3" rating is serious.*

87.-88. A "2" rating is minor.
A "3" rating is serious.

89. A "3" rating is minor.*

90. A "2" rating is minor.
A "3" rating is serious.*

91.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR
HARD	2	MINOR
	3	SERIOUS*

*Consider the effect of other components such as PRACTICE and FEEDBACK.

92. A "2" rating is minor.
A "3" rating is serious.

93. Examine the training device/equipment malfunction(s) that occurred for the task.

IF TASK IS:	AND RATING IS:	THEN DEFICIENCY IS:
EASY	2	MINOR
	3	MINOR*
HARD	2	MINOR*
	3	SERIOUS*

94. Each response must be examined and judged on its own characteristics.

Appendix H
WORKSHEETS FOR CONDUCTING THE TEE

Date: _____

Evaluator: _____

WORKSHEET A1: BACKGROUND ON THE PROJECT

Course: _____

Purpose of Course: _____

Primary Audience: _____

Secondary Audience: _____

Expected Entry Skills/Training: _____

Purpose of TEE: _____

User of TEE: _____

User Contact: _____

Training Dates: _____ Location: _____

Testing Dates: _____ Location: _____

Training Contact: _____

Limitations on Observations: _____

Resource Material:	Exist?	Source:	Date Obtained:	Date Revised:
Task Documentation (from Task Analyses)				
Training Concept Plan				
Lesson Plan				
Practical Exercises				
Soldier's Manual				
Course Handouts				
Test Instruments				
Commander's Manual				
S.Q.T.				
Training/Testing Schedule				
Operator's Manual				
Field Manual				

Worksheet A1 (continued)

Target Date for TEE completion: _____ Contingencies: _____

Previous TEE on course? Yes ☐
No ☐

Report available? Yes ☐
No ☐

Comparative Study indicated? Yes ☐ No ☐ Notes: _____

Training Development Organization: _____

Can they be contacted? Yes ☐ No ☐ Notes: _____

Delivery Organization: _____

How will trainees be selected? _____

Entry test to be given? Yes ☐ No ☐ Notes: _____

Pretest to be given? Yes ☐ No ☐ Notes: _____

How will instructors be selected? _____

Qualifications of Instructors: _____

Instructor/Trainee Ratio: _____ Notes: _____

Instructor-dependence: High ☐ Medium ☐ Low ☐

Complexity of tasks: High ☐ Medium ☐ Low ☐

Ease of training observation: Difficult ☐ Medium ☐ Easy ☐

Ease of testing observation: Difficult ☐ Medium ☐ Easy ☐

Mission criticality: Very high ☐ High ☐ Medium ☐ Low ☐

Other Notes: _____

Sheet #: _____

Course: _____

[illegible]

Date: _____

Evaluator: _____

Sheet #: _____

WORKSHEET B2: PRODUCT EVALUATION — EVALUATE TEST MATERIALS

Course: _____

Test: _____

Follow the directions for Task B2 in the User's Guide.

Lesson # and/or Title	Task/ TLO #	LO #	Item #	TEE Question	Rating (Circle)	Description
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	

Date: _____

Evaluator: _____

Sheet #: _____

WORKSHEET B3: PRODUCT EVALUATION — EVALUATE PRESENTATION

Course: _____

Follow the directions for Task B2 in the User's Guide.

Lesson # and/or Title	Task/ TLO #	LO #	S/E/P/F*	TEE Question	Rating (Circle)	Description
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	
					1 2 3	

WORKSHEET C1.1: OBSERVATION OF CLASSROOM INSTRUCTION

Date: _____

Data Collector: _____

Group/MOS #: _____ Course: _____

LESSON #: _____ LESSON Title: _____

Applicable TLO/LO#(s): _____

Training Location/Environment: _____

Starting Time: _____ Instructor ID#(s): _____

If any of the questions below are not applicable to the training event you are observing, write N/A in the description column.

Make one rating for each question. If several things could be rated for a question, take them all into account in making one rating for the event.

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
27. Are motivational techniques employed?	1 = Yes (Please describe them.) 3 = No	
28. Is the trainee attitude positive?	1 = Positive 2 = Indifferent 3 = Hostile or frustrated	
29. Is mastery of prerequisite skills verified prior to new instruction?	1 = Yes 2 = No	
30. Are OBJECTIVES presented to the student?	1 = Yes 3 = No	
32. Are STATEMENTS for CONCEPTS, PROCEDURES, or RULES adequate? (See job aid criteria.)	1 = Completely adequate 3 = Some or all features omitted	
35. Does STATEMENT HELP provide sufficient explanation?	1 = Help provides sufficient explanation. 2 = Help gives insufficient explanation. 3 = Help is confusing.	
36. Does training include instruction on the use of required job performance aids?	1 = Yes 3 = No	
38. Is EXAMPLE HELP adequate?	1 = Help provides sufficient explanation. 2 = Help gives insufficient explanation. 3 = Help is confusing.	

