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From: Commandant of the Marine Corps
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Subj: SYSTEMS APPROACH TO TRAINING USER'S GUIDE, (SHORT TITLE: SAT USERS GUIDE)

Ref: (a) MCO 1553.2B
(b) MCO 1553.3A

1. Purpose. Per references (a) and (b), this user's guide establishes the procedures and business rules for the application of the SAT process to formal school curriculum development and unit training management for the operating forces. The SAT User's Guide has been prepared as an extension of Marine Corps Training and Readiness Manuals. Developed in support of instructional theory and the Department of Defense MIL-STD-1379D (Military Training Programs), the SAT is the primary source of information for instructional program development and management for Marine Corps Formal Learning Centers (FLC) and formal courses of instruction collocated at other military service schools. It is also useful in assisting in the development of unit training programs in the Operating Forces.

2. Scope. The Systems Approach to Training, based on Instructional Systems Development (ISD), was established to manage the process of analyzing, designing, developing, implementing, and evaluating instructional programs. To illustrate the process of instructional program development from start to finish, the five phases of SAT are presented sequentially in this Guide. In actuality these phases overlap and are interrelated, and some procedures of each phase may be performed at various times throughout the life of an instructional program. The SAT is a dynamic flexible system that, when applied, provides for effective and efficient instruction.

3. Changes. As a result of the 2009 Formal School Management Symposium, this edition of the SAT has been significantly reduced in scope. Chapters on Adult Education, Formal School Administration, and Appendixes have moved to different documents. Adult Education will be captured in a higher level doctrinal publication and school administration and the appendixes will be located in reference (a). Recommendations for further improvements to this publication are always encouraged from commands; recommendations should be submitted to the Training Management and Evaluation Branch, Ground Training Division, TECOM.

4. Information. CG, TECOM will update the SAT as necessary to provide current and relevant procedures to commanders, and to ensure current best practices are available for use by Marine Corps FLCs. All questions pertaining to the Marine Corps Ground T&R Program, SAT process, and Unit Training Management should be directed to: Commanding General, TECOM (Ground Training Division, C 469), 1019 Elliot Road, Quantico, VA 22134.

5. Command. This Directive is applicable to the Marine Corps Total Force.

6. Certification. Reviewed and approved this date.

R. C. FOX
By direction

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SAT USERS GUIDE

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CHAPTER 1

OVERVIEW

1000. INTRODUCTION. The mission of any instructional system is to determine instructional needs and priorities, develop effective and efficient solutions to meet these needs, implement these solutions in a competent manner, and assess the degree to which the outcomes of the system meet the specified needs. To achieve this in the most effective way possible, a systems approach to the process and procedures of instruction was developed. The resulting model, ISD, was later adopted by the Marine Corps as the Systems Approach to Training (SAT). Continued operations in Iraq and Afghanistan have caused all military services to advance their institutional approaches to training and education to better prepare Marines for the complex environment they find themselves operating in. In the future, the manual will be modified to be more inclusive of procedures that accommodate, and encourage, the cognitive and affective development of Marines, particularly as addressed in leader courses. The model, whether it is referred to as ISD, or SAT is a recognized standard governing the instructional process in the private sector and within the Department of Defense (DoD) and other government agencies.

1001. GOAL OF INSTRUCTION

a. The goal of Marine Corps instruction is to develop performance-based, criterion- referenced instruction that promotes student transfer of learning from the instructional setting to the job. For a learning objective to be achieved, instruction must be both effective and efficient. Instruction is effective when it teaches learning objectives based on job performance requirements and efficient when it makes the best use of resources.

b. SAT is a comprehensive yet flexible process that identifies what is performed on the job, what should be instructed, and how this instruction should be developed, implemented, and evaluated. This systematic approach ensures that what is being instructed are those tasks that are most critical to successful job performance. It also ensures that the instructional approach chosen is the most time and cost efficient. The SAT process further identifies standards of performance and learning objectives. This ensures that students are evaluated on their ability to meet these objectives and that instructional courses are evaluated based on whether or not they allow student mastery of these objectives. Finally, the SAT identifies needed revisions to instruction and allows these revisions to be made to improve instructional program effectiveness and efficiency.

1002. INTENT OF SAT

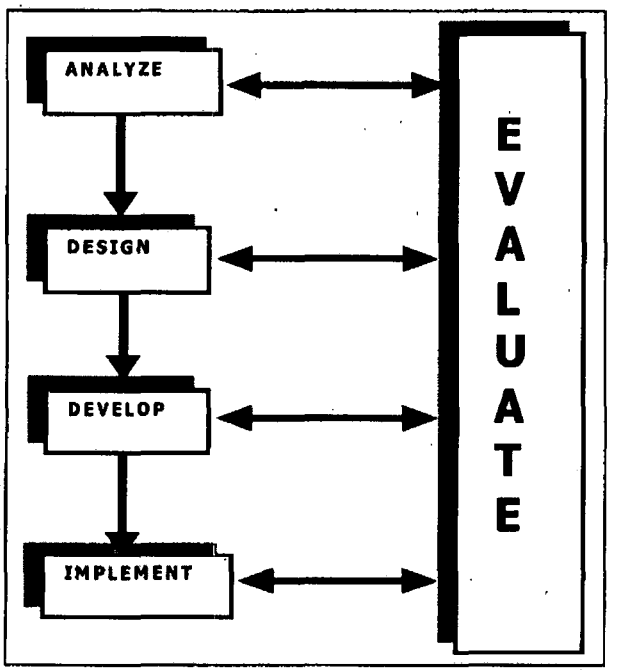
a. The SAT was created to manage the instructional process for analyzing, designing, developing, implementing, and evaluating instruction. The SAT serves as a blueprint for organizing or structuring the instructional

process. The SAT is a set of comprehensive processes, guidelines, tools, and techniques needed to close the gap between current and desired job performance through instructional intervention.

b. The Marine Corps originally targeted the SAT for initial job training in FLCs, but the comprehensive system can be applied to Managed On-the-Job Training in the operating forces and supporting establishment. SAT although slightly modified, is also used to manage Unit Training Management Programs. Refer to MCRP 3-0A, Unit Training Management (UTM) Guide for specific guidance on applying SAT to UTM.

1003. BENEFIT OF SAT

a. The Systems Approach to Training is a dynamic, flexible system for developing and implementing effective and efficient instruction to meet current and projected needs. The SAT process is flexible in that it accounts for individual differences in ability, rate of learning, motivation, and achievement to capitalize on the opportunity for increasing the effectiveness and efficiency of instruction. The SAT process reduces the number of school management decisions that have to be made subjectively and, instead, allows decisions to be made based on reasonable conclusions which are based on carefully collected and analyzed data. More than one solution to an instructional problem may be identified through the SAT; however, the selection of the best solution is the goal.



b. The SAT model allows any one of the five phases, and their associated processes, to occur at any time. In addition, each phase within SAT further builds upon the previous phase, providing a system of checks and balances to

ensure all instructional data is accounted for and that revisions to instructional materials are identified and made.

c. It is not the intent of the SAT process to create an excessive amount of paperwork, forms, and reporting requirements that must be generated by each FLC conducting instruction. This would serve only to detract from the instructional program. The SAT process does not provide a specific procedure for every instructional situation that can be encountered. Instead, it presents a generalized approach that can be adapted to any instructional situation.

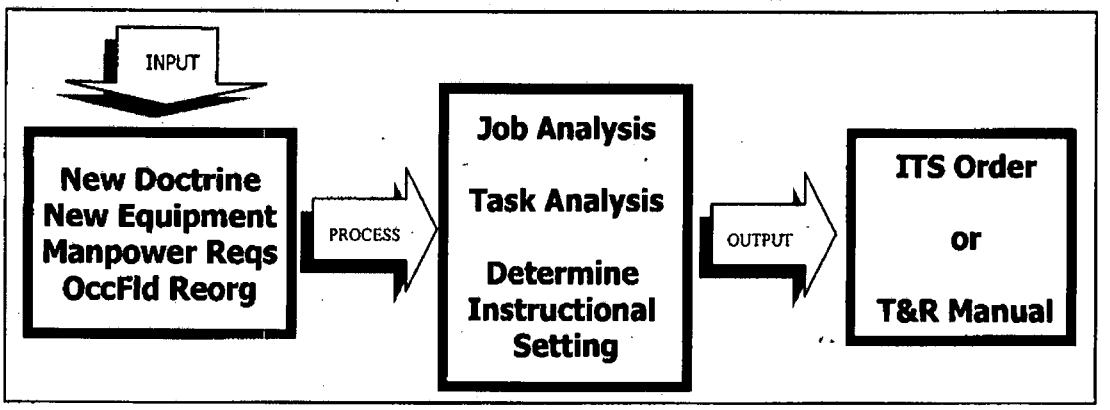
(1) SAT Phases. The SAT model simplifies and standardizes the instructional process into manageable subsets. The SAT process is made up of five distinct phases, each serving a specific purpose. The five phases are Analyze, Design, Develop, Implement, and Evaluate. Each of these phases involves inputs, processes, and outputs. The successive phases of the SAT build upon the outputs of the previous phase(s).

(a) Analyze. During the Analyze Phase of SAT, a particular job or Occupational Field/Military Occupational Specialty (OccFld/MOS) is analyzed by CG, TECOM (C46) to determine what job holders perform on the job, the order in which they perform it, and the standard of performance necessary to adequately perform the job. The result, or output, of the Analysis Phase is Individual Training Events (ITEs) as part of a Training and Readiness (T&R) Manual. Training events are behavior statements that define job performance in the Marine Corps and serve as the basis for all Marine Corps instruction. The three main processes of the Analysis Phase are:

1. Job Analysis. Job or occupational analysis is performed to determine what the job holder must know or do on the job. Job analysis results in a verified list of all duties and tasks performed on the job.

2. Task Analysis. Task analysis (sometimes called Training Analysis) is performed to determine the job performance requirements requisite of each task performed on the job. Job performance requirements include a task statement, conditions, standard, performance steps, administrative instructions, and references. Job performance requirements in the Marine Corps are defined by ITEs. ITEs define the measures of performance that are to be used in diagnosing individual performance and evaluation of instruction.

3. Determine Instructional Setting. The third process in the Analysis Phase involves determining the instructional setting for each individual training standard task behavior. Instructional setting is important because it defines who is responsible for instructing the task and the level of proficiency the student must achieve when performing the task in an instructional environment. TECOM (C 469) is responsible for determining the organization responsible for conducting the instruction and the level of instruction assigned to each task. This is done after ITEs/T&R are developed. When determining instructional setting, two guiding factors must be used - effectiveness and efficiency. Seek the best program within acceptable costs while meeting the learning requirement.

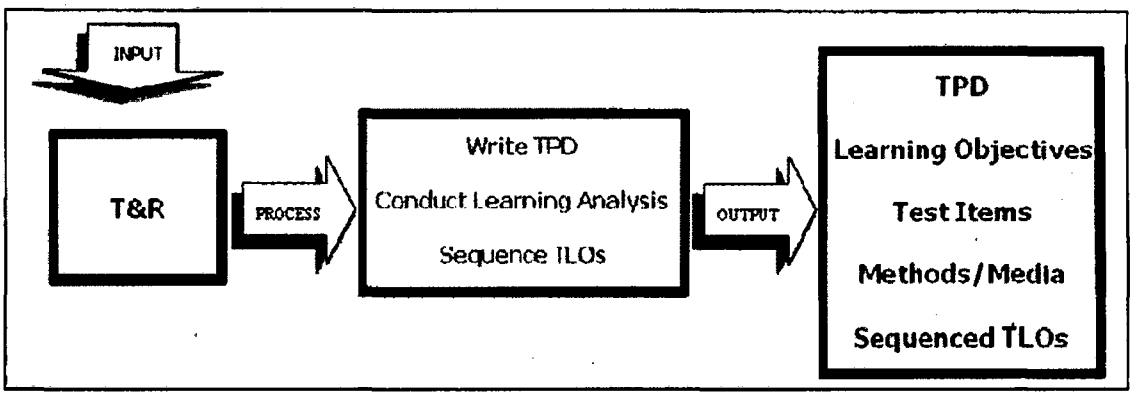


(b) Design. During the Design Phase of SAT, FLC instructional developers equate task performance under job conditions to task performance within the instructional setting. The goal of this phase is to simulate as closely as possible the real-world job conditions within the instructional environment. The closer the instructional conditions are to the real world, the more likely it is that the student will transfer the learning to the job. The Design Phase is made up of three separate processes, each of which has a specific purpose:

1. Write a Target Population Description (TPD). The TPD defines the student population entering a course.

2. Conduct Learning Analysis. The learning analysis is conducted to develop the learning objectives, test items, and methods/media. The learning analysis describes what the students will do during instruction, what they will be tested on, and what methods and media are appropriate to maximize student learning and transfer of knowledge and skills to the job setting.

3. Sequence Learning Objectives. Learning objectives are sequenced to allow students to make logical transitions from one subject to the next. Sequenced learning objectives provide efficient instruction and serve as a draft course structure.



(c) Develop. The Develop Phase of SAT builds on the outcomes of the Analyze and Design Phases. The Analyze Phase identifies those tasks to be instructed and the desired standard to which those tasks must be performed. The Design Phase outlines how to reach the instructional goals determined in the Analyze Phase by converting job tasks to tasks taught in the instructional environment, and further builds the foundation for instruction. During the Develop Phase, instructional developers from the FLC produce Course Descriptive Data (CDD), the Program of Instruction (POI) and the Master Lesson File (MLF). The processes of the Develop Phase are:

1. Develop a Course Structure. The course structure is a detailed chronological document identifying the implementation plan for a course.

2. Develop Concept Cards. Academic and administrative concept cards are created to assign resources within the formal FLC to lessons, evaluation, and events.

3. Conduct an Operational Risk Assessment (ORA). An ORA will be conducted on each lesson/event within a POI. The associated ORA tools will be incorporated into the Master Lesson File (MLF).

4. Develop Lesson Material. Lesson plans, student materials supplemental student materials, (optional), media, the Instructor Preparation Guide (IPG), are all lesson materials to be used during the Implement Phase.

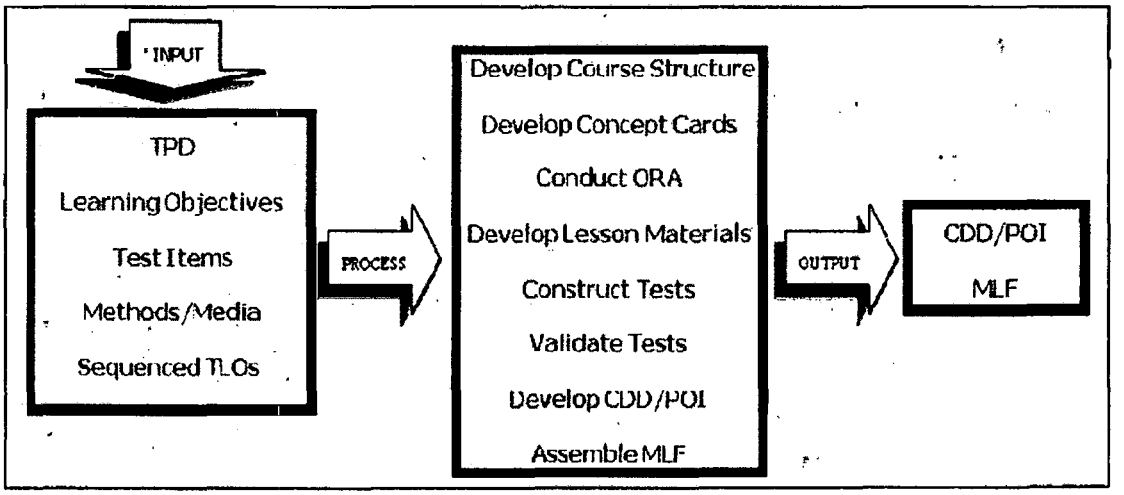
5. Construct Tests. Constructing a test involves selecting and placing the test items from the Learning Objective Worksheet (LOW) on the appropriate test. It also involves providing ample instructions to the student, instructions to the evaluation, and developing the grading criteria for each test given in the course.

6. Validate Instruction. The goal of validation is to determine the effectiveness of instructional material prior to implementation.

7. Develop Program of Instruction (POI). The CDD as section I of the POI provides an estimate of the resources required to administer a

course, and the remainder of the POI provides a detailed description of the course. This document records the FLC's plan for satisfying the training requirements listed in the T&R Manual.

8. Assemble A Master Lesson File. One Master Lesson File (MLF) is compiled for EVERY class taught at the FLC in order to provide continuity of instruction.



(d) Implement. During the Implement Phase of SAT, instructors within the FLC prepare the class and deliver the instruction, test, and conduct after- lesson management. The purpose of the Implement Phase is the effective and efficient delivery of instruction to promote student understanding of material and to ensure the transfer of student knowledge and skills from the instructional setting to the job. The processes of the Implement Phase are:

1. Review Lesson Materials. Reviewing lesson material involves all those activities that instructors must perform before preparing and conducting instruction. Instructors must have a clear understanding of all aspects of the lesson. This is accomplished by reviewing the course/training schedule, the MLF, and tests. By reviewing these items the instructor can identify any conflicts, questions, or potential problems before the rehearsals begin. More importantly, the instructor can make required adjustments prior to delivering the instruction to the students. The instructor must ensure the lesson plan, student materials, and media all have the same information.

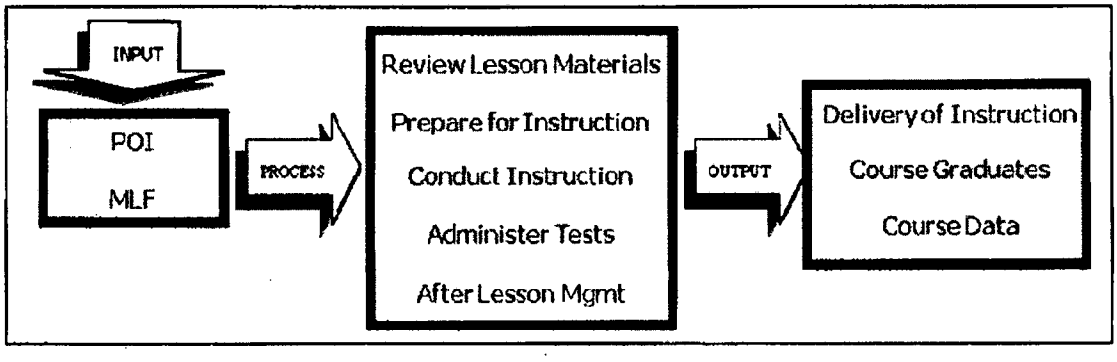
2. Prepare for Instruction. The preparation portion of the Implement Phase involves all those activities that instructors and support personnel must perform to get ready for delivering the instruction. To maximize the transfer of knowledge and the development of skills by the learner, instructors must rehearse the lesson, prepare instructional materials, and prepare the instructional environment.

3. Conduct Instruction. The effective and efficient delivery of instruction is a key point in the SAT process. Although the

curriculum developer may have designed and developed the material so that it would maximize the transfer of learning, it is crucial that the instructor present the lesson in a manner that ensures comprehension and on-the-job application. While comprehensive planning and preparation early in the Implement Phase is necessary, it does not guarantee success. The instructor must communicate effectively, conduct the lesson, and manage the classroom during and after the presentation.

4. Administer Tests. The primary purpose for administering tests is to determine if the learning objectives have been met, improve instruction, and thereby increase student learning. This is accomplished by having a well thought out evaluation process.

5. After-Lesson Management. The primary purpose for employing after-lesson management is to ensure the effective and efficient use of school resources. By ensuring the instructional environment is well maintained, the instructor is saving the school valuable resources. The secondary purpose is to capture specific lesson-related data for future use in the school's evaluation program.



(e) Evaluate. The Evaluate Phase of SAT measures instructional program effectiveness and efficiency. Evaluation and revision drive the SAT model. Evaluation consists of formative and summative evaluation and management of data. Formative evaluation involves validating instruction before it is implemented and revising instruction to improve the instructional program prior to its implementation. Formative evaluation is ongoing at all times both within and between each phase of the SAT model. Summative evaluation is conducted after a course of instruction has been implemented. Summative evaluation assesses the effectiveness of student performance, course materials, instructor performance, and/or the instructional environment. There are five main processes in the evaluation phase:

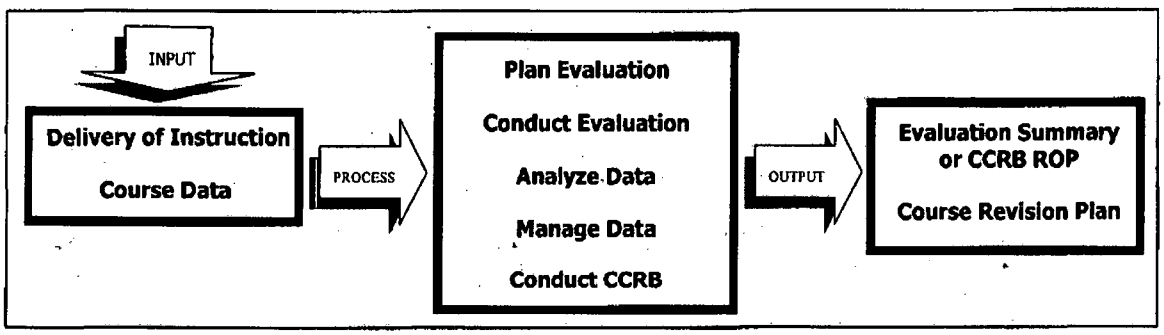
1. Plan Evaluation. Thorough and systematic planning is key to a successful evaluation. For an evaluation to provide the information required for making decisions concerning an instructional program, the evaluation must identify the critical evaluation issues and topics influencing the program. These topics will define the focus of the evaluation. Potential evaluation questions, criteria, and issues need to be identified and specific evaluation topics selected.

2. Conduct Evaluation. This section provides how evaluation takes place within each phase of the SAT to provide checks and balances. This section allows the user of this manual to address specific ways to conduct evaluation for each phase of the SAT process.

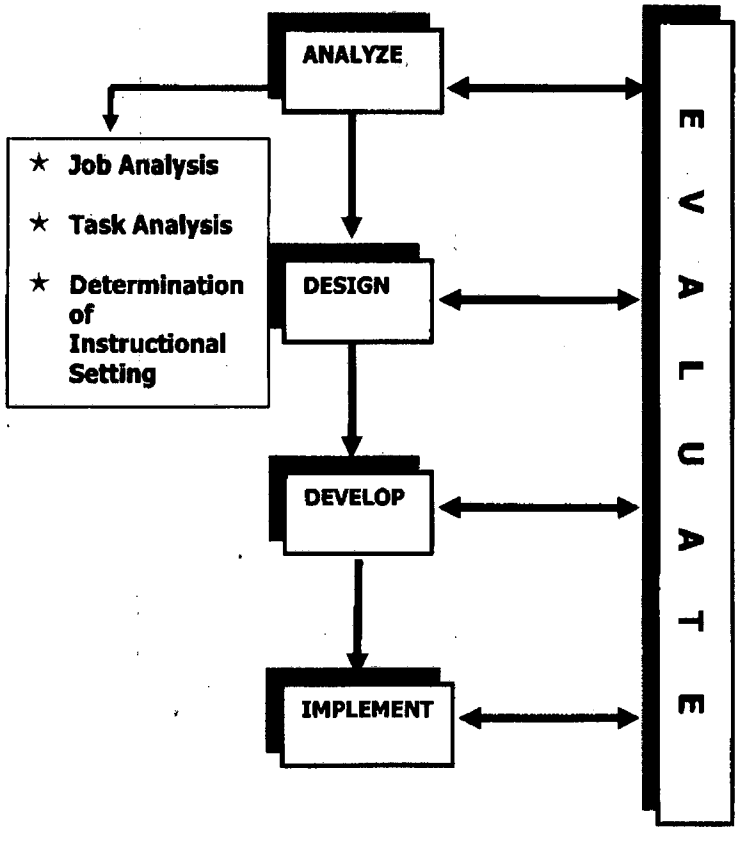
3. Analyze Data. This section takes the evaluator through the steps of organizing, quantifying, interpreting, and summarizing data so that information supporting changes can be presented in a Course Content Review Board (CCRB).

4. Manage Data. The next step in the evaluation process is to manage the documentation of evaluation results and recommendations for revising or refining an instructional program. These documents and reports are prepared to serve as a historical record of the evaluation, provide an audit trail for the continuing development and improvement of instruction, and direct the activities for implementing changes to the instructional program. Efficient data management therefore requires that the information presented in these documents be clear, concise, and accurate. This chapter provides guidance concerning the documentation of evaluation results.

5. Conduct CCRB. A CCRB functions to record information and make recommendations to improve the effectiveness and efficiency of an instructional program. The Record of Proceedings (ROP) must provide justification and recommended courses of action for implementing any revisions to the instructional program.



ANALYZE PHASE



In Chapter 2:

Chapter 2

2000. INTRODUCTION

The Analyze Phase is a crucial phase in the Systems Approach to Training (SAT) process. During this phase, job performance data is collected, analyzed, and reported. The analysis is conducted through a process called Front End Analysis (FEA). The results of the FEA is a comprehensive list of tasks and performance requirements. In the Marine Corps, job performance requirements are defined by Individual and Collective Training Events (ITE/CTE) in Training and Readiness (T&R) Manuals. The Analyze Phase consists of three main processes: job analysis, task analysis, and determining instructional setting.

This chapter has four separate sections. The first three cover the three Analyze Phase processes and the fourth provides the administrative responsibilities.

1. **Job Analysis:** "What are the job requirements?"
2. **Task Analysis:** "What are the tasks required to perform the job?"
3. **Determine Instructional Setting:** "Will the Marine receive job training in a Formal Learning Center (FLC), or through MOJT?"
4. **Requirements and Responsibilities in the Analyze Phase:** "What are the roles and responsibilities of each element in the training establishment?"

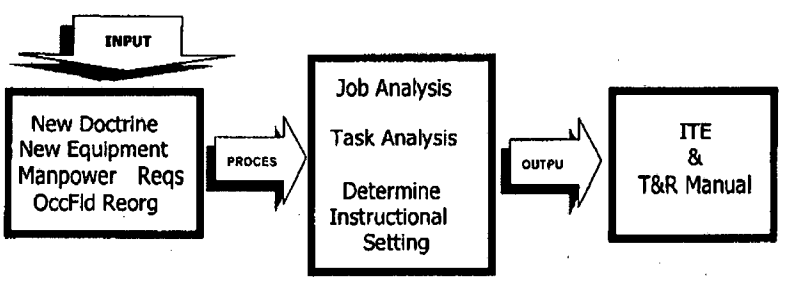


Figure 1-1

2001. PURPOSE

Section 1

The purpose of the Analyze Phase is to accurately determine what the Marine must know and do on-the-job. Job Analysis is done through a systematic research process called the Front-End Analysis (FEA) to collect, collate, and report job performance data. Task analysis is accomplished by convening a Subject Matter Expert (SME) conference. This conference, attended by representatives from the Operating Forces, FLCs, and Marine Corps Center for Lessons Learned (MCCLL), along with the occupational field sponsor and TECOM Task Analysts, review the results of the FEA (and MCCLLs material) and produce a draft T&R Manual to describe training events. The draft T&R is then staffed and, when final changes are made, it is published in the NAVMC 3500 series.

The FLCs are responsible for reviewing the signed T&R to identify those events that they are responsible for teaching. The curriculum developers then enter the relevant tasks into MCTIMS Curriculum Management Module and begin the development of the Program of Instruction (POI). To accelerate the design and development phases of the SAT process, schools can begin the process of entering the tasks into MCTIMS from the draft T&R that is published immediately following the T&R conference. There is a risk however that if the T&R draft is ultimately rejected or changed during the CG level staffing that the developed curriculum will become obsolete.

As part of instruction, FLCs, develop, implement, and evaluate their curricula based on existing T&R events. The development of T&R events within the Analyze Phase is unique to TECOM, and is normally performed under the guidance of Ground Training Division (GTD) or Aviation Training Division (ATD). FLCs, within the Marine Corps, should not develop T&R events independently without prior approval of TECOM (GTD/ATD).

The results of this phase form the basis for the entire instructional process by clearly defining the target population, what Marines are actually performing on the job, what they will need to learn in the FLC, and what will be learned through managed on-the-job training (MOJT). The Analyze Phase is concerned with generating an inventory of job tasks, selecting tasks for instruction, developing performance requirements, and analyzing tasks to determine instructional setting.

Section 2

2002. JOB ANALYSIS

Job analysis involves finding out exactly what the Marine does on the job rather than what the Marine must know to perform the job.

The first step in the Analyze Phase is the completion of a Job Analysis that is conducted through the FEA process. TECOM (GTD) collects, examines, and synthesizes data regarding each Occupational Field/Military Occupational Specialty (OccFld/MOS). This data may include time in grade and MOS, career progression, tasks performed on the job, instructional location, level of instruction, etc. Job analysis is the collection and organization of data that results in a clearly defined description of duties, tasks, and indicative behaviors that define that job. Job analysis involves finding out exactly what the Marine does on the job rather than what the Marine must know to perform the job. The product of job analysis is a verified list of all duties and tasks performed on the job and the identification of those tasks that must be taught in the FLCs. Once the Job Analysis is complete, an FEA Report is produced and serves as a key input to the T&R conference held to define the training events and determine instructional setting.

Job Analysis Requirements

Job analysis begins once a requirement for training has been identified and validated. Job analysis requirements are typically generated by:

- ⇒ The introduction of new or better weapons/support systems.
- ⇒ Organizational changes such as changes in MOS structure and career field realignments.
- ⇒ Doctrinal changes required by new laws, Department of Defense (DoD) requirements, and Marine Corps needs.
- ⇒ Evaluations/Marine Corps Center for Lessons Learned indicating that a change in job requirements is required.
- ⇒ Direction from higher headquarters.
- ⇒ FEAs are also conducted on a cyclical basis for most OccFlds.

Task Criteria

A task is a behavior performed on the job. A task is defined by specific criteria and must:

- ⇒ Be a logical and necessary unit of work.
- ⇒ Be observable and measurable or produce an observable and measurable result.
- ⇒ Have one action verb and one object.
- ⇒ Be a specific act done for its own sake.
- ⇒ Be independent of other actions.
- ⇒ Have a specific beginning and ending.
- ⇒ Occur over a short period of time.

Functional Areas

To facilitate survey of job incumbents and correlation of survey data, closely related tasks within a task list are grouped by functional area for the purposes of job analysis. A functional area is an organizer of data consisting of one or more tasks performed. Functional areas are generally very broad categories. One or more functional areas make up a job. A functional area may be defined by:

1. a system (e.g., Small Arms Weapons, Mines and Demolitions, Communication Equipment).
2. a function (e.g., Administrative Functions, Patrolling Functions).
3. a level of responsibility (e.g., Train Logistics Personnel, Supervise Intelligence Personnel).

Initial Task List Development

Develop an initial task.

The first step in Job Analysis is the development of an initial task list and is conducted by TECOM (GTD) and OccFld sponsor. This process can include the initial identification of functional areas in which the tasks will be organized. An initial task list is developed by a combination of the following means:

1. Reviewing technical documentation and references pertaining to the job. This documentation might also be obtained from various sources outside the Marine Corps. These sources may address similar jobs and tasks and have generated materials that may be applicable for task list development. These sources include:

    - Other Service Schools. These include Navy, Army, Air Force, or Coast Guard FLCs, such as U.S. Army Engineer School at Ft. Leonard Wood, MO, U.S. Army Signal School at Ft. Gordon, GA, and Air Force Communications Technical School at Lowry Air Force Base, CO.

    - Trade Organizations/Associations. Civilian or industry trade organization/associations, such as Society for Applied Learning Technology (SALT) or Association of Naval Aviation can provide additional resources and technical support.

    - Defense Technical Information Center (DTIC). DTIC offers training studies, analyses, evaluations, technical articles and publications.

2. Convening a board of subject matter experts (SME) who can detail the requirements of a specific job.

3. Conducting interviews with SMEs.

4. Reviewing Marine Corps Center for Lessons Learned to identify timeless (environment, enemy, and conflict non-specific) changes to job and task requirements.

5. Soliciting input from Marine Corps FLCs, and Centers of Excellence (COE).

Task List Verification

Verify the task list for accuracy and completeness.

The next step in Job Analysis involves verifying the task list in terms of accuracy and completeness. Verification ensures that the tasks on the list are actually those performed by members of the OccFld or MOS. Task list verification is normally conducted by TECOM (GTD) during the FEA by one or more of the following methods:

- ☑ Administering survey questionnaires to job incumbents.
- ☑ Conducting interviews with SMEs.
- ☑ Observing actual job performance of tasks at the job site.
- ☑ Convening a board of SMEs to review the task list.

Refining the Task List

Refine and Consolidate the task list.

After the data in the previous two steps have been collected, the task list is refined and consolidated. A final review of the task list should be made to ensure all tasks meet the criteria for a task discussed preciously in this Section.

Identifying Tasks for Instruction

Task recommendations are accomplished through administration of a survey questionnaire sent to job incumbents and SMEs. The data collected represent the judgments of a statistically-valid sample of job incumbents and SMEs who are familiar with the job. The responses to the survey are analyzed using statistical analysis procedures. The following criteria may be considered when selecting tasks for instruction and are included in the survey questionnaire administered by TECOM (GTD).