• = TEE Analyst only

WORKSHEET C1.1 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
*39. Are EXAMPLES sequenced from easy to hard? (CONCEPTS only)	1 = Yes 3 = No	
*40. Are there enough EXAMPLES? (See job aid for criteria.)	1 = Yes 3 = No	
*41. Are NON-EXAMPLES included? (CONCEPTS only)	1 = Yes 3 = No	
42. Do DEMONSTRATIONS show how to correct/avoid common errors?	1 = Yes 3 = No	
*43. Are steps in a DEMONSTRATION the appropriate size? (See job aid.)	1 = Yes 2 = Step size is too small. 3 = Step size is too large.	
44. Are tasks and task steps DEMONSTRATED in the same sequence as they are performed in the real world?	1 = Yes 2 = Slightly out of sequence 3 = Very different sequence	
45. Are memory aids used? (PRACTICE REMEMBERING only)	1 = Used 3 = Not used	
46. Does each PRACTICE REMEMBERING item have the same content and format as the test item?	1 = Same 2 = Same content, different format 3 = Different content	
47. Is FEEDBACK provided for PRACTICE?	1 = FEEDBACK HELP is given. 2 = Correct answer only is given. 3 = No feedback is given.	
*48. Is FEEDBACK HELP adequate?	1 = Help gives enough explanation. 2 = Help gives insufficient explanation. 3 = Help is confusing.	
70. Is the technical quality of written or spoken material adequate? (See job aid for criteria. Make notes on specific problems.)	1 = Most criteria met 2 = Several criteria met 3 = Few criteria met	
71. Is the wording of written or spoken material easy for the students to understand?	1 = Yes, few hard words and long sentences 2 = Some hard words and long sentences 3 = Many hard words and long sentences	
72. Is the instructor's presentation or the narration easy to listen to?	1 = Yes 2 = Dull and monotonous 3 = Hard to listen to	

WORKSHEET C1.1 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
73. Is the instructor's presentation or the narration supported by visuals?	1 = Completely 2 = Partially 3 = Not at all	
74. Are visuals easily understood?	1 = Yes 2 = Understandable with effort 3 = Very hard to understand	
*75. Are the OBJECTIVES (TLOs and LOs) within each LESSON sequenced properly? (Prerequisites taught first.)	1 = Yes 3 = No	
80. Do course administration directions make realistic demands of students and instructors?	1 = All demands are realistic. 3 = Some demands are unrealistic. (Note what they are)	
81. Is the instructor/trainee ratio such that all students can see, hear, and receive feedback?	1 = Yes 2 = A few students cannot see, hear, and receive feedback. 3 = Many students cannot see, hear, and receive feedback.	
82. Does the instructor follow the methods in the Instructor Guide?	1 = Yes 2 = Follows to some extent 3 = Follows very little or not at all	
83. Does the instructor teach all of the content in the LESSON materials?	1 = Yes 2 = Much of the content 3 = Very little of the content (If 2 or 3, note what was left out.)	
84. Did the instructor limit his teaching to the content in the LESSON materials?	1 = Yes 3 = No (Please note what other things he taught.)	
85. Is there enough space for all of the trainees?	1 = Yes 2 = A little crowded 3 = Very cramped or some students can't fit in the space at all.	
86. Is instruction free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the instruction.	
87. Is the lighting appropriate for the training situation?	1 = Yes 2 = Students have trouble reading or seeing displays and equipment. 3 = Students cannot read or see displays and equipment.	
88. Is the temperature appropriate for training situation?	1 = Yes 2 = Temperature makes students uncomfortable. 3 = Temperature seriously interferes with learning.	
89. Is the instructor's attitude positive?	1 = Yes 3 = No	

WORKSHEET C1.1 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
90. Are frequent breaks provided? (5-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	
91. Is the speed of presentation appropriate?	1 = Yes 2 = Too slow 3 = Too fast	
92. Was the allotted training time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
93. Does the training device/equipment used in training function properly?	1 = Yes 2 = Minor malfunctions, little change from intended task performance 3 = Major malfunctions, substantial change from intended task performance	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during training that would interfere with learning? (Describe each one below. Rating = 3)		

* = TEE analyst only

WORKSHEET C1.2: OBSERVATION OF DEMONSTRATIONS

Date: _____

Data Collector: _____

Group/MOS #: _____ Course: _____

LESSON #: _____ LESSON Title: _____

Applicable TLO/LO#(s): _____

Training Location/Environment: _____

Starting Time: _____ Instructor ID#(s): _____

If any of the questions below are not applicable to the training event you are observing, write N/A in the description column.

Make one rating for each question. If several things could be rated for a question, take them all into account in making one rating for the event.

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
27. Are motivational techniques employed?	1 = Yes (Please describe them.) 3 = No	
28. Is the trainee attitude positive?	1 = Positive 2 = Indifferent 3 = Hostile or frustrated	
29. Is mastery of prerequisite skills verified prior to new instruction?	1 = Yes 2 = No	
31. Are OBJECTIVES presented to the student?	1 = Yes 3 = No	
36. Does training include instruction on the use of required job performance aids?	1 = Yes 3 = No	
38. Is EXAMPLE HELP adequate?	1 = Help provide sufficient explanation. 2 = Help gives insufficient explanation. 3 = Help is confusing.	
40. Are there enough EXAMPLES? (See job aid for criteria.)	1 = Yes 3 = No	
42. Do DEMONSTRATIONS show how to correct/avoid common errors?	1 = Yes 3 = No	

WORKSHEET C1.2 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
43. Are steps in a DEMONSTRATION the appropriate size? (See job aid.)	1 = Yes 2 = Step size is too small. 3 = Step size is too large.	
44. Are tasks and task steps DEMONSTRATED in the same sequence as they are performed in the real world?	1 = Yes 2 = Slightly out of sequence 3 = Very different sequence	
45. Are memory aids used? (PRACTICE REMEMBERING only)	1 = Used 3 = Not used	
46. Does each PRACTICE REMEMBERING item have the same content and format as the test item?	1 = Same 2 = Same content, different format 3 = Different content	
70. Is the technical quality of written or spoken material adequate? (See job aid for criteria. Make notes on specific problems.)	1 = Most criteria met 2 = Several criteria not met 3 = Few criteria met	
71. Is the wording of written or spoken material easy for the students to understand?	1 = Yes, few hard words and long sentences 2 = Some hard words and long sentences 3 = Many hard words and long sentences	
72. Is the instructor's presentation or the narration easy to listen to?	1 = Yes 2 = Dull and monotonous 3 = Hard to listen to	
73. Is the instructor's presentation or the narration supported by visuals?	1 = Completely 2 = Partially 3 = Not at all	
79. Are the OBJECTIVES (TLOs and LOs) within each LESSON sequenced properly? (Prerequisites taught first)	1 = Yes 3 = No	
80. Do course administration directions make realistic demands of students and instructors?	1 = All demands are realistic. 3 = Some demands are unrealistic. (Note what they are.)	
81. Is the instructor/trainee ratio such that all students can see, hear, and receive feedback?	1 = Yes 2 = A few students cannot see, hear, and receive feedback. 3 = Many students cannot see, hear, and receive feedback.	
82. Does the instructor follow the methods in the Instructor Guide?	1 = Yes 2 = Follows to some extent 3 = Follows very little or not at all	
83. Does the instructor teach all of the content in the LESSON materials?	1 = Yes 2 = Much of the content 3 = Very little of the content (If 2 or 3, note what was left out.)	

WORKSHEET C1.2 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
84. Did the instructor limit his teaching to the content in the LESSON materials?	1 = Yes 3 = No (Please note what other things he taught.)	
85. Is there enough space for all of the trainees?	1 = Yes 2 = A little crowded 3 = Very cramped or some students can't fit in the space at all.	
86. Is instruction free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the instruction.	
87. Is the lighting appropriate for the training situation?	1 = Yes 2 = Students have trouble reading or seeing displays and equipment. 3 = Students cannot read or see displays and equipment.	
88. Is the temperature appropriate for training situation?	1 = Yes 2 = Temperature makes students uncomfortable. 3 = Temperature seriously interferes with learning.	
89. Is the instructor's attitude positive?	1 = Yes 3 = No	
90. Are frequent breaks provided? (3-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	
91. Is the speed of presentation appropriate?	1 = Yes 2 = Too slow 3 = Too fast	
92. Was the allotted training time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
93. Does the training device/equipment used in training function properly?	1 = Yes 2 = Minor malfunctions, little change from intended task performance 3 = Major malfunctions, substantial change from intended task performance	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during training that would interfere with learning? (Describe each one below. Rating = 3)		

• • TEE analyst only

WORKSHEET C1.3: OBSERVATION OF ISOLATED PRACTICE (USING)

Date: _____

Data Collector: _____

Group/MOS #: _____ Course: _____

LESSON #: _____ LESSON Title: _____

Applicable TLO/LO#(s): _____

Training Location/Environment: _____

Starting Time: _____ Instructor ID#(s): _____

Ending Time: _____

Individual ☐ Crew ☐

If any of the questions below are not applicable to the training event you are observing, write N/A in the description column.

Make one rating for each question. If several things could be rated for a question, take them all into account in making one rating for the event.

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
27. Are motivational techniques employed?	1 = Yes (Please describe them.) 3 = No	
28. Is the trainee attitude positive?	1 = Positive 2 = Indifferent 3 = Hostile or frustrated	
30. Is mastery of prerequisite skills verified prior to new instruction?	1 = Yes 2 = No	
31. Are OBJECTIVES presented to the student?	1 = Yes 3 = No	
36. Does training include instruction on the use of required job performance aids?	1 = Yes 3 = No	
47. Any PRACTICE USING items sequenced from easy to hard?	1 = Yes 3 = No	
48. Do PRACTICE USING items provide opportunities for common errors to be made?	1 = Yes 3 = No	

WORKSHEET C1.3 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
50. Does PRACTICE USING integrate tasks as they are integrated in the "real world?"	1 = Yes 2 = Partially 3 = No, tasks are practiced separately.	
51. Are job performance aids (JPAs) usable?	1 = Easy to use 2 = Hard to use 3 = Unusable	
52. Do all students use the job performance aid (JPA)?	1 = Yes 2 = Up to 20% do not use JPA. 3 = More than 20% do not use JPA.	
53. Does the TASK LEVEL of the item match that of the test item(s)?	1 = Yes (2 and 3 — See table in job aid.)	
55. Does the FORMAT of the PRACTICE item match that of the test item(s)?	1 = Yes (2 and 3 — See table in job aid.)	
56. Do the CONDITIONS of each FINAL PRACTICE item match those of the test item(s)?	1 = Yes 2 = Slightly different 3 = Very different	
57. Do the STANDARDS of each FINAL PRACTICE item match those of the test item(s)?	1 = Yes 2 = Slightly different 3 = Very different	
58. Is FINAL PRACTICE free of external cues or help?	1 = Yes 2 = Hints given 3 = Answers are given away.	
61. Do all students PRACTICE?	1 = Yes 2 = Up to 20% of students do not PRACTICE. 3 = More than 20% of students do not PRACTICE.	
62. Do all students meet the required STANDARDS in FINAL PRACTICE?	1 = Yes 2 = Up to 20% of students do not. 3 = More than 20% of students do not.	
63. Is FEEDBACK provided for PRACTICE?	1 = FEEDBACK HELP is given. 2 = Correct answer only is given. 3 = No FEEDBACK is given.	