- Percent of job holders performing the task.
- Percentage of time spent performing the task.
- Task difficulty.
- Amount of training required to perform the task

Survey responses to each of these criteria are then analyzed and a Front End Analysis Report (FEAR) is produced that will assist the task analyst in creation/revision of the T&R Manual

2003. TASK ANALYSIS

SECTION 3

The second step in the Analyze Phase is to conduct a Task Analysis that sequences and describes observable, measurable behaviors involved in the performance of a task or job. Task analysis is conducted by a T&R conference. It involves the systematic process of identifying specific tasks to be trained, and a detailed analysis of each of those tasks in terms of frequency, difficulty, and importance.

The purpose of task analysis is to:

⇒ Refine the task list based on SME input.
⇒ Develop T&R events that identify the conditions, standards, and performance steps necessary for the successful completion of a task.
⇒ Determine where the tasks will be instructed (FLC or via MOJT at the unit level).
⇒ Produce a target population description that will guide the FLC or unit in the preparation of instruction/training.

Below are questions to ask when performing a Task Analysis:

- ☑ How difficult or complex is the task?
- ☑ What behaviors are used in the performance of the job?
- ☑ How frequently is the task performed?
- ☑ How critical is the task to the performance of the job?
- ☑ To what degree is the task performed individually, or to what degree is the task part of a set of collective tasks?
- ☑ If a subset of a set of collective tasks, what is the relationship between the various tasks?
- ☑ What is the consequence if the task is performed incorrectly or is not performed at all?
- ☑ To what extent can the task be trained on the job?
- ☑ What level of task proficiency is expected following training?
- ☑ How critical is the task?
- ☑ What information is needed to perform the task? What is the source of information?
- ☑ What are the performance requirements?
- ☑ Does execution of the task require coordination between other personnel or with other tasks?
- ☑ Are the demands (perceptual, cognitive, psychomotor or physical) imposed by the task excessive?
- ☑ How often is the task performed during a specified time-frame (i.e., daily, weekly, monthly, yearly)?
- ☑ How much time is needed to perform this task?
- ☑ What prerequisite skills, knowledge, and abilities are required to perform the task?
- ☑ What are the current criteria for acceptable performance?
- ☑ What are the desired criteria?
- ☑ What behaviors distinguish good performers from poor performers?
- ☑ What behaviors are critical to the performance of the task?

Development of T&R Events

Once tasks are verified and the task lists are refined, T&R events are developed. Refer to MCO P3500.72_ (Ground Training and Readiness Program) for conduct of a T&R conference. Often, many elements of the ITE (e.g., performance steps, conditions, standards) are collected while the task list is being refined. This enables a better understanding of the task and can serve as a check to ensure the tasks are actually performed on the job. A working group conference composed of subject matter experts (SME) is particularly effective for examining how a task is to be completed by identifying the performance steps and the sequence of those performance steps, conditions, and standards necessary to successfully accomplish the task. \

Components of a T&R Event

A T&R event contains the following basic components. Refer to MCO P3500.72A (Ground Training and Readiness Program) for all components available for use in the MCTIMS T&R Development Module:

a. **Event Code**. The event code is a 4-4-4 character set. The first four characters indicate the MOS or community (e.g., 0321, 1812, MWT). The second four characters indicate the functional area (e.g., DEF, FSPT, MVMT). The third four characters indicate the level and sequence (1000 through 8000).

(1) **Functional Area Grouping**. Categorizing events with the use of a recognizable up to four-letter functional code makes the type of skill or capability being referenced easily identifiable. Examples include DEF (defensive tactics), MAN (maneuver), CBRN (chemical, biological, radiological, and nuclear, etc.).

(2) **Sequencing**. A four digit numerical sequence is assigned to each training event. The higher the first number, the more advanced the capability or skill being evaluated. For example, PAT-4001 (patrolling) is a designator for patrolling conducted at the squad level, PAT-5001 is a designator for patrolling at the platoon-level, and PAT-7001 is a designator patrolling at the battalion level. Each event should be given a unique four digit sequence number. Depending on the arrangement of the functional areas within the T&R Manual (alphabetical, logical sequencing) the numbering should proceed by "ones" starting with the number 1 until all events within a functional area are numbered. At that point, numbering should resume by adding one or two to the "tens" digit and again starting with "one." Numbering in this fashion will allow for new events to be added to the functional area, without having to number them out of sequence. For example, if the last event in the AAAA functional area is numbered 0300-AAAA-1007, then the next event will be 0300-BBBB-1011.

d. **Sustainment Interval.** This is the period, expressed in number of months, between evaluation or retraining requirements. Skills and capabilities acquired through the accomplishment of training events are refreshed at pre-determined intervals. It is essential that these intervals are adhered to in order to ensure Marines maintain proficiency.

e. **Event Description**. A discretionary field that provides a description of the event purpose, objectives, goals, and requirements. It is used when the event title needs to be enhanced to describe specific tasks within the event.

f. **Billet.** Individual training events may contain a list of billets within the community that are responsible for performing that event. This ensures that the billet's expected tasks are clearly articulated and a Marine's readiness to perform in that billet is measured.

g. **Grade.** Each individual training event will list the rank(s) at which Marines are required to learn and sustain the training event.

h. **Initial Training Setting.** For individual T&R events only, this specifies the location for initial instruction of the training event in one of three categories (formal school, managed on the job training (MOJT), distance learning). Regardless of the specified Initial Training Setting, any T&R event may be introduced and evaluated during MOJT.

f. **Condition**. Describes the condition(s), under which tasks are performed. Conditions are based on a "Real World" operational environment. The conditions also indicate what is provided (equipment, materials, manuals, aids, etc.), environmental constraints, conditions under which the task is performed, and any specific cues or indicators to which the performer must respond. When resources or safety requirements limit the conditions, a downgraded justification must be submitted.

c **E-Coded.** This is a "yes/no" category to indicate whether or not the E-Coded event contributes toward the Combat Readiness Percentage (CRP) of the associated Mission Essential Task (MET).

g. **Standard**. The standard indicates the basis for judging effectiveness of the performance. It consists of a carefully worded statement that identifies the proficiency level expected when the task is performed. The standard provides the minimum acceptable performance parameters and is strictly adhered to. "In accordance with the reference" will **NOT** be used as a stand-alone standard.

f. **Performance Steps**. Performance steps specify the actions required to accomplish a task. Performance steps follow a logical progression, and should be followed sequentially, unless otherwise stated. Normally, performance steps are listed only for 100-level individual T&R events (those that are taught in the entry-level MOS school), but may be included in upper-level events when appropriate.

h. **Prerequisite(s)**. Prerequisites are the listing of academic training and/or T&R events that must be completed prior to attempting completion of the event.

i. **Reference(s).** References are the listing of doctrinal or reference publications that may assist the trainees in satisfying the performance standards and the trainer in evaluating the performance of the event.

b. **Event Title.** The task behavior is used as the event title.

k. **Ordnance**. Each event will contain a listing of ordnance types and quantities required to complete the event.

l. **External Support Requirements**. Each event will contain a listing of the external support requirements needed for event completion (e.g., range, support aircraft, targets, training devices, other personnel, and non-organic equipment).

m. **Combat Readiness Percentage (CRP)**. The CRP is a numerical value used in calculating training readiness for collective events. Only E-Coded events listed in the appropriate T&R manual are used to determine a units CRP.

T&R Staffing

Draft T&R staffing involves soliciting comments from affected individuals or organizations throughout the Marine Corps, and then integrating those comments into the T&R document. The Operating Forces, FLCs, and OccFld sponsors (and designated SMEs under special circumstances) will be included on the T&R staffing distribution list. TECOM (GTD/ATD) will coordinate final review, and will consolidate and reconcile all recommendations.

Upon completion of this process, necessary changes will be incorporated into the final T&R draft manual for signature. T&R Manuals are forwarded to CG, TECOM for approval and signature.

Once final approval and signature has been received, the training events are published as a T&R Manual in the NAVMC 3500-series and can then be distributed throughout the Marine Corps.

2004. INSTRUCTIONAL SETTING

SECTION 4

The third process in the Analyze Phase involves determining the instructional setting for each individual training event (ITE) task behavior. Instructional setting is important because it defines who is responsible for instructing the task and the level of proficiency the student must achieve when performing the task in an instructional environment. TECOM is responsible for determining the organization responsible for conducting the instruction and the level of instruction assigned to each task. This is done during the T&R Conference while T&R events are being developed. When determining instructional setting, two guiding factors must be used -- effectiveness and efficiency. The Marine Corps seeks the best training possible within acceptable, affordable costs while meeting the learning requirement.

Responsibility for Instruction

Once the job is defined and the T&R events are developed, the job structure can be broken down into organizations that will assume responsibility for instruction. The tasks must be divided into four groups:

1. Those that are to be included in a formal learning center (level 1000).
2. Those that are to be included in a Managed On-the-Job-Training (OJT) program (level 2000+).
3. Those that can be covered via computer-based instruction or via simulation.
4. Those for which no formal or OJT is needed (i.e., can be learned by using job performance aids or self study packets).

Instructional Setting

The purpose of entry-level FLC instruction is twofold: to teach the minimum skills necessary to make the Marine productive immediately upon arrival at his first duty station; and to provide the Marine with the necessary prerequisites to continue instruction in an MOJT program. Instructional setting refers to the extent of instruction assigned to each Individual Training Event (ITE) task behavior. Instructional setting is generally determined by convening a board of job incumbents and SMEs to discuss the extent of instruction required to adequately perform the task. This can be accomplished at a T&R Development/Review Conference or Operational Advisory Group (OAG) Conference. Instructional settings are published in the T&R Manual. Instructional settings in T&R Manuals are designated for 1000/2000-level events in the T&R Development Module

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The Determination of the Instructional Setting is the final process in the Analyze Phase. The output of this phase is:

☑ **Training and Readiness (T&R) Manual.**

This output becomes the input to the Develop Phase. The first step of

the Design Phase will be to write a Target Population Description (TPD) for the course to be developed from the events identified during the Analyze Phase.

SECTION 5

2005. REQUIREMENTS AND RESPONSIBILITIES IN THE ANALYZE PHASE

Training and Education Command [TECOM (GTD/ATD)] Responsibilities

A systematic approach to the design of instruction requires an identification of the tasks performed on the job. Job performance in the Marine Corps is defined and supported by training standards. Training standards published as individual events in T&R Manuals are the primary source for the development of all Marine Corps instruction. TECOM (GTDGTD/ATDATD) is responsible for coordinating all the steps in the Analyze Phase and for managing the FEA process. TECOM will coordinate the development of T&R Manuals for military occupational fields (OccFld) and military occupational specialties (MOS). The culmination of the Analyze Phase is an approved set of training standards for an OccFld or MOS, published as a NAVMC 3500 series T&R Manual.

1. **Job Analysis**. As part of the FEA process, TECOM (GTD) is responsible for conducting job analyses. Additionally, TECOM (GTD) will collect supporting information that will assist in the identification and selection of tasks for instruction. TECOM (GTD) publishes the analysis results in a Front-End Analysis Report (FEAR). The process of conducting a FEA is directed by MCO 1200.13_

2. **Task Analysis**. TECOM (GTD/ATD) is responsible for convening the T&R conference. The conference conducts formal task analysis and produces the refined task list which TECOM publishes as a draft T&R.

3. **Determination of Instructional Setting**. The T&R conference also determines where the tasks should be taught, either at the FLC (for level 1000 entry-level), or in the Operating Forces/Supporting Establishment as MOJT. The TECOM task analyst conducting the T&R conference will publish the instructional setting in the T&R Manual.

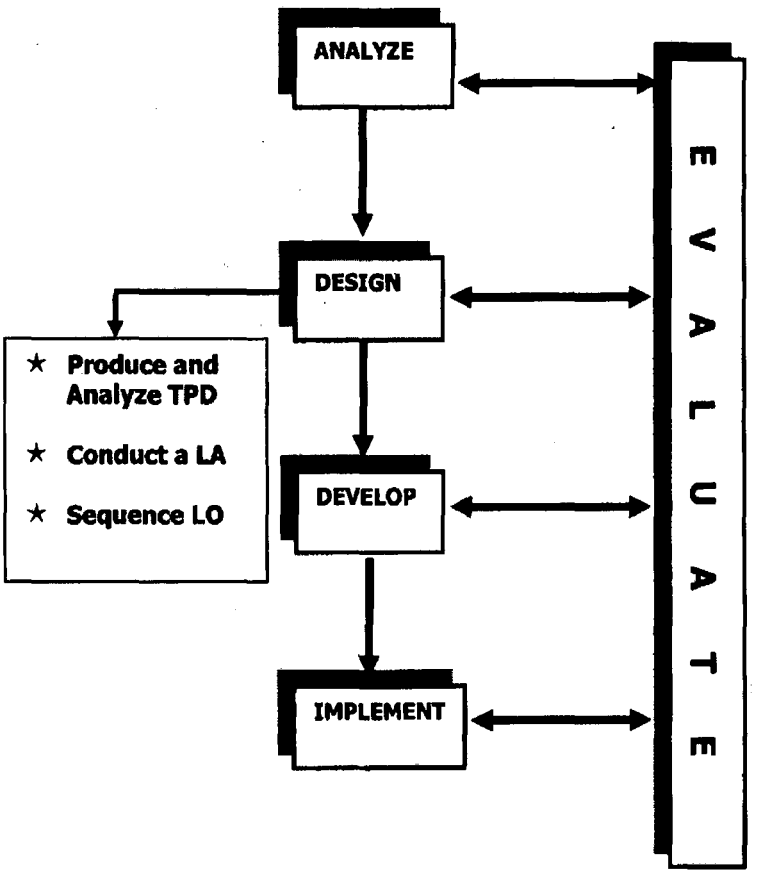
Formal Learning Center Responsibilities

The FLCs play a supporting role during the Analyze Phase.

1. **Task Analysis**. Since task analysis involves determining the condition, standard, performance steps, etc., having the resident experts from the FLC participate in this process is beneficial. FLCs, will provide SMEs to aid in the development of the condition, standard, performance steps, and support requirements for T&R events.

Train the Trainer School, TRNGCMD will provide instruction on Individual Training Event Development as part of the Curriculum Development Course and Formal School Management Course.

DESIGN PHASE



In Chapter 3:

Chapter 3

3000. INTRODUCTION

The output of the Analysis Phase which is the T&R Manual, becomes the input to the Design Phase.

The Design Phase consists of three processes:

1. **Write the Target Population Description (TPD):** "Who is coming for instruction and what knowledge, skills, and attitudes (KSAs) must/will they bring with them?"

2. **Conduct a Learning Analysis:** "What do I have to teach with?" and "What will be taught, evaluated, and how?"

3. **Sequence TLOs/ELOs:** "In what order will the instruction be taught to maximize both resources and the transfer of learning?"

3001. WRITE THE TARGET POPULATION DESCRIPTION

SECTION 1

INTRODUCTION. The first process of the Design Phase is to write the **Target Population Description (TPD).** A TPD is a description of the knowledge, skills, and attitudes (KSAs) students are expected to bring to a course of instruction. It provides a general description of an average student and establishes the minimum administrative, physical, and academic prerequisites each student must possess prior to attending a course. During the Design Phase, the TPD will provide guidance for developing objectives and selecting instructional strategies that will meet the needs of the students.

KSA - Knowledge, skills, and attitudes.

ROLE OF TPD IN INSTRUCTION

The TPD provides the focus for designing instruction. For instruction to be effective and efficient, it must build upon what students already know. Considering the TPD allows the curriculum developer to focus on those specific knowledge and skills a student must develop. For example, if knowing the nomenclature of the service rifle is required for the job, and the students entering the course already possess this knowledge, then teaching this specific information is not required. Conversely, if students entering a course do not know the service rifle nomenclature, then they need instruction. The TPD also allows the curriculum developer to select appropriate methods of instruction, media, and evaluation methods. For example, experienced students can often learn with group projects or case studies and self-evaluation. Entry-level students generally need instructor-led training and formal evaluation. *In summary, the TPD describes the average student in general terms, establishes prerequisites, serves as the source document for developing course description and content, and is used to design instruction.*

TPD - Target Population Description

STEPS IN WRITING THE TPD

Obtain Sources of Data

To clearly define the target population, gather data from the appropriate sources listed below. These references outline job performance by detailing what tasks must be performed on the job and the specific requirements of that particular job.

STEP 1

⇒ MCO P1200.7_, Military Occupational Specialty (MOS) Manual.

⇒ NAVMC 3500 Series, Training and Readiness (T&R).

Additionally, information can be obtained from the OccFld Sponsor and TECOM Task Analysts (Ground Training Division (GTD)/Aviation Training Division (ATD)) by means of phone conversation and/or electronic message.