• = TEE Analyst only

WORKSHEET C1.3 (continued)

Date:

LESSON Title:

TEE QUESTION ¹	RATING (Circle the number)	DESCRIPTION
*69. IS FEEDBACK HELP adequate?	1 = Help gives enough explanation. 2 = Help gives insufficient explanation. 3 = Help is confusing.	
70. Is the technical quality of written or spoken material adequate? (See job aid for criteria. Make notes on specific problems.)	1 = Most criteria met 2 = Several criteria not met 3 = Few criteria met	
71. Is the wording of written or spoken material easy for the students to understand?	1 = Yes, few hard words and long sentences 2 = Some hard words and long sentences 3 = Many hard words and long sentences	
74. Are visuals easily understood?	1 = Yes 2 = Understandable with effort 3 = Very hard to understand	
*75. Are the OBJECTIVES (TLOs and LOs) within each LESSON sequenced properly? (Prerequisites taught first.)	1 = Yes 3 = No	
80. Do course administration directions make realistic demands of students and instructors?	1 = All demands are realistic 3 = Some demands are unrealistic. (Note what they are.)	
81. Is the instructor/trainee ratio such that all students can see, hear, and receive feedback?	1 = Yes 2 = A few students cannot see, hear, and receive feedback. 3 = Many students cannot see, hear, and receive feedback.	
82. Does the instructor follow the methods in the Instructor Guide?	1 = Yes 2 = Follows to some extent 3 = Follows very little or not at all	
83. Does the instructor teach all of the content in the LESSON materials?	1 = Yes 2 = Much of the content 3 = Very little of the content (If 2 or 3, note that was left out)	
84. Did the instructor limit his teaching to the content in the LESSON materials?	1 = Yes 3 = No (Please note what other things he taught.)	
85. Is there enough space for all of the trainees?	1 = Yes 2 = A little crowded 3 = Very cramped or some students can't fit in the space at all.	
86. Is instruction free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the instruction.	
87. Is the lighting appropriate for the training situation?	1 = Yes 2 = Students have trouble reading or seeing displays and equipment. 3 = Students cannot read or see displays and equipment.	

* = TEE Analyst only

WORKSHEET C1.3 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
88. Is the temperature appropriate for training situation?	1 = Yes 2 = Temperature makes students uncomfortable. 3 = Temperature seriously interferes with learning.	
89. Is the instructor's attitude positive?	1 = Yes 3 = No	
90. Are frequent breaks provided? (5-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	
92. Was the allotted training time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
93. Does the training device/equipment used in training function properly?	1 = Yes 2 = Minor malfunctions, little change from intended task performance 3 = Major malfunctions, substantial change from intended task performance	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during training that would interfere with learning? (Describe each one below. Rating = 3)		

• = TEE analyst only

WORKSHEET C1.4: OBSERVATION OF A PERFORMANCE TEST

Date: _____

Data Collector: _____

Group/MOS #: _____

Course: _____

Type of Test: LESSON ☐
Individual ☐

(LESSON #): _____ Final ☐
Crew ☐ Other _____

Applicable TLO/LO #s: _____

Test Location/Environment: _____

Starting Time: _____ Test Administrator (Instructor) ID #(s): _____

Ending Time: _____ Test Scorer (Instructor) ID #(s): _____

If any of the questions below are not applicable, write N/A in the Description column.

Make one rating for each question below. If several things could be rated for a question, take them all into account in making one rating for the test. If applicable, however, note which test items apply in the Description column. In a performance test, use a new worksheet each time the instructor directs the students to perform a new activity.

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
6. Do the CONDITIONS of the test item match the CONDITIONS of its OBJECTIVE?	1 = Exact match 2 = Minor mismatch 3 = Severe mismatch	
7. Do the STANDARDS of the test item match the STANDARDS of its OBJECTIVE?	1 = Exact match 2 = Minor mismatch 3 = Severe mismatch	
*10. Does the test item provide opportunities for common errors to be made?	1 = Yes 3 = No	
11. Is the language of the test item easy for students to understand?	1 = Easy 2 = Somewhat difficult 3 = Very difficult	
16. Is the test item tricky or misleading?	1 = Not misleading 2 = Somewhat misleading 3 = Very misleading	
18. When performance steps are scored, does the instructor use a checklist?	1 = Fills in completely 2 = Uses as a reference or fills in partially 3 = Does not use	
21. Are test administration directions complete?	1 = Directions are complete 2 = Directions provided, but incomplete or unclear 3 = Directions are not provided.	

WORKSHEET C1.4 (continued)

Dates:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
22. Do instructors follow the directions when administering the test?	1 = Yes 2 = Some variations from directions 3 = Significant variations from directions	
23. Are adequate test instructions provided to the student?	1 = Yes 2 = Instructions provided, but unclear 3 = No instructions provided	
24. Does the FINAL TEST integrate tasks as they are integrated in the "real world?"	1 = Yes 2 = Partially 3 = No, tasks are tested separately.	
25. Are tasks and task steps tested in the same sequence as they are performed in the "real world?"	1 = Yes 2 = Slightly out of sequence 3 = Very different sequence	
26. Is the test free of external cues or help?	1 = Yes 2 = Hints given 3 = Answers are given away.	
26. Is the test free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the testing.	
27. Is the lighting appropriate for the testing situation?	1 = Yes 2 = Students have trouble reading or seeing displays and equipment 3 = Students cannot read or see displays and equipment	
28. Is the temperature appropriate for testing situation?	1 = Yes 2 = Temperature makes students uncomfortable. 3 = Temperature seriously interferes with testing.	
29. Is the instructor's attitude positive?	1 = Yes 3 = No	
90. Are frequent breaks provided? (3-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	
92. Was the allotted testing time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
93. Does the training device/equipment used in testing function properly?	1 = Yes 2 = Minor malfunctions, little change from intended task performance 3 = Major malfunctions, substantial change from intended task performance	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during testing that would interfere with learning? (Describe each one below. Rating = 1)		