Gather and Review Student Background Information

STEP 2

While considering the adult learning characteristics identified in Chapter 6 and the resources identified above, review pertinent student background information. In order to ensure the course prerequisites are correct and that the training program is developed to meet the attributes of the TPD, organize this information into the following categories:

1. **Administrative**
2. **Physical**
3. **Academic**

a. **Administrative**. Certain prerequisites may be necessary due to administrative requirements of the school or the course material. These prerequisites include the student's rank, MOS, security clearance, time remaining in service, or police record (which may mean exclusion from certain types of instruction).

b. **Physical**. Physical information includes specific skills and general fitness which may include age, height, color perception, vision acuity, physical limitations, etc.

c. **Academic**. Academic information represents an inventory of the knowledge and skills the student must or will possess prior to the start of instruction. These prerequisites may include specific basic courses already completed, reading level, test scores, training experience and GCT/ASVAB scores.

Write the TPD

STEP 3

Capture information that describes the general characteristics of the average student attending the course. Summarize the data into a concise paragraph describing the target population. Organize the general information describing the average student so that it is grouped together and so that any prerequisites are grouped together.

Figure 3-2. Sample Target Population Description (TPD)

TPD FOR CURRICULUM DEVELOPER COURSE

This course is for the staff non-commissioned officer through company grade officer, as well as civilian and contracted employees, involved in the design, development, and evaluation process of the SAT. Attendees must possess a working Common Access Card (CAC) and be proficient in Microsoft Word and PowerPoint.

Prerequisites:

1. Students must possess a CAC with current certificates
2. Assignment as a curriculum developer or administrator at a Marine Corps FLC
3. Proficient in Microsoft Word
4. Proficient in Microsoft PowerPoint

3002. CONDUCT A LEARNING ANALYSIS

This second process of the Design Phase is to conduct a Learning Analysis to define what will be taught. The purpose of the Learning Analysis is to examine the real world behavior that the Marine performs in the Operating Forces and transform it into the instructional environment. A Learning Analysis produces three primary products essential to any Program of Instruction (POI): learning objectives, test items, and methods/media. This process allows for adjustments to be made to accommodate for resource constraints at the FLC. A Learning Analysis must be performed for every task covered in new courses. Learning Analyses must be validated with every POI submission. Additionally, each new task added to the Training and Readiness (T&R) Manual, and taught at the FLC, requires a Learning Analysis.

POI- Program of Instruction.

3 primary products of a Learning Analysis:

1. Learning Objectives
2. Test items
3. Method/Media

STEPS TO CONDUCT A LEARNING ANALYSIS

Gather Materials

The first step in conducting a learning analysis is to gather materials. Once the scope of the course that the curriculum developer is designing is determined (by reading guidance from TECOM or the School Commander), obtain the:

STEP 1

1. T&R manual – to determine what tasks the jobholder performs.
2. Publications – like orders, directives, manuals, job aids, etc. that will help analyze the tasks to be taught.
3. Subject Matter Experts – to fill in details that the publications will not. SMEs will conduct the brainstorming session along with the Curriculum Developer.
4. Learning Analysis Worksheet (LAW) - Use the LAW found in the MCO 1553.2_ and or enter the data into MCTIMS. LAWs must be included as a component of the Master Lesson File (MLF).
5. Previously developed LAWs and LOWs for established courses under review.

Determine Training Requirements

Review the T&R manual to determine what tasks must be taught at the FLC. Tasks with "Initial Training Setting" or "Formal" are taught at the appropriate school. Communication with TECOM Task Analysts is essential. The T&R Manual is the foundation for curriculum development. In some cases, topics that need to be taught at a FLC will not have corresponding events in a T&R Manual. Examples are a course overview or an introduction to a series of tasks being instructed. These lessons are not derived from learning objectives and are designated "Lesson Purpose." Although Lesson Purpose should be minimized since those lessons can not be linked to T&R Events, the overall importance to the effectiveness of the POI must be considered in determining the amount of Lesson Purpose required. Coordination with the Task Analyst is essential in determining if T&R Events need to be added, or if the Lesson Purpose classes are the appropriate solution. See MCO 1553.2_ Ch 1, par. 3.f (3) for guidance on use of Lesson Purpose time.

STEP 2

STEP 3

Analyze the Target Population Description

Before the knowledge, skills, and attitudes (KSAs) are determined, the target population must be analyzed. The TPD is analyzed so that the curriculum developer can make a determination of the KSAs the students will bring into the instructional environment. Instruction must capitalize on students' strengths and focus on those KSAs the students must develop or possess to perform satisfactorily on the job. The goal is for the learning analysis to reveal the instructional needs of the target population so that selected methods and media are appropriate for the student audience.

STEP 4

Record Task Data

Record the data found in the T&R manual. The LAW in Annex O-2 of the MCO 1553.2_ serves as a guide for what information to record. Record the T&R Event including the task, and the conditions and standards associated with the task. Then record each performance step.

STEP 5

Generate Knowledge, Skills, and Attitudes for each Performance Step

When generating knowledge, skills, and attitudes (KSA), analyze each performance step and break it down into a list of KSAs required for each student to perform that performance step. Consideration of the level of detail needed, transfer of learning, target population, and school resources is essential. The method used to identify KSAs is commonly called "brainstorming." Brainstorming is the process used by SMEs and curriculum developers to work together to ensure that KSAs are generated for each task. In order to do this, the differences between knowledge, skill, and attitude must be identified:

a. **Knowledge** is information required to effectively accomplish a step, task, or job. Knowledge involves storing and recalling information and refers to the learning of names, facts, processes, and principles. Examples include "know rifle nomenclature", or "know the format of the operations order".

b. **Skill** is the ability to perform an activity that contributes to the accomplishment of the step, task, event, or job. Examples include "disassemble a rifle", "organize inventory", etc.

KSA – Knowledge, Skill, Attitude.

c. **Attitude** is the feeling or emotion in regard to a fact or state. Since the majority of these cannot be observed or measured within the confines of the instructional setting, they are generally not recorded during the Learning Analysis. The exception is when analyzing the lower levels of Receiving and Responding within the Affective domain.

Knowledge and skills are generated from references for the subject or task, such as an operator's manual, SOP, or user's guide. Also, consider the knowledge and skills that the target population possesses upon entering the course. This will ensure that resources are not wasted on instruction of knowledge and skills that the target population already possesses.

KSAs are brainstormed and recorded with one object and one verb, the words "or" and "and" cannot be used as they would introduce a second object or verb. See Enclosure (1) for a non-exclusive list of action verbs and definitions.

KSAs are brainstormed and recorded with one object and one verb.

A KSA must be recorded for each performance step to indicate that the step has been analyzed and not overlooked. If no KSA can be generated for the performance step, then record the performance step as the KSA. *These KSAs are an essential part of lesson plan development, as they will become the information contained in the lesson plan.*

Group KSAs

Review all the knowledge and skills generated for the entire event, regardless of the performance step under which they were initially brainstormed. Circle and/or color-code the ones that are duplicative, very similar, or common to one or more performance steps. For each group, answer the question: "What behavior would confirm that the student possesses these skills and knowledge?" Complementary knowledge and skills are grouped to reduce the number of Enabling Learning Objectives (ELO). ***Therefore the number of performance steps usually does not equate to the number of ELOs.*** Record behaviors on a working copy/scratch paper and retain since these behaviors are the basis for developing the ELOs. Also, use the scratch paper for notes and other considerations or decisions that are made.

STEP 6

ELO - Enabling Learning Objective.

The number of performance steps does not necessarily equate to the number of ELOs.

Specifically, grouped knowledge and/or skills that are beyond the scope of instruction (for more experienced personnel) or are possibly taught elsewhere (in the course or school), still need to be grouped and recorded as the Learning Analysis progresses. For example, if any grouped KSAs identified during the Learning Analysis directly relate to the TPD of the course, they would be designated as "TPD." Additionally, if a grouped KSA is taught in an earlier portion of the course, then it would not need to be re-taught but merely recalled. These grouped KSAs will be designated as delete "del" since they will not be taught in follow-on lessons. However, since these KSAs were identified during the Learning Analysis, they must be recorded for every task. This is critical to ensure that when future modifications to the course are made, key KSA groupings are not lost or dropped from the instruction.

TLO- The TLO is verbatim from the T&R Event

Sequence Groupings

Review the behavior for each individual event and all the groupings of knowledge, skills and/or attitudes. The question to be answered during this step is, "Which grouping(s) of knowledge, skills, and/or attitudes should be taught first?" There are several methods curriculum developers use to sequence and present course material. The developer will use one, or a combination of two or more, of the methods listed below to sequence the groupings.

STEP 7

Methods used to sequence and present material.

a. **Whole to Part.** Present the result or product first, and then present the process or each step.

b. **Part to Whole.** Present the process or steps first, then teach the final result or product.

c. **Simple-to-Complex.** Present concepts that students may be familiar with or that are less complicated, then build on these concepts by presenting newer or more difficult ones.

d. **Complex-to-Simple.** Actions are sequenced in terms of decreasing complexity; each associated with the larger complex structure of which it is a part.

e. **Chronological.** Present concepts or ideas in the order they occur over time, such as with historical events.

f. **Sequential.** Present procedures or steps in the order they are performed on the job.

g. **Cause and Effect order.** Actions are sequenced to demonstrate cause and affect relationships. This technique is appropriate for relationships that personnel must commit to long-term memory and for which training environment performance failures can be tolerated.

h. **Critical Order.** Actions are sequenced in the order of relative importance, whether from the least important to the most or vice versa, depending on the situation. Tasks favoring this technique are those that require an important action such as "Clear the weapon before starting disassembly."

i. **Known-to-Unknown Order.** Familiar topics are considered before unfamiliar ones. This technique is appropriate in situations where the target audience has some familiarity with the type of action, but the specific action is generally unknown to them. For example, maintenance of military commercial vehicles would precede maintenance of lesser-known military specific vehicles.

Assign a lower case alpha designator to each grouping of KSAs, based on the order that they will be taught.

Under each performance step, assign a lower case alpha designator to each grouping of KSAs, based on the order that they will be taught. For the first group the lower case "a" would be assigned, "b" for the next and so on. If the groupings exceed a to z, continue with aa, ab, ac, etc...

STEP 8

Record Learning Analysis in MCTIMS

MCTIMS is the designated database that the Marine Corps uses for managing instruction. For documentation of the Learning Analysis process, all elements must be recorded into MCTIMS. A Learning Analysis Worksheet (LAW) must be produced for inclusion in the Master Lesson File (MLF). The required components of an MLF are discussed in MCO 1553.2_ Ch 1, par. 6(a). See Annex O-2 of MCO 1553.2_ for the paper-based LAW and Annex O-3 for the Learning Analysis checklist.

DEVELOP LEARNING OBJECTIVES

The learning objective is the first of three primary products of the Learning Analysis. A learning objective is defined as the precise behavior that the student will accomplish under a specified condition, and to a prescribed standard. It is a "contract" between the instructor and the student.

What a Learning Objective should do!

The purpose of a learning objective can be broken down into five areas. All areas should be considered of equal importance. The learning objective should:

- Tells student what he/she will be able to perform. (Behavior)
- Describes the conditions under which the performance will occur. (Condition)
- Tells how well someone will perform. (Standard)
- Establishes the basis for measurement of the performance.
- Provides a focus for the instructor and the student.

COMPONENTS OF A LEARNING OBJECTIVE

Prior to writing a learning objective, it is important to have an understanding of each component: behavior, condition, and standard.

Behavior

What must a Behavior Statement do?

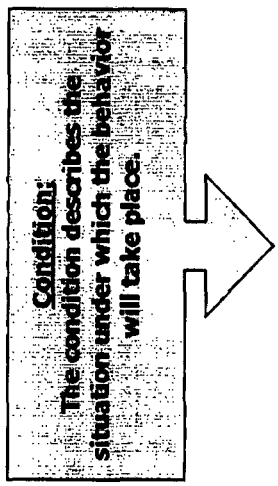
The behavior is the action the student is expected to perform after instruction. The behavior must:

☑ **Contain one action verb and one object**. To avoid confusion by both the student and the instructor, the behavior needs to state a single action and a single object. For example, "type an electronic mail message." In this example "type" is the action verb, and "message" is the object.

☑ **Be free of ambiguity**. When a behavior is observable, measurable, and uses qualifiers when necessary, the behavior will mean the same thing to all students. An action verb must be observable in order to be measurable. It should paint a picture in the student's mind of what must be accomplished. This is true whether it is knowledge or a skill. Some verbs require further explanation. For instance, the verb "describe" requires a qualifier, either "in writing" or "orally." This will eliminate any confusion on the part of the student as to how he will be required to demonstrate the behavior. Examples of other verbs that require qualifiers are "explain," "select," and "list." By qualifying the action statement, the action or the product of that action is made observable. Some verbs are not useful even when qualified. These verbs are impossible to directly observe. For example, a person cannot see someone "know." A person cannot see someone "understand." These words are intangibles. (See figure 3-7 for a comprehensive domain/verb listing)

☑ **Be stated in student terms.** Instructors must understand that they may already possess knowledge that the student does not. Do not use acronyms or technical terms that could create confusion. Keep it simple, clear, and concise.

☑ **Be a realistic performance of the behavior in the instructional environment.** The behavior must reflect what the student will do within the confines of the instructional environment and should as closely as possible replicate what the student will do on the job.



Condition

The condition describes the situation under which the behavior will take place. Conditions specify the resources provided to the student and the environment in which the student must perform the behavior. Conditions can be broken down into three areas: aiding/limiting, environmental, and implied.

Aiding/Limiting Conditions. A description of what a student will or will not have available to him/her when performing the task. These include references, tools, equipment, job aids, facts, formulas, specific situations, special instructions, and cues. *If the task must be simulated because performance could be hazardous or impracticable to reproduce, then the conditions must reflect this simulation. For example, "in a simulated contaminated environment."*

☑ **Aiding Conditions.** Any information or resource that is available to the student is considered an aiding condition. Some examples are listed below:

Aiding Conditions Example

***Given tools and equipment,* tune an engine ....**

***Given an observation scenario...,* complete a "SALUTE" report ....**

☑ **Limiting Conditions.** Any information or resource that is not available to the student is considered a limiting condition. Some examples are listed below:

Limiting Conditions Example

***Without the aid of references,* perform immediate action ....**

***While blindfolded,* assemble an M16 rifle ....**

Environmental Conditions. Environmental conditions describe the environment in which the student will be performing the behavior. These conditions can be physical or social.

☑ **Physical.** Physical conditions deal with the time of day, weather, location, and facilities. A few examples are listed on the next page.

***During the hours of darkness,* navigate from point A to point B....**

***In mountainous terrain,* drive a HMMWV ....**

***In a mess galley,* bake a cake ....**

Physical Environmental Condition Examples

☑ **Social.** Most learning objectives talk to the student as an individual but they may also identify the student as a member of a team. For example, "*as a member of a machinegun team...*" This is an important aspect of the social environment since the person performing the behavior could be affected by what the other team members do or fail to do.

Implied conditions. Quite often the verb or object in a learning objective will have an implied condition in it. The learning objective, "Without references, drive an LAV over rough, hilly terrain in accordance with the Rough Terrain Checklist," has an implied condition. It implies that the driver will have an LAV, and anything else required to operate it over rough, hilly terrain. For tasks that require the Marine to be equipped with individual equipment, all efforts need to be made to simplify the condition statement with regard to these items. Instead of listing each piece of gear that the Marine would wear, a generic statement such as, "while wearing a combat load" should be used. Clarification of those components that make up a combat load is provided during the lesson or in a reference.

Standard

To be a standard, these four criteria must be met: *Completeness, Accuracy, Time, and Realistic*

The standard describes the level of proficiency to which the behavior must be performed. Standards state the quantity and/or quality of acceptable behavior. There are four criteria for a good standard:

☑ **Completeness.** A standard specifies the level of task completion that indicates acceptable performance of the task behavior. For instance, a standard may specify the precise nature of the output, the number of features that the output must contain, the number of steps, points, pieces, etc., that must be covered or produced, or any quantitative statement that indicates an acceptable portion of the total.

For example:

...list 3 of the 5 performance steps.

...tune an engine so that it idles between 900 and 1100 RPMs.

☑ **Accuracy.** A standard indicates what is considered an accurate performance of a task behavior. Standards specify how well the behavior must be performed and are normally contained in references such as Marine Corps Orders, Technical Manuals, and Field Manuals. Only those references that describe in detail an acceptable standard of performance may be cited. If parts of the standard are contained in more than one reference, all references must be cited.

For example:

...solve a mathematical problem *to within two decimal points.*

...fire the rifle *with a minimum score of 25.*

☑ **Time.** If the task is time critical, then the minimum time requirement must be specified in terms of days, hours, minutes, or seconds.

For example:

...don the field protective mask within 9 seconds.

...type a letter at a minimum speed of 40 words per minute.

...generate a 5-paragraph order in less than 2 hours.

☑ **Realistic.** The standard must be realistic in order to expect the student to perform the behavior based on the instruction provided. A standard is deemed realistic when the time, accuracy, and completeness criteria allow for successful completion.

RECORD LEARNING OBJECTIVES

The Learning Objective Worksheet (LOW) is a required element of the Master Lesson File (MLF). Refer to MCO 1553.2_ Ch 1, par. 6(a) for more information on the required MLF components. The LOW contains the TLO behavior/ELO and, if necessary, a rationale for downgrading. The LOW also contains test/evaluation items for learning objectives and selected methods and media. See MCO 1553.2_ Anex O-4 for the LOW and Annex O-5 for the LOW Checklist.

WRITING TERMINAL LEARNING OBJECTIVES

The T&R Manual describes the real-world task the Marine performs in the Operating Forces. Each task in the T&R Manual designated to be taught at the FLC has a corresponding TLO.

It may be determined that modifications to the condition and/or standard may be needed to reflect the actual conditions of the instructional setting and/or the standard by which mastery is measured. In this case, the TLO must be downgraded. Provide downgrade justification and the revised condition and/or standard as required.

Compare Formal learning Center Resources Against the Task List

If the school does not possess the resources to teach the task/event to standard, there are two possible courses of action. The first is to downgrade the behavior and the second is to request additional resources.

If the school is going to downgrade the behavior, then the TLO is modified to accommodate the constraints of the instructional setting. Once the behavior is changed, a downgrade justification must be provided in the Program of Instruction (POI).

Figure 3-6, TLO Construction Flowchart, provides a guide for this decision making process.

Resources include but are not limited to:

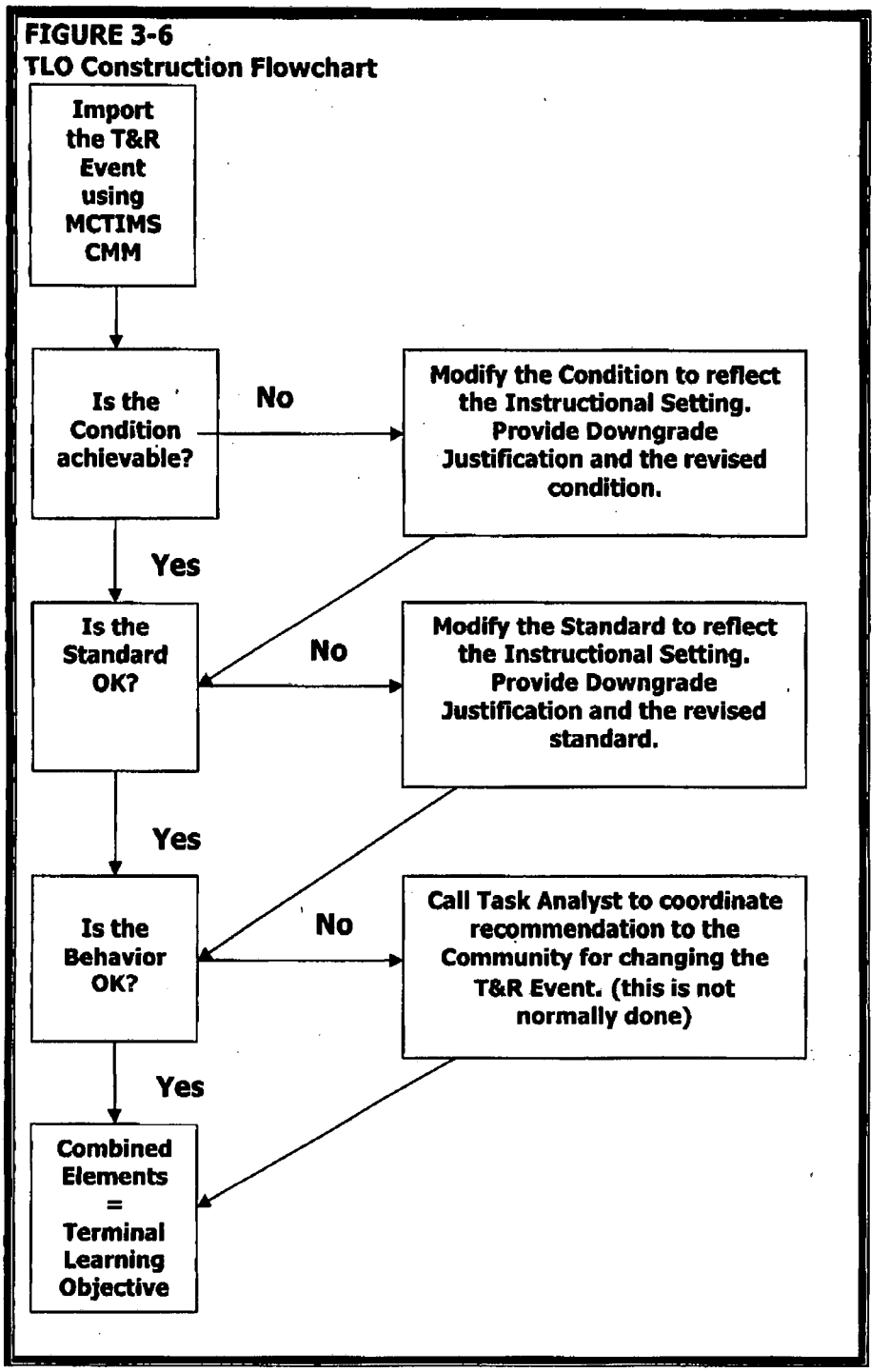
- ☑ **Time**
- ☑ **Manpower**
- ☑ **Facilities**
- ☑ **Equipment**
- ☑ **Budget**
- ☑ **Safety** (The ability to perform the task in an instructional environment safely)

The availability of these will impact how instruction is designed throughout the course.

Determine Evaluation Methods

If the task is performance-based, then performance evaluation of the process, the product, or both needs to occur. If the behavior is knowledge-based, then the evaluation will be written or oral. Since resources are often limited, performance-based evaluation and remediation are not always possible (remediation is not counted as academic time). However, every attempt must be made to secure required resources from TECOM to ensure that training and evaluation replicate actual job conditions and standards.

FIGURE 3-6
TLO Construction Flowchart



WRITING ENABLING LEARNING OBJECTIVES

ELOs are written to emphasize teaching points and evaluate student understanding/ performance.

ELOs are subordinate to the TLO and are statements of behavior, condition, and standard to achieve the TLO. ELOs are derived from the identified knowledge and skills that are not identified as "TPD" or "DEL" needed by the students to perform the steps identified in the T&R Event. Remember, the number of ELOs is usually not equal to the number of T&R performance steps. There may be more ELOs or less depending on how KSAs were grouped. ELOs are written to emphasize teaching points and to evaluate student understanding/performance. For each grouping of KSAs not labeled as "TPD" or "DEL" an ELO is generated. This supports the building block approach of the SAT, which is the Marine Corps official instructional systems design.

ELOs are determined in the Learning Analysis when a list of required knowledge and skills are generated. One behavior is developed for each grouping of common, similar, or duplicative knowledge and skills that are assigned an "alpha" designator. This behavior is derived by keeping the evaluation method in mind and answering the following question: **"What one behavior will the students perform that confirms they possess the grouped knowledge/skills?"**

As a general rule, since every task performed has a definitive beginning and end, all TLOs should have a minimum of two ELOs. As discussed during the SAT Review Conference there may be specialized cases where a TLO can stand on its own. In these cases specific justification will be required if there are no associated ELOs with a TLO. This is not blanket authorization to submit POIs with TLOs and no associated ELOs. 2000 level career progression courses where the TPD has MOS experience is an example of a course that may have some TLOs with no ELOs. ELOs support the TLO. ELOs provide the level of detail necessary to describe knowledge and skills needed to master the task. TLOs will not be repeated as ELOs since this is contrary to logical learning analysis.

Below is a list of steps for writing ELOs. Figure 3-7 Enabling Learning Objective Construction Flowchart provides a flowchart of these steps.

STEP 1

Document the Behavior

STEP 2

When writing an ELO, the first step is to document the behavior that was identified by each grouping of KSAs. The behavior identified may need to be modified so that it follows the rules of a well-written behavior. Refer to Section 2203 for more information on writing the behavior.

Determine the Condition and Standard

STEP 3

When writing ELOs, modifications to the condition and/or standard may be needed (i.e., the TLO is a performance based objective, however there needs to be a knowledge based ELO in order to master the TLO).

Record Completed Enabling Learning Objective

The final step in writing the ELO is to record it. Like the TLO, the ELO must also be written in the form of a complete sentence. For example: While blindfolded, disassemble the M16 service rifle in four minutes or less. It is critical to ensure that all the Performance Steps of a given T&R Event are covered by the developed ELOs. The best way to accomplish this is to compare the ELOs to the groupings of

KSAs.

DEVELOP TEST ITEMS

The purpose of any test is to find out whether the objectives have been achieved. Test items are designed to determine if the learner has acquired the KSAs to perform an objective or task. Each TLO/ELO must be evaluated TLOs and ELOs may be evaluated more than once (this is not common practice and must serve a purpose). Evaluation is also critical to maintaining or improving the effectiveness of instruction.

Analyze the TLO/ELO

Learning objectives tell the student what he is expected to know or be able to perform following instruction. Test items are written to assess the student's level of mastery of the learning objective. Prior to writing test items, the Curriculum Developer must analyze the behavior, condition, and standard.

STEP 1

- ☑ **Behavior.** The test item must be written to evaluate whether the student has acquired the knowledge, skills, and/or developed the appropriate attitude required by the learning objective. The verb used in the behavior will either require knowledge or performance. The behavior tells the curriculum developer whether the test will be knowledge-based or performance-based.

- ☑ **Condition.** The condition provides directions to the student on what will be available and under what conditions he/she will be tested. For example, "given a scenario" as a condition statement means to the test developer that a scenario will need to be a part of the test item.

- ☑ **Standard.** The standard establishes the criteria of how well the event is to be performed. The standard, as it is expressed in the learning objective, may need to be reiterated verbatim in the test item or in the test instructions.

The test item is written so that the student will perform the behavior stated in the learning objective, under the conditions specified, and to the established standard.

Determine Type of Test Item

STEP 2

Performance-based and knowledge-based are the two common types of test items used to measure student mastery of learning objectives.

Performance Test Items. Performance test items are used to measure the knowledge of a subject as well as the ability to perform the skills.

A performance test item can evaluate a process, a product, or both. The type of test item that evaluates a process is valuable for tasks where, if the process is not fully evaluated, much could be lost in the evaluation of the final product. For instance, if a student makes a mistake in the process, but the end result is correct, evaluators using this method are aware that a mistake was made. A performance examination that evaluates a product must use specific criteria to measure how well the student meets the desired objective. This type of test item is useful for evaluating tasks that can be performed in a number of different ways and still achieve the desired outcome. It is possible to have a test item that evaluates both the process and product.

PERFORMANCE BASED TEST ITEMS
Advantages
1. Can evaluate complex learning objectives that cannot be evaluated with traditional paper-and-pencil test. 2. Provides a more natural, direct, and complete evaluation of some types of reasoning, oral, and physical skills. 3. Provides greater motivation for students by clarifying goals and making learning more meaningful. 4. Encourages the application of learning to "real life" situations.
Limitations
1. Requires considerable time and effort to use. 2. Judgment and scoring performance can be subjective and burdensome, if the evaluator is not knowledgeable in the assessment of the student's performance. 3. Evaluation must frequently be done individually, rather than in groups. If evaluation is done in groups, careful allocation of task mastery must be adhered to so that performers are not penalized for non-performers.

Assessment of Student Achievement. By Norman E. Gronlund. p. 137.

Knowledge (Cognitive) Test Items. Time, cost, safety, and resource constraints do not always permit performance-based instruction and evaluation. If learning objective behaviors must be adapted and cannot duplicate the behavior, conditions, and standards of the job, the test item still must mirror the learning objective. Once the actual behavior is adapted, a knowledge-based learning objective and written test item are developed. Written test items can still provide realistic scenarios and circumstances, but must measure the stated learning objective. For example, if resource constraints prevent the FLCs from having the students "climb a mountain," an adapted learning objective and corresponding written test item would be to "describe the steps to climb a mountain." Some new information must simply be measured through cognitive evaluation.

Knowledge Test Items:

- ☑ True/False
- ☑ Multiple Choice
- ☑ Matching
- ☑ Listing
- ☑ Fill-in-the-Blank
- ☑ Short Answer
- ☑ Labeling
- ☑ Essay

Figure 3-8

Figure 3-8 is a list of the types of knowledge test items. The following paragraphs describe and outline the advantages and disadvantages of each.

- **True/False Test Items.** This type of test item is rarely effective for testing higher-level cognitive skills. It deals mostly with simple factual information and recall. Alone, this test item should not be used for evaluation because a true/false test item always runs a fifty percent chance of being guessed. Therefore, it is not as reliable as other test items. It would not be a good idea to send a graduate from the school out on the job based on evaluations supported solely by true/false test items. The students could have guessed their way to graduation. Another drawback to this item is that it is also extremely difficult to write one correctly. Most true/false items are poorly written. However, when used in conjunction with a short answer test item requiring the student to justify responses, this helps solidify the student's comprehension of the topic/task.

True/False test items are the least preferred method of testing. However, when used in conjunction with a short answer test item, T/F items can help solidify the student's comprehension of the topic/task.

TRUE/FALSE CHOICE ITEMS
Advantages
1. The item is useful for outcomes where there are only two possible alternatives (e.g., fact or opinion, valid or invalid). 2. Less demand is placed on reading ability than in multiple-choice items. 3. A relatively large number of items can be answered in a typical testing period. 4. Complex objectives can be measured when used with interpretive exercises. 5. Scoring is easy, objective, and reliable.
Limitations
1. It is difficult to write items beyond the knowledge level that are free from ambiguity. 2. Making an item false provides no evidence that the student knows what is correct. 3. No diagnostic information is provided by the incorrect answers. 4. Scores are more influenced by guessing than with any other item type.

Assessment of Student Achievement. By Norman E. Gronlund. p. 79.

Multiple-Choice Test Item. This type of test item is versatile and flexible. It is also the most common, and probably the most abused, of all test items. This item can measure a wide range of cognitive abilities ranging from simple recall of information to understanding of complex concepts. It is a quick and easy item to score whether using computerized grading or a paper-based answer key. This is one of the primary reasons this type of test item is seen so much in Formal Schools that process large groups of students. It is time efficient as well as fairly simple to construct if a few rules are followed.

MULTIPLE CHOICE ITEMS
Advantages
1. Learning objectives from simple to complex can be measured. 2. Highly structured and clear tasks are provided. 3. A broad sample of achievement can be measured. 4. Incorrect alternatives provide diagnostic information. 5. Scores are less influenced by guessing than true-false items. 6. Scoring is easy, objective, and reliable.
Limitations
1. Constructing good items is time consuming. 2. It is frequently difficult to find plausible distracters. 3. This item is ineffective for measuring some types of problem solving and the ability to organize and express ideas. 4. Score can be influenced by reading ability.

Assessment of Student Achievement. By Norman E. Gronlund. p. 60.

- **Matching Test Item.** A matching test item is used to measure a student's ability to recognize facts and discriminate among related or similar items. Matching test items normally use two columns of related items, and students are required to match a series of items listed in one column with related items in the other column. It provides a way to test various knowledge factors simultaneously.

Always have more responses than premises. This keeps the student from ascertaining correct responses by process of elimination.

MATCHING ITEMS
Advantages
1. A compact and efficient form is provided where the same set of responses fit a series of item stem (i.e., premises). 2. Reading and response time is short. 3. This item type is easily constructed if converted from multiple-choice items having a common set of alternatives. 4. Scoring is easy, objective, and reliable.
Limitations
1. This item type is largely restricted to simple knowledge objectives based on association. 2. It is difficult to construct items that contain a sufficient number of responses that are of similar kind or nature. 3. Susceptibility to irrelevant clues is greater than in other item types.

Assessment of Student Achievement. By Norman E. Gronlund. p. 85.

Listing Test Item. A listing test item measures the student's knowledge of information presented during instruction. This item requires the student to list a specified number of items in response to a question. Listing test items should not be used if the student's grammar skills are not at the appropriate level (refer to TPD).

LISTING ITEMS
Advantages
1. Easy to write. 2. Guessing is less likely than in selection-type items. 3. Preparation time is less than that for selection-type items.
Limitations
1. It is difficult to phrase statements so that only one answer is correct. 2. Scoring is contaminated by spelling ability. 3. Scoring is tedious and time-consuming.

- **Fill-in-the-Blank Test Items.** This type of item tests the student's knowledge and/or comprehension of information presented during instruction. A fill-in-the-blank test item requires the student to write a short answer in the blanks provided within the statement/question. The maximum number of blanks should be limited to two within a question or statement. Fill-in-the-blank test items are written as statements and do not require an action verb. Fill-in-the-blank test items do not test the student's ability to organize thoughts and ideas, and are not useful for problem solving.

- **Short Answer Test Items.** A short answer test item is used to evaluate the student when recall is important. Short answer is referring to a one word, number, or very short phrase type of response. The student creates the answer. Short answer test items are good to use, as they do not have a list to select from or something to help jog the student's memory. This type of item is unsuitable for complex learning.