WORKSHEET C1.5: OBSERVATION OF A WRITTEN TEST

Date: _____

Data Collector: _____

Group/MOS #: _____ Course: _____

Type of Test: LESSON ☐ (LESSON #): _____ Final ☐
 Individual ☐ Crew ☐ Other ☐ _____

Applicable TLO/LO #s: _____

Test Location/Environment: _____

Starting Time: _____ Test Administrator (Instructor) ID #(s): _____

Ending Time: _____ Test Scorer (Instructor) ID #(s): _____

If any of the questions below are not applicable, write N/A in the Description column.

Make one rating for each question below. If several things could be rated for a question, take them all into account in making one rating for the test. If applicable, however, note which test items apply in the Description column.

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
21. Are test administration directions complete?	1 = Directions are complete. 2 = Directions provided, but incomplete or unclear 3 = Directions are not provided.	
22. Do instructors follow the directions when administering the test?	1 = Yes 2 = Some variations from directions 3 = Significant variations from directions	
23. Are adequate test instructions provided to the student?	1 = Yes 2 = Instructions provided, but unclear 3 = No instructions provided	
24. Is the test free of external cues or help?	1 = Yes 2 = Hints given 3 = Answers are given away.	
25. Is the test free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the test.	
26. Is the lighting appropriate for the testing situation?	1 = Yes 2 = Students have trouble reading. 3 = Students cannot read.	
27. Is the temperature appropriate for testing situation?	1 = Yes 2 = Temperature makes students uncomfortable. 3 = Temperature seriously interferes with the test.	

* = TEE Analyst only

WORKSHEET C1.5 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
89. Is the instructor's attitude positive?	1 = Yes 3 = No	
90. Are frequent breaks provided? (5-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	
92. Was the allotted testing time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during testing that would interfere with learning? (Describe each one below. Rating = 3)		

• = TEE analyst only

WORKSHEET C1.6: OBSERVATION OF AN ORAL TEST

Date: _____

Data Collector: _____

Group/MOS #: _____ Courses: _____

Type of Test: LESSON ☐ (LESSON #): _____ Final ☐
 Individual ☐ Crew ☐ Other ☐

Applicable TLO/LO #s: _____

Test Location/Environment: _____

Starting Time: _____ Test Administrator (Instructor) ID #(s): _____

Ending Time: _____ Test Scorer (Instructor) ID #(s): _____

If any of the questions below are not applicable, write N/A in the Description column.

Make one rating for each question below. If several things could be rated for a question, take them all into account in making one rating for the test. If applicable, however, note which test items apply in the Description column. In a performance test, use a new worksheet each time the instructor directs the students to perform a new activity.

THE QUESTION	RATING (Circle the number)	DESCRIPTION
6. Do the CONDITIONS of the test item match the CONDITIONS of its OBJECTIVE?	1 = Exact match 2 = Minor mismatch 3 = Severe mismatch	
7. Do the STANDARDS of the test item match the STANDARDS of its OBJECTIVE?	1 = Exact match 2 = Minor mismatch 3 = Severe mismatch	
11. Is the language of the test item easy for students to understand?	1 = Easy 2 = Somewhat difficult 3 = Very difficult	
14. Is the answer to the test item dependent on answering previous item(s) correctly?	1 = Answer not dependent on other items 3 = Previous items must be correctly answered.	
15. Are sketches and diagrams used in the test item easy to understand?	1 = Easy to understand 2 = Somewhat confusing 3 = Very confusing	
16. Is the test item tricky or misleading?	1 = Not misleading 2 = Somewhat misleading 3 = Very misleading	
21. Are test administration directions complete?	1 = Directions are complete. 2 = Directions provided, but incomplete or unclear. 3 = Directions are not provided.	

WORKSHEET C1.6 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
22. Do instructors follow the directions when administering the test?	1 = Yes 2 = Some variations from directions 3 = Significant variations from directions	
23. Are adequate test instructions provided to the student?	1 = Yes 2 = Instructions provided, but unclear 3 = No instructions provided	
26. Is the test free of external cues or help?	1 = Yes 2 = Hints given 3 = Answers are given away.	
26. Is the test free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the test.	
27. Is the lighting appropriate for the testing situation?	1 = Yes 2 = Students have trouble reading or seeing displays and equipment. 3 = Students cannot read or see displays and equipment.	
28. Is the temperature appropriate for testing situation?	1 = Yes 2 = Temperature makes students uncomfortable. 3 = Temperature seriously interferes with the test.	
29. Is the instructor's attitude positive?	1 = Yes 3 = No	
90. Are frequent breaks provided? (5-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	
92. Was the allotted testing time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
93. Does the training device/equipment used in testing function properly?	1 = Yes 2 = Minor malfunctions, little change from intended task performance 3 = Major malfunctions, substantial change from intended task performance	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during testing that would interfere with learning? (Describe each one below. Rating = 3)		

• = TEE Analyst only

WORKSHEET C1.7: OBSERVATION OF INTEGRATED PRACTICE

Date: _____

Data Collector: _____

Group/MOS #: _____ Course: _____

LESSON #: _____ LESSON Title: _____

Applicable TLO/LO #(s): _____

Training Location/Environment: _____

Starting Time: _____ Instructor ID #(s): _____

Ending Time: _____

Individual ☐

Crew ☐

If any of the questions below are not applicable to the training event you are observing, write N/A in the Description column.

Make one rating for each question. If several things could be rated for a question, take them all into account in making one rating for the event.

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
27. Are motivational techniques employed?	1 = Yes (Please describe them.) 3 = No	
28. Is the trainee attitude positive?	1 = Positive 2 = Indifferent 3 = Hostile or frustrated	
29. Are course ENTRY SKILLS reviewed?	1 = Review with practice 2 = Review with no practice 3 = No review	
30. Is mastery of prerequisite skills verified prior to new instruction?	1 = Yes 2 = No	
31. Are OBJECTIVES presented to the student?	1 = Yes 3 = No	
*48. Do PRACTICE USING items provide opportunities for common errors to be made?	1 = Yes 3 = No	
50. Does PRACTICE USING integrate tasks as they are integrated in the "real world?"	1 = Yes 2 = Partially 3 = No, tasks are practiced separately.	

WORKSHEET C1.7 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
51. Are job performance aids (JPAs) usable?	1 = Easy to use 2 = Hard to use 3 = Unusable	
52. Do all students use the job performance aid (JPA)?	1 = Yes 2 = Up to 20% do not use JPA 3 = More than 20% do not use JPA	
53. Does the TASK LEVEL of the PRACTICE item match that of the test item(s)?	1 = Yes (2 and 3 -- See table in job aid.)	
55. Does the FORMAT of the PRACTICE item match that of the test item(s)?	1 = Yes (2 and 3 -- See table in job aid.)	
56. Do the CONDITIONS of each FINAL PRACTICE item match those of the test item(s)?	1 = Yes 2 = Slightly different 3 = Very different	
57. Do the STANDARDS of each FINAL PRACTICE item match those of the test item(s)?	1 = Yes 2 = Slightly different 3 = Very different	
58. Is FINAL PRACTICE free of external cues or help?	1 = Yes 2 = Hints given 3 = Answers are given away.	
61. Do all students PRACTICE?	1 = Yes 2 = Up to 20% of students do not PRACTICE. 3 = More than 20% of students do not PRACTICE.	
62. Do all students meet the required STANDARDS in FINAL PRACTICE?	1 = Yes 2 = Up to 20% of students do not. 3 = More than 20% of students do not.	
63. Is FEEDBACK provided for PRACTICE?	1 = FEEDBACK HELP is given. 2 = Correct answer only is given. 3 = No FEEDBACK is given.	
64. IS FEEDBACK HELP adequate?	1 = Help gives enough explanation. 2 = Help gives insufficient explanation. 3 = Help is confusing.	
65. Is TEAM PRACTICE provided?	1 = Yes 3 = No	

• = TEE Analyst only

WORKSHEET C1.7 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
66. Are TEAM PRACTICE CONDITIONS is the same as (or as close as possible to) those of the real task?	1 = Yes 2 = Slightly different 3 = Very different	
67. Is TEAM PRACTICE FEEDBACK provided?	1 = FEEDBACK HELP is given. 2 = Success/Failure feedback only is given. 3 = No FEEDBACK is given.	
*68. Is FEEDBACK HELP for TEAM PRACTICE adequate?	1 = Help gives enough explanation. 2 = Help gives insufficient explanation. 3 = Help is confusing.	
70. Is the technical quality of written or spoken material adequate? (See job aid for criteria. Make notes on specific problems.)	1 = Most criteria met 2 = Several criteria not met 3 = Few criteria met	
71. Is the wording of written or spoken material easy for the students to understand?	1 = Yes, few hard words and long sentences 2 = Some hard words and long sentences 3 = Many hard words and long sentences	
72. Is the instructor's presentation or the narration easy to listen to?	1 = Yes 2 = Dull and monotonous 3 = Hard to listen to	
80. Do course administration directions make realistic demands of students and instructors?	1 = All demands are realistic. 3 = Some demands are unrealistic. (Note what they are)	
81. Is the instructor/trainee ratio such that all students can see, hear, and receive feedback?	1 = Yes 2 = A few students cannot see, hear, and receive feedback. 3 = Many students cannot see, hear, and receive feedback.	
82. Does the instructor follow the methods in the Instructor Guide?	1 = Yes 2 = Follows to some extent 3 = Follows very little or not at all	
83. Does the instructor teach all of the content in the LESSON materials?	1 = Yes 2 = Much of the content 3 = Very little of the content (If 2 or 3, note what was left out.)	
84. Did the instructor limit his teaching to the content in the LESSON materials?	1 = Yes 3 = No (Please note what other things he taught)	
85. Is there enough space for all of the trainees?	1 = Yes 2 = A little crowded 3 = Very cramped or some students can't fit in the space at all.	