FILL IN THE BLANK/SHORT ANSWER ITEMS
Advantages
1. Easy to write. 2. Guessing is less likely than in selection-type items. 3. Well suited to computational problems and other learning outcomes where supplying the answer is important. 4. A broad range of knowledge outcomes can be measured.
Limitations
1. It is difficult to phrase statements so that only one answer is correct. 2. Scoring is contaminated by student's spelling ability. 3. Scoring is tedious and time-consuming. 4. Not very adaptable to measuring complex learning objectives.

Labeling Test Items. Labeling or identification test items are used to measure a student's ability to recall facts and label parts in pictures, schematics, diagrams, or drawings. This form of test is most often used to measure recognition of equipment components or other concrete objects. It has wide application when teaching complex processes, especially via Interactive Multimedia Instruction (IMI).

LABELING ITEMS
Advantages
1. Tests student's visual recognition of equipment components or other concrete objects. 2. Guessing is unlikely. 3. Scoring is easy.
Limitations
1. Must have a good diagram, sketch or illustration to be effective. 2. Scoring is contaminated by student's spelling ability.

Essay Test Items. The essay test item is fairly simple to produce by the instructor and requires complex thought by the student. It differs from the test items covered so far in that it generally requires the student to communicate the response to the evaluator in his or her own words. The nature of the test item makes it one of the most difficult for a student to complete and also, by far, the most difficult to evaluate. The evaluator is also often required to make a subjective assessment on whether the student has communicated the correct response. It is critical that the student clearly understand the requirements of the learning objective, and that the instructor replicate the learning objective in the essay test item. Essay test items are usually used for learning objectives that are not readily measurable such as certain mental skills like judging, problem solving, evaluating, and analyzing to name just a few.

ESSAY ITEMS
Advantages
1. The highest level learning outcomes (analysis, synthesis, evaluation) can be measured. 2. Preparation time is less than that for selection-type items. 3. The integration and application of ideas is emphasized.
Limitations
1. Each question is time intensive for measuring or achieving each learning objective. 2. It is difficult to relate to intended learning outcomes because of freedom to select, organize, and express ideas. 3. Scores are raised by writing skill and bluffing and lowered by poor handwriting, misspelling, and grammatical errors. 4. Scoring is time consuming, subjective, and tends to be unreliable.

Assessment of Student Achievement. By Norman E. Gronlund. p. 103.

Write Test Items

STEP 3

Once the decision has been made on the type of test most appropriate to use for an objective, the Curriculum Developer must write the test item(s). During this step, the Curriculum Developer is writing test items to be recorded on the LOW. Grading criteria and the construction of the test occurs in the Develop Phase. Refer to Section 3500 for information on Constructing Tests. Each type of test item has different sets of guidelines to follow. Following these guidelines will assist the Curriculum Developer to write valid test items.

Writing Performance-Based Test Items. This involves stating the performance objective, creating the checklist (if applicable), instructions to the evaluator, and instructions to the student.

When developing performance test items, use the following steps:

For an example of a performance-based test item see Figure 3-9.

1. **State the performance objective as a brief description of what the student must accomplish for successful completion of the performance test.**
2. **List steps/activities/behaviors (process) or characteristics (product).**
3. **Note common errors that are made when using the checklist.**
4. **Arrange the activities or steps and characteristics in correct order.**
5. **Review the checklist for accuracy and completeness.**

Checklist. Performance test items, which require the student to perform a task, usually have the format of a checklist. The checklist is developed to correspond to the steps or activities of the task being performed and the underlying knowledge and skill elements. Checklists need to be detailed. This may help identify precisely what occurred during performance. The checklist should identify elements that have been taught and measure the behavior. Ensure that **all** the criteria are included so that the evaluator will be able to tell how well the student meets the objective. A checklist can be either a YES/NO (Mastery/Non-mastery) checklist or a scaled credit checklist with points for each specific action that the student performs. The FLC will identify which of these will be used in the overall evaluation of the student (See scoring and grading in Test Construction, Section 3504). Additionally, a determination of whether the student should have the checklist when being evaluated must be made.

- **Process Checklist.** When a performance test requires the steps or activities to be rated, a process checklist is used. The process checklist should contain all of the essential steps or activities required for successful performance. Process checklist construction guidelines are as follows:

  1. Use when the performance of steps or activities of a task is to be evaluated.
  2. The steps or activities must be observable.
  3. Define all of the steps or activities of the task being performed.
  4. Sequence steps or activities in order of performance.
  5. Provide space for "checking" the performance of each step or activity.
  6. Provide space for recording and describing errors.

Instructions to the Evaluator

- ☑ The instructions specify all the information required by the evaluator to include the planning and set-up of the exam, ensuring required student materials are at hand, matching the conditions stated in the learning objective to perform the behavior.
- ☑ The instructions cover what the evaluator needs to evaluate the student, such as checklists, tools, etc.
- ☑ The instructions additionally state any start/stop signals, safety considerations, time limits that the instructor should emphasize to the student. Administrative information such as disposition of the completed evaluation needs to appear in the instructions, if necessary.
- ☑ The instructions must be detailed enough to cover everything the evaluator needs to know or do to make the evaluation happen.

Instructions to the Student. Instructions include student directions, specifically any start/stop directions, any safety considerations, time limits, and how the performance will be evaluated. The instructions to the student must be clear to ensure that every student is evaluated on the ability to perform the behavior stated in the learning objective.

The instructions to the student must be clear to ensure that every student is evaluated on the ability to perform the behavior stated in the learning objective.

FIGURE 3-9.
Sample Performance Checklist

Enabling Learning Objective: Without reference, given an M16 rifle, disassemble the rifle in 30 seconds in accordance with the procedures listed on pages 2-29 to 2-32 of FMFM 0-8.

Test Item:

1. **Instructions to the Evaluator:** Ensure you have an adequate training facility to conduct testing. Also, ensure the student has an M16 rifle. Inform the students that they have 30 seconds to disassemble the rifle. Inform students that if the time limit is not adhered to or he/she misses a step, the student will be given remedial training and retested. If the student fails a second time, he/she will be recommended for an academic review board. Ask the students if they have any questions. Tell the students to begin and evaluate the students by using the checklist provided. Once the test is completed, let the students know if they passed, send them to their next test station (if applicable), and turn completed checklist into Academics Chief.

2. **Instructions to the Student:** When the instructor says begin, disassemble the rifle. You have 30 seconds. You will be evaluated using a performance checklist detailing the disassembly procedures of an M16 rifle in accordance with FMFM 0-8. If you fail to complete this task in the time given you will receive remedial training. If you miss a step in the process you will receive remedial training. After completion of remedial training, you will be retested. If you fail to pass the second attempt, you will be recommended for an academic review board. Do you have any questions? You may begin.

3. **Performance Checklist**	YES	NO
a. Cleared the rifle.	___	___
b. Removed the sling.	___	___
c. Removed the handguards.	___	___
d. Separated rifle into two main groups.	___	___
e. Removed the charging handle.	___	___
f. Disassembled bolt carrier group.	___	___
1) Removed firing pin retaining pin.	___	___
2) Removed the firing pin.	___	___
3) Removed cam pin.	___	___
g. Disassembled the weapon in 30 seconds or less.	___	___

Writing Knowledge-Based Test Items

Writing True/False Test Items. True/False items are comprised of statements rather than questions. The item must be directly related to a learning objective. True/False items are designed to test knowledge, which means that they should be related to "knowledge" (Know-How-To or Know) from the learning analysis. Guidelines for writing true/false test items are as follows:

1. Include only one idea in each statement.
2. Place the crucial element at or near the end of the statement.
3. Avoid using negatives such as "no" or "not." They tend to confuse students.
4. Do not use absolutes such as "all," "every," "none," and "never."
5. Do not use statements containing "some," "any," and "generally."

Below is a checklist that can be used to evaluate true/false test items.

TRUE/FALSE ITEMS CHECKLIST

	YES	NO
1. Is this type of item appropriate for measuring the learning objective?		
2. Does each statement contain one central idea?		
3. Can each statement be undisputedly judged true or false?		
4. Are the statements brief and stated in simple, clear language?		
5. Are negative statements used sparingly and double negatives avoided?		
6. Are statements of opinion attributed to some source?		
7. Is there approximately an even number of true and false statements?		
8. When arranged in the test, are the true and false items put in random order?		

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Enabling Learning Objective:

Without the aid of the reference, given a M16 service rifle, associated equipment and ammunition, identify "make safe" procedures in accordance with the FMFM 0-8.

Test Item: When given the command to "make safe," the shooter will place the M16 service rifle in Condition 3. **True** ____ **False** ____

Figure 3-10 Sample True False Test Item

Incomplete Stem:
_____is the first step in disassembling the M16.

Complete Stem: When disassembling the M16, what is the first step?

Correct response:

c. Clear the weapon.

Distracters:

a. Take out the buffer.

b. Take off the hand guards.

c.

d. Take off the Lower receiver.

Components of a Multiple Choice Test Items. Before getting into the rules for writing this type of test item, the various components of a multiple-choice test item need to be discussed. There are three basic components to this test item: the stem, the responses, and the distracters.

a. **Stem.** The stem is a statement of the problem and should be worded in simple and understandable terms. Wording should be appropriate to the subject matter and to the group being tested. The solution to the problem should not depend upon the student's ability to translate complex sentence structure contained in the stem. Basically, there are two types of stems: the incomplete statement or the complete statement (usually in the form of a question).

b. **Responses.** Apart from the stem, the test item also consists of several possible answers or responses; only one of which is to be accepted as the correct response. There are only two types of responses, the correct response and alternative responses. Alternative responses are also known as distracters.

c. **Distracters.** Distracters are incorrect alternative responses to the question, however, all distracters are worded to be believable. Using commonly mistaken ideas and common misconceptions concerning the subject matter can best compose distracters. Care should be taken in forming the distracters. Distracters should not be designed to deceive students; rather, they are designed so that a student who does know the material will clearly know that the distracter is an incorrect answer. The student who does know the material should be able to select the correct response. Do not fall into the trap of presenting the student with a choice between several "correct" responses.

Writing Multiple Choice Test Items. Multiple choice test items are used to test facts and application of rules and procedures. They may also be used to test discriminations and problem solving. Guidelines for writing multiple choice test items are as follows:

1. Do not use the articles "a" and "an" at the end of the stem; this tends to indicate the correct answer.
2. All responses should follow grammatically from the stem.
3. All responses should be of approximately the same length.
4. All responses should have a similar grammatical structure.
5. All responses should use similar terminology.
6. Provide as many responses as necessary but normally four.
7. Position the correct response randomly throughout the test.
8. Ensure that there is only one correct answer.
9. Distracters should be plausible (believable) but incorrect.
10. Logically order all responses. Examples are smallest to largest, chronological order, or whatever makes sense.
11. Underline or CAPITALIZE all negatives and "in sequence" words. It is best if negatives are not used in the stem.
12. Ensure that all items are independent from other items. No hints at the answer to other test items should be in any item.
13. Avoid "all of the above," "none of the above," or "A and B only" in responses. This kind of response reduces the validity and reliability of test items.
14. Avoid the use of absolutes such as "never" or "always" since they tend to assess the student's attention to detail rather than the subject.
15. Never use double-negatives or double-talk, such as "What response is never true?"

Enabling Learning Objective: Without the aid of reference, select in sequence the basic steps for performing preventive maintenance on the M16 service rifle in accordance with FMFM 0-8.

Test Item: IN SEQUENCE, select the basic steps for performing preventive maintenance on the M16 service rifle.

a. Disassemble, clean, lubricate, inspect, reassemble, clear, perform functions check.
b. Clear, disassemble, clean, inspect, lubricate, reassemble, perform functions check.
c. Disassemble, clean, reassemble, lubricate, perform function check, clear, inspect.
d. Clear, disassemble, clean, inspect, reassemble, lubricate, perform functions check.

Figure 3-11. Sample Multiple Choice Test Item

MULTIPLE-CHOICE ITEMS CHECKLIST		
	YES	NO
1. Is this type of item appropriate for measuring the intended learning objective?		
2. Does the item task match the learning task to be measured?		
3. Does the stem of the item present a single, clearly formulated problem?		
4. Is the stem stated in simple, clear language?		
5. Is the stem worded so that there is no repetition of material in the alternatives?		
6. Is the stem stated in positive form wherever possible?		
7. If negative wording is used in the stem, is it emphasized (by underlining or caps)?		
8. Is the intended answer correct or clearly best?		
9. Are all alternatives grammatically consistent with the stem and parallel in form?		
10. Are the alternatives free from verbal clues to the correct answer?		
11. Are the distracters believable (plausible) and attractive to the uninformed?		
12. To eliminate length as a clue, is the relative length of the correct answer similar to that of the distracters?		
13. Has the alternative "all of the above" been avoided and "none of the above" used only when appropriate?		
14. Is the position of the correct answer varied so that there is no detectable pattern?		
15. Does the item format and grammar usage provide for efficient test taking?		

Assessment of Student Achievement. By Norman E. Gronlund, p.75.

Writing Matching Test Items. A matching test items contains a list of premises (items that require responses), a list of responses (possible answers), and a brief explanation of how the premises and response are related. Guidelines for writing matching items are as follows:

1. Provide, clear, concise directions on how to match the items in the two columns.
2. Indicate whether the responses may be used more than once.
3. Limit test items to a single area of choices to a single subject category.
4. Arrange the responses in the same logical order.
5. The responses and premises should have parallel grammatical construction.
6. Keep each list of premises and responses as brief as possible. It is recommended to have no more than ten items.
7. Always have more responses than premises.
8. The entire matching test item should be kept on the same page.

Enabling Learning Objective: Without the aid of reference, identify the individual components of the three main groups in a M16 service rifle per TM 05538C-10/1.

Test Item: Column A contains the three main groups of the M16 service rifle and column B contains a list of individual rifle components. Match the components to its main group.

A	B
___ Upper receiver	a. Hand guards, rear sight, ejection port.
___ Lower receiver	b. Bolt, firing pin, cam pin.
___ Bolt carrier group	c. Slide, half cock notch, ejector.
	d. Selector switch, magazine release, trigger.

Figure 3-12. Sample Matching Test Item

MATCHING ITEMS CHECKLIST		
	YES	NO
1. Is this type of item appropriate for measuring the intended learning objective?		
2. Does the item task match the learning task to be measured?		
3. Does each matching item contain only similar material?		
4. Are the lists of items short with the brief responses on the right?		
5. Is an uneven match provided by making the list of responses longer or shorter than the list of premises?		
6. Are the responses in alphabetical or numerical order?		
7. Do the directions clearly state the basis for matching and that each response can be used once, more than once, or not at all?		
8. Does the complete matching item appear on the same page?		

Assessment of Student Achievement. By Norman E. Gronlund. p. 87.

Writing Listing Test Items. A listing test item requires the student to list a specified number of items in response to a question. For example, a student may be asked to list the seven basic steps for performing preventative maintenance on the M16. Listed below are a few guidelines to keep in mind when writing a listing test item.

1. The student should always be told the number of items to be listed.
2. A listing test item can cover a complete procedure; such as, the steps in the process of disassembling the M16.
3. If the sequence of the process is important for the student to know, then "in sequence" should be highlighted or printed in bold text. For instance, if a Marine was being tested on failure to fire procedures before going to the rifle range, then "in sequence" would be very important.
4. Provide blanks of the same length at a length long enough for the student's answers.

Learning Objective: Without the aid of reference, list in sequence the five phases of the SAT process in accordance with the SAT.

Test Item: List IN SEQUENCE the five phases of the SAT process.

_____

_____

_____

_____

Figure 3-13. Sample Listing Test Item

Writing Fill in the Blank Test Items. A fill in the blank test item requires the student to recall facts and supply one or more key words that have been omitted from the statement. When placed in the appropriate blanks, the word(s) make the statement complete, meaningful, and true. Listed below are a few guidelines to keep in mind when writing a listing test item.

1. Leave blanks for key words only.
2. Keep items brief.
3. Make all blanks approximately the same size.
4. Grammatical cues to the correct answer, such as the articles "a" and "an" just before the blank, should be avoided.
5. Ensure that only one correct answer is possible for each blank.
6. Ensure that the sentence has enough context to cue the correct response.

Enabling Learning Objective: Without the aid of the reference, describe in writing the performance characteristics of the M16 service rifle in accordance with TM 05538C-10/1.

Test Item: The maximum effective range of the M16 service rifle is _____ meters at individual/point targets and _____ meters at area targets.

Figure 3-14. Sample Fill In The Blank Test Item

Short Answer Test Items. Listed below are a few guidelines to keep in mind when writing a short answer test item.

1. Phrase the item so that the required response is concise.
2. May use a question or a statement.
3. Provide space for student to answer.
4. Provide same amount of space for each answer.

Enabling Learning Objective: Without the aid of reference, describe in writing the performance characteristics of the M16 service rifle in accordance with TM 05538C-10/1.

Test Item: State the cyclic rate of fire for the M16 service rifle.