• = TEE Analyst only

WORKSHEET C1.7 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
86. Is instruction free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the instruction.	
87. Is the lighting appropriate for the training situation?	1 = Yes 2 = Students have trouble reading or seeing displays and equipment. 3 = Students cannot read or see displays and equipment.	
88. Is the temperature appropriate for training situation?	1 = Yes 2 = Temperature makes students uncomfortable. 3 = Temperature seriously interferes with learning.	
89. Is the instructor's attitude positive?	1 = Yes 3 = No	
90. Are frequent breaks provided? (5-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	
92. Was the allotted training time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
93. Does the training device/equipment used in training function properly?	1 = Yes 2 = Minor malfunctions, little change from intended task performance 3 = Major malfunctions, substantial change from intended task performance	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during training that would interfere with learning? (Describe each one below. Rating = 3)		

• = TEE Analyst only

WORKSHEET C1.8: OBSERVATION OF INDIVIDUAL STUDY

Date: _____

Data Collector: _____

Group/MOS #: _____ Course: _____

LESSON #: _____ LESSON Title: _____

Applicable TLO/LO #(s): _____

Training Location/Environment: _____

Starting Time: _____ Instructor ID #(s): _____

Ending time: _____

If any of the questions below are not applicable to the training event you are observing, write N/A in the Description column.

Make one rating for each question. If several things could be rated for a question, take them all into account in making one rating for the event.

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
28. Is the trainee attitude positive?	1 = Positive 2 = Indifferent 3 = Hostile or frustrated	
29. Do course administration directions, make realistic demands of students and instructors?	1 = All demands are realistic. 3 = Some demands are unrealistic. (Note what they are.)	
32. Is there enough space for all of the trainees?	1 = Yes 2 = A little crowded 3 = Very cramped or some students can't fit in the space at all.	
36. Is instruction free of distractions?	1 = Yes 2 = Distractions are annoying. 3 = Distractions seriously interfere with the instruction.	
37. Is the lighting appropriate for the training situation?	1 = Yes 2 = Students have trouble reading or seeing displays and equipment. 3 = Students cannot read or see displays and equipment.	
38. Is the temperature appropriate for training situation?	1 = Yes 2 = Temperature makes students uncomfortable 3 = Temperature seriously interferes with learning	
39. Are frequent breaks provided? (3-10 minute break every hour)	1 = Yes 2 = Breaks too short or infrequent 3 = Breaks not provided	

WORKSHEET C1.8 (continued)

Date:

LESSON Title:

TEE QUESTION	RATING (Circle the number)	DESCRIPTION
92. Was the allotted training time too long or too short?	1 = Appropriate length 2 = Too long 3 = Too short	
93. Does the training device/equipment used in training function properly?	1 = Yes 2 = Minor malfunctions, little change from intended task performance 3 = Major malfunctions, substantial change from intended task performance	
94. Is there anything else unusual about the lesson materials, or do any other critical incidents occur during training that would interfere with learning? (Describe each one below. Rating = 3)		

* = TEE Analyst only

Date: _____

Evaluator: _____

**WORKSHEET C1.9: RATING OF PROCESS EVALUATION QUESTIONS
COVERING A SERIES OF TRAINING EVENTS**

Group/MOS #: _____ Course: _____

Lesson #: _____ Lesson Title: _____

Applicable TLO/LO #(s): _____

Training Location/Environments: _____

Starting Times: _____ Dates: _____

Data Collectors: _____

Instructor ID #(s): _____

Answer each of the following TEE questions by examining the process evaluation data collection worksheets that apply to the series of presentation components for each task in the lesson.

- *32. Are the basic PRESENTATION COMPONENTS present? (See guidance and tables in Appendix A for rating.)

Task #/s

Rating

- *75. Are the OBJECTIVES (TLOs and LOs) within each LESSON sequenced properly? (Prerequisites taught first.)
- 1 = Yes
3 = No

Rating

- *76. Are the LESSONS sequenced properly within the course? (Have all of the prerequisites for tasks taught in this LESSON been taught in previous LESSONS?)
- 1 = Yes
3 = No

Rating _____

WORKSHEET C1.10: TRAINEE REACTION QUESTIONNAIRE

Please give us your ideas about the training you have just finished. Be honest. Your answers will not be shown to anyone in your command. Please do not put your name on this questionnaire.

Check how you feel about each statement in the boxes on the right. Answer the question below each statement.

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. I enjoyed the training. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Why or why not?

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2. I was pleased with my performance in the training. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Why or why not?

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 3. There was something about the training that made me <u>not</u> want to learn. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List everything that made you not want to learn:

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 4. There was something in the training that made it hard to learn. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List everything that made it hard to learn:

5. Please make any other comments you would like to make about the course.

Date: _____

Data Collector: _____

WORKSHEET C1.11: TRAINEE REACTION INTERVIEW FORM

Group/Mos #: _____ Course: _____

Interview Location/Environment: _____

Interview Starting Time: _____ Instructor ID #(s): _____

Ask each question orally along with the five possible answers, check the appropriate box, and record the main ideas of the trainee's other responses in the space below each question.

Be sure he understands which training event you are asking about.

- | | Strongly
Disagree | Didn't
Like | Undecided | Liked | Strongly
Agree |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. How much did you like
or not like the training? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Why or why not?

- | | Very
Unhappy | Unhappy | Undecided | Happy | Very
Happy |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2. How happy or unhappy
were you with how you
did in the training? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Why or why not?

Date _____ Lesson Title _____

- | | Definitely
Yes | Yes | Undecided | No | Definitely
Not |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 3. Was there anything in the training that turned you off (made you not want to learn)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List **everything** that turned you off:

- | | Definitely
Yes | Yes | Undecided | No | Definitely
Not |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 4. Was there anything about the training that made it hard to learn? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List everything that made it hard to learn:

5. Please make any other comments you would like to make about the course.

WORKSHEET C1.12: INSTRUCTOR REACTION QUESTIONNAIRE

Please give us your ideas about the training event you have just conducted. Be honest. Your answers will not be shown to anyone in your command.