_____

Figure 3-15. Sample Short Answer Test Item

SHORT ANSWER/FILL IN THE BLANK ITEMS CHECKLIST		
	YES	**NO**
1. Is this type of item appropriate for measuring the intended learning outcome?		
2. Does the item task match the learning task to be measured?		
3. Does the item call for a single, brief answer?		
4. Has the item been written as a direct question or a well-stated incomplete sentence?		
5. Does the desired response relate to the main point of the item?		
6. Have clues to the answer been avoided (e.g., "a" or "an," length of the blanks)?		
7. Are the units and degree of precision indicated for numerical answers?		

Assessment of Student Achievement. By Norman E. Gronlund. p.99.

Labeling Test Items. Listed below are a few guidelines to keep in mind when writing a labeling test item.

1. Make all sketches, drawings or illustrations clear and of sufficient size. If possible, use the actual parts of a unit.
2. Provide sufficient information to indicate what the equipment is and which part is to be labeled.
3. The parts to be labeled or identified should be clearly pointed out by using lines or arrows.
4. Ensure that only one definite answer is possible.

Recording Test Items

Test items are recorded on the Learning Objective Worksheet (LOW), which is a required document of the Master Lesson File (MLF). Refer to MCO 1553.2 Chap 1 para 6 on the required MLF components. See MCO 1553.2_ Appendix O-4 for the LOW and Appendix O-5 for the LOW Checklist. Entering test items into MCTIMS will facilitate the automated grading/scoring of tests, tracking of GPAs (if applicable), and test item analysis (discussed in Section 5300 of this manual).

SELECT INSTRUCTIONAL METHODS

An instructional method is the approach used to present instruction. The method selected will have a direct impact on both the quality of the training system and its cost effectiveness. Any given lesson will probably incorporate two or more methods to serve different purposes at different points in the progression of the lesson.

STEP 1

Consider the Advantages and Limitations of Methods

In order to evaluate instructional methods, consideration of the advantages and limitations inherent to each is required. Twelve major types of instructional methods are characterized below. Lecture, demonstration and practical application are three of the most common methods. They are easily remembered as "tell, show, do."

INSTRUCTIONAL METHODS	ADVANTAGES	LIMITATIONS
Lecture (Formal, Informal, Briefing, Guest). Formal lecture involves one-way communication used for reaching large audience in a classroom setting. Informal lecture involves considerable interaction between the instructor and student in both the form question and discussion.	☑ Ideal for presenting many ideas in a short time. ☑ Suitable for introducing a topic. ☑ Convenient for instructing large groups. ☑ Supplementing material from other sources.	☑ Does not provide an avenue for the instructor to estimate student progress. ☑ No active participation by students. ☑ Dependent on the instructor's speaking skills. ☑ Not responsive to individual needs of students. (Informal lectures however, accommodate these concerns)
Indirect Discourse (Panel Discussion, Dialogue, Teaching Interview). Involves verbal interaction among two or more persons, which is seen and heard by students. Some example include, dialogue, a teaching interview, a panel discussion (debate), skits, playettes, and other dramatizations.	☑ Can effectively be used for extremely large groups. ☑ Facilitates higher level cognitive skills. ☑ Class size is not an issue with this method.	☑ Does not permit students' needs to be satisfied. ☑ Instructors cannot gauge if learning has transferred. ☑ Requires a high level of instructor expertise to be effective. ☑ Recommended method to reach high levels of learning. ☑ Evaluation is not inherent in method. ☑ Not responsive to individual needs of students.
Demonstration. This instructional method is used to allow students to observe instructors perform a sequence of events. It is designed to teach a procedure, technique, or operation.	☑ Enables performance standards to be demonstrated. ☑ Provides immediate feedback. ☑ Method may be tailored during instruction. ☑ Responsive to individual needs. ☑ Extremely effective when used in conjunction with lecture or prior to practical application. ☑ Evaluation is inherent in method. ☑ Instructors can tell if learning has transferred.	☑ Time consuming to develop and requires a great deal of preparation. ☑ Requires a high level of expertise. ☑ Instructor must be able to anticipate student error. ☑ Best conducted in small groups. ☑ Success is dependent on demonstrator skills.
Reading (Books, Reference Publications, Web-based Material, Manuals, Handouts). The assignment to a student or printed materials including books, periodicals, microfilms, manuals and regulations, and handouts.	☑ Most effective and time efficient means of presenting material. ☑ Students progress at own pace.	☑ Not responsive to individual needs. ☑ Dependent on availability of resources. ☑ Evaluation is not inherent in method. (Should be used as a supplement with formal Marine Corps curricula. In cases of entry-level should be used sparingly.)

INSTRUCTIONAL METHODS	ADVANTAGES	LIMITATIONS
Self-Paced (Programmed, Modular, Computer Assisted, Mediated). Self-paced instruction is a learning program, which is organized so that students are allowed to move through it at their own pace under the guidance of an instructor. Some typical applications include, programmed instruction (paper and computer), modular instruction (prepackaged units of instruction containing clear statement of objectives, computer-assisted instruction (computer used as vehicle for interaction), and mediated instruction (slides, film, tapes, and cassettes).	☑ Accommodates learning rates. ☑ Provides immediate feedback. ☑ Responsive to individual needs. ☑ Evaluation is inherent the method.	☑ Has rigid rules and requires considerable development time. ☑ Instructor experience must be high to utilize this method effectively. ☑ Directed towards individual learning.
Questioning (Socratic Method, Student Query). Questioning as a method is used to emphasize a point, stimulate thinking, keep students alert, check understanding, review material, and seek clarification. Examples of this method are the Socratic method (instruction by asking students questions), and student query (students asking questions).	☑ Reaches higher levels of learning. Stimulates higher order thinking. ☑ Effective at developing mental skills. ☑ Evaluation is inherent this method. ☑ Responsive to individual needs and differences.	☑ Will not work if students are unfamiliar with the topic. ☑ Requires a high level of instructor expertise to be used effectively. ☑ Lends itself best to one-on-one or groups of 8-12 for instruction.
Discussion-Non Directed (Peer Controlled Seminar Free Discussion). Non-directed discussion is an individual/group interactive process in which task or objective-related information and experiences are evoked from a student or the group. This method places the responsibility for learning on the students through their participation.	☑ Works best if students have experience with lesson topic. ☑ Responsive to the individual needs of students.	☑ Danger the seminar method will pool ignorance. ☑ Natural leaders of the class may dominate discussion. ☑ Instructors play a limited/passive role. ☑ Recommended for both lower and higher level cognitive skills. ☑ Most effective for small groups of 8-12 students. ☑ Evaluation not inherent in method.

INSTRUCTIONAL METHODS	ADVANTAGES	LIMITATIONS
Guided Discussion. Guided discussion provides interaction among students and instructors. This instructional method develops concepts and principles though a group process and the unobtrusive guidance of the instructor.	☑ Involves interaction by all. ☑ Allows students to exchange ideas, values, and attitudes. ☑ Responsive to the individual needs of students. ☑ Effectively used for teaching in the Affective Domain.	☑ Not recommended for simple recall of information. ☑ Effective utilization of this method requires a high level of instructor expertise. ☑ Instructors must be able to judge value of student responses. ☑ 8-12 students is the optimum size to conduct a guided discussion. ☑ Evaluation is not inherent with this method.
Practical Application. Individual Projects. Students interact with things, data, or persons as necessary to develop the skills to master the learning objectives.	☑ Provides student's maximum flexibility to practice and demonstrate acquired skills in a controlled setting. ☑ Method combines well with other methods. ☑ Evaluation is inherent this method. ☑ Responsive to student's special weaknesses, interests, and needs.	☑ Time consuming. ☑ Require supervision and informal evaluation by the instructor. ☑ Can take place outside the classroom. ☑ Students need to acquire mastery for this method to be effective. ☑ One of the best methods for ensuring learning at higher levels of application, analysis, and evaluation. ☑ High level of instructor expertise ☑ Designed for individual instruction.
Field Trips. A field trip is an out-of-classroom experience where students interact with persons, locations, and materials or equipment for the attainment of objectives. Typically used for affective purposes rather than for measurable cognitive development.	☑ Students encounter real settings appealing to all senses. ☑ Method is highly recommended for reaching the affective domain.	☑ May require extensive logistical considerations. ☑ Instructor must be at the comprehension level. ☑ Not typically used as much for cognitive development. ☑ Evaluation not inherent in the method ☑ Not responsive to individual needs.

INSTRUCTIONAL METHODS	ADVANTAGES	LIMITATIONS
Simulations (Role-playing, Games). Simulations are low risk, educational experiences, which substitute for some real life situation. It may involve groups or whole units. Some kinds of simulations are role playing, in-basket exercises (used in random order to simulate a series of matters or decisions which a leader might actually encounter), organizational or management games- students manipulate an organization or some component part to produce certain outcomes, hardware simulations (students use trainers that resemble, to some degree, the equipment that is to be used on the job; e.g. flight simulator and virtual reality).	☑ Low risk and effective as capstone methods following a block of instruction. ☑ Students can operate at the highest cognitive level in a low-risk environment. ☑ Student weaknesses and strengths can be quickly identified and worked with. ☑ Recommend few students per instructor ☑ Evaluation is inherent in the method. ☑ Responsive to students needs.	☑ Not usually recommended for imparting knowledge to students. ☑ Knowledge is presumed to be prerequisite for this method. ☑ Elaborate versions may require special equipment. ☑ Few students per instruction during simulation itself. ☑ Simulation areas are of various sizes and configurations. ☑ Requires trained staff to conduct.
Case Study. A learning experience in which students encounter a real-life situation in order to achieve some education objective.	☑ Students develop new insights into the solution of specific on-the-job problems. ☑ No follow-up evaluation is necessary ☑ Responsive to student's needs, differences, and creativity. ☑ Evaluation is inherent in the method.	☑ Can be time consuming. ☑ One of the best methods for reaching higher levels in the cognitive domain ☑ Students must have thorough understanding at the comprehension level prior to starting. ☑ Level of instructor expertise is high. ☑ Size of class is normally small, but may accommodate larger groups.
Coaching. A learning experience where face-to face interaction occurs between the instructor and the student in order to meld individuals with diversified backgrounds, talents, experience and interests; encouraging them to accept responsibility and seek continued improvement and achievement.	☑ Enhances learning and enables performance standards to be demonstrated. ☑ Provides immediate feedback. ☑ Responsive to individual needs. ☑ Extremely effective when used in conjunction with lecture or prior to practical application. ☑ Evaluation is inherent in the method.	☑ Time consuming to develop. ☑ Requires a great deal of preparation. ☑ Requires a high level of expertise. ☑ Instructor must be able to anticipate student error. ☑ Best conducted in small groups or individually. ☑ Accommodates evaluation and instructors can tell if learning had transferred.

Review Method Considerations

STEP 2

In addition to considering the advantages and limitations of each method, the Curriculum Developer must review the following: learning objectives, TPD, adult learning principles, and resource constraints.

Learning Objectives. The method choice must complement the kind of learning to be undertaken by the students (e.g. cognitive, affective, psychomotor). Based upon the domain and the level required by the learning objective, methods of instruction are chosen that will enable students to perform at the specified level. A combination of methods work best.

> **For example:** If the terminal learning objective required learners to assemble a piece of equipment, then the informal lecture method alone is inadequate to teach that particular skill. Since the objective is a motor skill, students would benefit by adding demonstration and practical application.

Target Population Description (TPD). Consider the level of motivation, background, knowledge, and skill level of the target population.

> **For example:** Since the case study method requires the learners to analyze and evaluate the subject matter, then case study method would not be the appropriate method for students with no prior knowledge.

Consider Adult Learning Principles. Typically, adults are self-directed learners and bring their own experiences to the classroom. Research has shown that they learn best:

- ☑ through problem-based learning.
- ☑ in small groups.
- ☑ when challenged.

NOTE: The TPD must also be considered along with these principles.

> **For example:** If the course is entry level, the students may not bring a lot of experience to the classroom and problem-based learning may not be appropriate. Also, courses for entry-level students are generally large in size, which may not allow for certain interactive methods.

Resource Contraints. Although resource constraints should not be the primary factor in determining instructional methods, availability of resources must be considered. This can include minimum level of instructor experience, class size, evaluation potential, and the ability to meet the individual needs of students.

For example: If the Curriculum Developer wanted to use the demonstration method to show students how to field strip various weapons, experience level of the instructors would need to be considered. In this particular case, instructor experience must be high in order for the demonstration to be successful.

STEP 3

Select Method

Select the appropriate method after reviewing method considerations.

STEP 4

Record Instructional Methods

The instructional method chosen is recorded in MCTIMS for printing on the Learning Objective Worksheet (LOW) and the Concept Card.

SELECT INSTRUCTIONAL MEDIA

STEP 1

In any instructional situation there is a message to be communicated. Video, television, diagrams, multimedia, computers, and printed material are examples of media used to communicate the message. Appropriate media ensures that information is presented to students by the most effective and cost-efficient means possible.

The Curriculum Developer should select a media mix that is best suited for the TPD. Selection of media types should also take into consideration theories of adult learning.

Consider the Advantages and Limitations of Media

Media have various characteristics that make them either suitable or unsuitable for particular training situations. Consider the characteristics listed in Figure 3-18 carefully to ensure that the appropriate media are selected for the instructional system.

See Media Figure 3-18 on the next page.

MEDIA CHARACTERISTICS	ADVANTAGES	LIMITATIONS
Printed Materials. Printed material must be kept simple, yet meaningful; displaying only small amounts of information.	☑ Easily constructed. ☑ Easily duplicated. ☑ Effective for indoor use. ☑ May be enlarged, displayed, or distributed to students as a handout. ☑ Low cost. ☑ Readily available. ☑ Computer-generated graphics and charts can be easily revised.	☑ Can not be tailored to needs of students during instruction. ☑ Can only be used outdoors if weather permits. ☑ Time consuming if images are illustrations or photographs, or digital images. ☑ Flat pictures cannot be revised.
Chalkboards and Dry Erase boards. Common presentation media tools that are familiar to instructors and students alike.	☑ Easy to prepare and use. ☑ May be used to show development or buildup of an event or display. ☑ Allow information to be tailored during instruction. ☑ Effective when instruction calls for great deal of writing. ☑ Portable (in some instances). ☑ Low in cost. ☑ Readily available.	☑ Displays are not effective if lettering is not large enough to be seen by all.
Turn Chart. Simple and familiar in design, specifically in small interactive classes.	☑ Easy to prepare and use. ☑ May be used to show development or buildup of an event or display. ☑ Allow information to be tailored during instruction. ☑ Effective when instruction calls for great deal of writing ☑ Allows for interaction between instructor and students. ☑ Portable. ☑ Low in cost. ☑ Readily available.	☑ Displays are not effective if lettering is not large enough to be seen by all. ☑ Can only be used outdoors if weather permits, unless lamination is applied (cost factor).

Figure 3-18 Media Characteristics (continued)

MEDIA CHARACTERISTICS	ADVANTAGES	LIMITATIONS
Models/Mock-Ups. Models/Mock-Ups is representations of actual equipment, structures or devises. Models/Mock-Ups seeks to represent actual items when items are too large, to difficult, or too dangerous to be brought into the classroom.	☑ Appeals to students' sense of touch. ☑ Realistic ☑ Shows details. ☑ Useful in demonstrations and hands-on experiences	☑ Time consuming to develop. ☑ May require specialized personnel. ☑ May require assistant instructors. ☑ Class size limited to the size of the model/mock-up. ☑ May be costly. ☑ May not be readily available. ☑ Cannot be revised (only minor modifications can be made).
Actual Item/Object. AIOs are the equipment or devices that are actually utilized in the performance of the task or job. AIOs may be too difficult, or too dangerous to be brought into an indoor classroom and therefore outdoor facilities may need to be utilized. Actual Item/Object. AIOs are the equipment or devices that are actually utilized in the performance of the task or job. AIOs may be too difficult, or too dangerous to be brought into an indoor classroom and therefore outdoor facilities may need to be utilized.	☑ Appeals to students' sense of touch. ☑ Realistic ☑ Shows details. ☑ Useful in demonstrations and hands-on experiences	☑ Time consuming to develop. ☑ May require specialized personnel. ☑ May require assistant instructors. ☑ Class size limited to the size of the model/mock-up. ☑ May be costly. ☑ May not be readily available. ☑ Can not be revised (Only replaced)
	☑	☑

Figure 3-18 Media Characteristics (continued)

MEDIA CHARACTERISTICS	ADVANTAGES	LIMITATIONS
Slides. Slides are presented using a slide carousel and projector that projects images on a large screen or wall.	☑ Effective for presenting still images of text, photographs, and graphics to large audiences. ☑ Ideal for enlarging images. ☑ Easy to develop if computer generated. ☑ Can be combined in any sequence. ☑ Instructor can maintain eye contact with students. ☑ Slide projectors are easy to use ☑ Easy to update, move, or rearrange.	☑ Slides can only be used where there is source of electricity. ☑ Requires a large screen. ☑ Projector must be monitored for overheating. ☑ Requires additional equipment (e.g.. slide carousel, extra bulb). ☑ Can be costly to develop if photos are developed into slides.
Audio. Audio is generally used in conjunction with other media (e.g. supplementing a slide presentation).	☑ Effective for self-paced instruction. ☑ Easy to use.	☑ Lengthy to develop. ☑ Costly to develop. ☑ Cannot be tailored during instruction. ☑ Requires a source of electricity and additional equipment (e.g. Audio Deck). ☑ Cannot be revised.
Video. Video recreates or shows footage of actual sites, events, procedures, equipment that is difficult or dangerous to observe in class (e.g. volcanic eruption).	☑ Effective for recreating actual events. ☑ Presenting correct method for performing a set of procedures. ☑ Reproduced at a low cost. ☑ Readily available from commercial sources. ☑ Easy to use.	☑ Generally requires a great deal of planning. ☑ They can not be tailored during instruction. ☑ Requires a source of electricity. ☑ Normally requires additional equipment (e.g. TV). ☑ Has a high initial development cost. ☑ Cannot be revised (copyright).