Check the appropriate box for each statement below and supply the other information requested.

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. The information in the training materials was generally clear. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which material was unclear:

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2. Enough information was provided to conduct the course. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which you needed more information:

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 3. The information in the material was technically accurate. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which materials were inaccurate:

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 4. I had access to all student and instructor materials available for the course. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which you could not obtain the materials:

- | | Strongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 5. The students had no trouble learning any of the tasks in the course. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List the tasks the students had trouble learning:

Give the reasons you think they had trouble with each one:

6. Please make any other comments you would like to make about the course:

Date: _____

Data Collector: _____

WORKSHEET C1.13: INSTRUCTOR REACTION INTERVIEW FORM

Group/Mos #: _____ Course: _____

Interview Location/Environment: _____

Interview Starting time: _____ Instructor ID #(s): _____

Ask each question orally along with the five possible answers, check the appropriate box, and record the instructor's other responses in the space below each question. Be sure he understands which training event you are asking about.

- | | Very
Confusing | Confusing | Undecided | Clear | Very
Clear |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Was the information in the training materials generally clear? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which material was unclear:

- | | Definitely
Not | No | Undecided | Yes | Definitely
Yes |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2. Did you have directions to give the course? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which you needed more information:

- | | Definitely
Not | No | Undecided | Yes | Definitely
Yes |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 3. Was the information in the material technically accurate? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which materials were inaccurate:

- | | None | About
1/4 | About
1/2 | About
3/4 | All |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 4. Did you have all the materials available for the course? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List tasks for which you could not obtain the materials:

- | | Definitely
Not | No | Undecided | Yes | Definitely
Yes |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 5. Did students have trouble learning any of the tasks in the course? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

List the tasks the students had trouble learning:

Give the reasons you think they had trouble with each one:

Additional tasks students had
trouble learning:

Reasons you think they had
trouble with each one:

6. Please make any other comments you would like to make about the course:

Sheet #: _____

Course:

H-41

Date: _____

Evaluator: _____

WORKSHEET D3.1: TRAINEE CHARACTERISTICS

Course: _____ Type: Initial ☐ Transition ☐
Refresher ☐
Other: _____

Duty Positions:		Number in title:	
Category:	Specified:	Actual:	Notes:
Grade			
Academic			
Age			
Years in Army			
Previous job experience			
Special aptitudes/ qualifications			
Method of selection for this training			
Course grades from similar MOS training			
Commander's performance reports/ recommendations			
Other:			

Date: _____

Evaluator: _____

WORKSHEET D3.2: INSTRUCTOR CHARACTERISTICS

Course: _____ Times Given: _____

Code No.: _____ MOS: _____

Category:	Specified:	Actual:	Notes:
Grade			
Academic			
Age			
Years in Army			
Training in delivery of training			
Experience in training delivery			
Experience in subject matter			
Involvement with course development			
Involvement with hardware development			
Special aptitudes/qualifications			
Method of selection to delivery this training			
Other _____ _____ _____			

- How instructor was/will be evaluated? _____
- Penalties/rewards for trainee performance _____

Evaluator: _____

Test Condition/Situation: _____

Type of Test: Individual ☐ Crew ☐ Code No: _____
 Final ☐ Within-Course ☐ Entry Test ☐
 Written ☐ Hands-On ☐ Pretest ☐

Position: _____

[illegible]

Date: _____

Evaluator: _____

Course: _____

Test: _____

WORKSHEET E2.1: SUMMARY OF TEST ADEQUACY DATA FOR OBJECTIVES

Task/TLO or LO:			Page ____ of ____ for this objective		
PRODUCT			PROCESS		
Questions by test item:			Questions by test item:		
item # ____	item # ____	item # ____	item # ____	item # ____	item # ____
item # ____	item # ____	item # ____	item # ____	item # ____	item # ____
item # ____	item # ____	item # ____	item # ____	item # ____	item # ____
Questions by objective (TLO or LO):			Questions by objective (TLO or LO):		

Date: _____

Evaluator: _____

Course: _____

Test: _____

WORKSHEET E2.2: SUMMARY OF TEST ADEQUACY DATA FOR THE TEST

PRODUCT	PROCESS

Date: _____

Evaluator: _____

Course: _____

Lesson: _____

WORKSHEET E2.3: SUMMARY OF PRESENTATION DATA

TASK/TLO or LO:	
PRODUCT	PROCESS
Questions by presentation components, series of components, LO, or task/TLO:	Questions by presentation component, series of components, training event, LO, or task/TLO:
Questions by lesson (each one that applies to this LO or task/TLO, by set of LOs or tasks/TLOs (of which this LO or task/TLO is one), or by course:	Questions by lesson (each one that applies to this LO or task/TLO, by set of LOs or tasks/TLOs (of which this LO or task/TLO is one), or by course:

Instructor Code: _____

Course: _____

[illegible]

Date: _____

Evaluator: _____

Course: _____

WORKSHEET E3.2: DATA SUMMARY BY TRAINEE

Trainee Code	Entry Test No Go (X)	Pre-Test Go (+)	Within-Course No Go (X)	Final Exam No Go (X)
# No Go		(#Go)		
% No Go		(%Go)		
Test Adequacy				

Trainee Characteristics Deficiencies: _____

Date: _____
 Evaluator: _____
 Course: _____
 Sheet #: _____

WORKSHEET E3.3 DATA SUMMARY BY FUNCTION