Figure 3-18 Media Characteristics (continued)

MEDIA CHARACTERISTICS	ADVANTAGES	LIMITATIONS
Computer Based Training (CBT). Computer based training utilizes the computer as an instructional device.	☑ Allows students varying levels of control over the rate and sequence of their learning. ☑ Provides immediate feedback. ☑ Provides reinforcement. ☑ Tracks student progress. ☑ Provides diverse learning experiences	☑ Educators and students have unrealistic expectations. ☑ Teaches only a limited range of interaction. ☑ Human interaction is reduced or completely eliminated. ☑ Start-up cost for both hardware and software can be very expensive. ☑ Software cannot be revised.
	☑	☑
	☑	☑

MEDIA CHARACTERISTICS	ADVANTAGES	LIMITATIONS
Computer Mediated Conferencing, Video Teleconference, Virtual Conferencing, Interactive Television, and Desktop Video Conferencing. All of these methods describe learning via telecommunications. These types of media formats permit cost-effective training to large numbers of people who may be disturbed across numerous sites.	☑ Real-time interactivity to large audiences in a cost efficient way. ☑ All television/computer systems allow the transmission. ☑ OD motion images and sound over a distance. ☑ Learners can communicate with the instructor and with each other via telephone or two-way video.	☑ The classroom used must be dedicated for two-way communications ☑ Can not generally be used for other purposes. ☑ Learners may feel isolated. ☑ Technical problems any interrupt instruction. ☑ Instructors may not feel comfortable using these mediums. ☑ Students may be reluctant to assume greater responsibility in this type of setting. ☑ Start up cost may be expensive depending on requirements. ☑ May not be available due to space constraints.
	☑	☑

Figure 3-18 Media Characteristics

REVIEW MEDIA CONSIDERATIONS

STEP 2

The type(s) of media selected should enhance the presentation of information and compliment the method of instruction, be available, and be able to be developed prior to the onset of the course. Curriculum developers weigh these factors and select the media for the course of instruction being taught. The following factors are considered and analyzed prior to selecting instructional media:

Factors that must be considered.

a. **Target Population Description:** Consider the abilities, education level, and learning preferences of the learner to select media that meets their learning preferences and abilities.

b. **Learning Objective**: Identify the learning domain addressed in the learning objective as either, Cognitive, Psychomotor, or Affective.

c. **Class size:** Ensure the type of media selected compliments the size of the class. For the Marine Corps, in most situations: 1-9 students is considered a small class, 10 -20 students is a medium class, and over 20 students is a large class.

d. **Resources:** Money, time, scheduling, facilities, personnel, and equipment availability must also be considered to assess whether certain types of media are available, cost effective, and/or feasible to use.

e. **Learning Styles:** Consider that students will have different learning styles. Instruction is best when it accomodates visual, auditory, and kinesthetic learners.

Select Media

STEP 3

After considering the target population description, learning objective, class size, resources and learning styles, select the media that best accommodates these factors.

Record Instructional Media

STEP 4

The instructional media chosen is recorded on the Learning Objective Worksheet (LOW). The selected media is then recorded in MCTIMS for inclusion on the LOW and Concpet Card.

3003. SEQUENCE LEARNING OBJECTIVES (LO)

SECTION 4

Sequencing LOs is the final process of the design phase and provides a foundation for developing course structure. Once this is completed, instruction is developed. The purpose of sequencing LOs is to ensure the instruction promotes learning by the optimum placement of learning objectives. Sequencing LOs provides the following benefits:

a. **Efficiency**. Sequencing LOs allows for an efficient system of instruction while avoiding duplication.

b. **Transition**. Properly sequenced LOs allow the student to make a logical transition from one skill or knowledge to the next while avoiding confusion. This ensures that supporting knowledge and skills are acquired before dependent subject matter is introduced.

c. **Structured Learning**. Sequenced LOs serve as a rough course structure and outline the strategy for instruction. This is important as it facilitates learning, particularly when introducing new concepts or material. This transfer of learning is maximized when closely related learning objectives are kept together.

RELATIONSHIPS BETWEEN LOS

To sequence LOs, they are organized into broad categories. The relationships between them are determined and they are sequenced in the order implied by their relationship. Learning objectives do not necessarily have to be taught in the sequence they are listed. For instance, facilities and equipment may not be available for this. The organization provides the optimum sequence for learning, but it may not always be possible to instruct the course in this order.

1 **Grouping LOs**. Before LOs are sequenced, they should be grouped. LOs that deal with the same subject have a shared element relationship and may be grouped together. The shared element may be that of an object (e.g., ammunition, supply procedures, M16 rifle) or a condition (e.g., a desert environment, using a specific piece of equipment, nighttime).

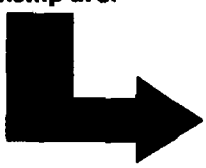
   a. **Same Object**. LOs with the same object may be grouped together (e.g., all TLOs pertaining to the M16 rifle or all LOs pertaining to a communications annex). Same object LOs can often be determined by reviewing the T&R Events, because all tasks are grouped by duty areas that define similarities among them. LOs may be grouped by these same areas also. Grouping LOs this way maximizes the mastery of LOs, because closely related LOs are kept together.

b. **Same Condition.** The environment and the resources within a school should be considered when grouping LOs. LOs may be grouped by like resources (e.g., all instruction requiring the use of a radio or all instruction that takes place on the firing range). Grouping learning objectives with the same condition maximizes instructional time (e.g., instructional time is not lost due to traveling from one location to another or due to obtaining the same equipment at different times throughout the course) allowing an efficient system of instruction.

2. **Relationships in sequencing.** To logically sequence LOs, the curriculum developer must determine the relationship among them. The four most important relationships in sequencing LOs are dependent, supportive, independent, and conflicting. They are described in detail below:

a. **Dependent Relationships.** Dependent relationships exist between LOs that are a prerequisite to other LOs. Personnel must master the dependent LO before they can master the others. Examples of actions having a dependent relationship are:

Examples of actions having a dependent relationship are:



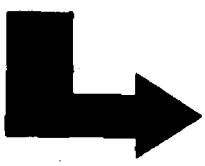
For a sniper to engage a target, he must first learn to apply the principles of marksmanship.

To send a message in Morse code, one must first learn to identify the Morse code symbols for each letter and number.

b. **Supportive Relationships.** In supportive relationships, skills and knowledge in one LO have some relationship to those in another LO. The learning involved in mastery of one LO transfers to the other, making learning involved in the mastery of the other easier. In a supportive relationship, LOs are sequenced so that a logical transition can be made from one skill or knowledge to the next. This type of sequencing is largely dependent upon the Curriculum Developers expertise in the subject matter and subjective judgment of what makes the learning of a task easier. For example, "maintain a checkbook ledger" has a supportive relationship to "balance a checkbook." You could learn how to balance a checkbook without first learning to maintain a checkbook ledger. However, learning to maintain a ledger first will make balancing a checkbook much easier.

Other examples are:

Examples of actions having a supportive relationship are:



"Disassemble the M16 service rifle." Disassembling the M16 service rifle has a supportive relationship to the "assembly of the M16 service rifle."

"Drive a 1/4 ton truck." Driving a 1/4 ton truck has a supportive relationship to "drive a 5 ton truck."

"Write learning objectives." Writing learning objectives has a supportive relationship to "given learning objectives, write a lesson plan.

c. **Independent Relationships**. In an independent relationship, skills and knowledge in one learning objective are unrelated to those in another LO. For example, "balance a checkbook" has nothing to do with "selecting investments." Arrange LOs with independent relationships in any reasonable sequence. However, they should not be placed between LOs having dependent or supportive relationships. Examples of actions having an independent relationship are:

"Balance a checkbook" is independent of "select investments."

"Solve mathematical equations (general math, geometry, calculus)" is independent of "solve scientific equations (chemistry, physics)."

"Dissasemble the M16" is independent of "disassemble the 9mm pistol."

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d. **Conflicting relationships**. Conflicting relationships exist between LOs that involve opposite responses to the same cue in a different context. These responses must be clearly related to the situation in which the cue is received. The two actions should be taught together and the reason for the opposite response to the same cue explained and reinforced. The conflicting element that causes two very similarly stated LO(s) to be conflicting usually involves a visual or auditory cue within the learning objective(s).

e. Remember to sequence the LO(s) with conflicting relationships as close to one another as possible so that the conflicting issues/concerns can be addressed. Examples of conflicting elements presented in similarly stated actions are:

In the TLO "As a member of a platoon and on the command fall in, fall in platoon formation per the NAVMC 2691W/CH 1." This command could mean two distinctive different movements, depending on whether the platoon has weapons or not. You may want to teach these movements close to each other to show the major differences and make it clear to the platoon.

In the TLO "As a member of a platoon and on the command right face, execute a right face per the NAVMC 2691 W/CH 1," the same holds true depending on whether the platoon is armed. If the platoon is not armed, on the command of execution, "Face," the individuals in the platoon simply execute a right face. On the other hand, if armed, the individuals in the platoon have to execute trail arms, right face, and then order arms.

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f. **Relationship Table**. Not all actions fit neatly into one of the above categories. Some may seem to be both dependent and supportive. Other combinations may seem to be just as possible. The table in Figure 3-19 summarizes the relationships between TLOs.

DEPENDENT	CONFLICTING	SUPPORTIVE	INDEPENDENT
Knowledge and skills in one LO are closely Related to those in the other LO.	Knowledge and skills in one LO conflict in some respect with those in another LO.	Knowledge and skills in one LO have some relationship to those in the other LO.	Knowledge and skills in one LO are unrelated to those in the other LO.
To master one of the LOs it is first necessary to master the other.	Mastering one LO may cause difficulty in mastering the other LO.	Mastering one LO transfers to other, making learning Involved in the mastery of the other easier.	Mastering one LO does not simplify mastering the other.
LOs must be arranged in the sequence indicated by the knowledge and skills hierarchy.	LOs must be taught closely together, directly addressing the conflicting elements between the two LOs.	LOs should be placed close together in the sequence to permit optimum transfer of learning from one LO to the other.	In general, the LOs can be arranged in any sequence without loss of learning efficiency.

Figure 3-19 Relationship Table

STEPS FOR SEQUENCING LEARNING OBJECTIVES

The following are steps for sequencing LOs:

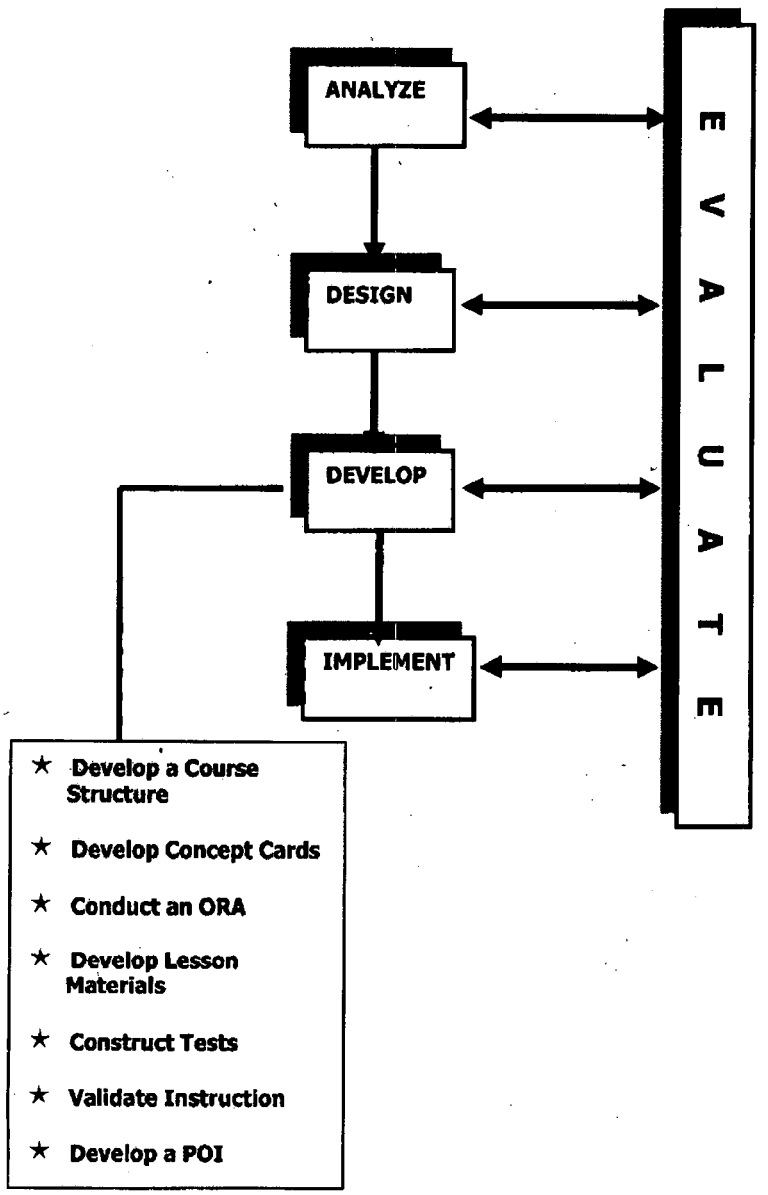
1. Group the LOs based on shared elements.
2. Determine if the relationship between the LOs is dependent, supportive, independent, or conflicting.
3. Arrange LOs based upon their relationship.
   - Sequence the LOs with **dependent relationships** in a hierarchical arrangement.
   - Sequence LOs with **supportive relationships** in an order that permits the optimum transfer of learning from one learning objective to another.
   - Sequence the LOs with **independent relationships** in any logical order. Since the LOs are independent of one another, the sequence in which they are presented will not affect learning. Remember that these LOs stand-alone and should not be placed between dependent or supportive LOs as this would disrupt the transfer of learning.

Summary of the Design Phase: The outputs of this phase are:

- ☑ **TPD**
- ☑ **Learning Objectives**
- ☑ **Test Items**
- ☑ **Method and Media**
- ☑ **Sequenced LOs**

These outputs become the inputs to the Develop Phase that begins with developing course structure.

DEVELOP PHASE



In Chapter 4:

Chapter 4

4000. INTRODUCTION

The Develop Phase of the Systems Approach to Training (SAT) process builds on the outputs of the Design Phase to produce a Program of Instruction (POI) and the Master Lesson File (MLF).

This chapter is broken down into the following eight sections:

1. **Develop A Course Structure.** The course structure is a detailed chronological document identifying the implementation plan for a course.
2. **Develop Concept Cards.** Academic and administrative concept cards are created to assign resources within the FLC to lessons, evaluation, and events.
3. **Conduct an Operational Risk Assessment (ORA).** An ORA will be conducted on each lesson/event within a Program of Instruction (POI). The associated ORA tools will be incorporated into the Master Lesson File (MLF).
4. **Develop Lesson Materials.** Lesson plans, student materials, supplemental student materials (optional), media, the Instructor Preparation Guide (IPG), are all lesson materials to be used during the Implement Phase.
5. **Construct Tests.** Constructing a test involves selecting and placing the test items from the Learning Objective Worksheet (LOW) on the appropriate test. It also involves providing ample instructions to the student, instructions to the evaluator, and developing the grading criteria for each test given in the course.
6. **Validate Instruction.** The goal of validation is to determine the effectiveness of instructional material prior to implementation.
7. **Develop a Program of Instruction (POI).** POI provides a detailed description of the course and is the FLC Commanders communication to TECOM of how the course is being conducted. These documents record the Formal School's plan for satisfying the training requirements listed in the Training and Readiness (T&R) order. The CDD (Section I of the POI) provides a summary of the resources required to administer a course and the task list.
8. **Assemble A Master Lesson File.** One Master Lesson File (MLF) is compiled for **EVERY** class taught at the FLC in order to provide continuity of instruction.

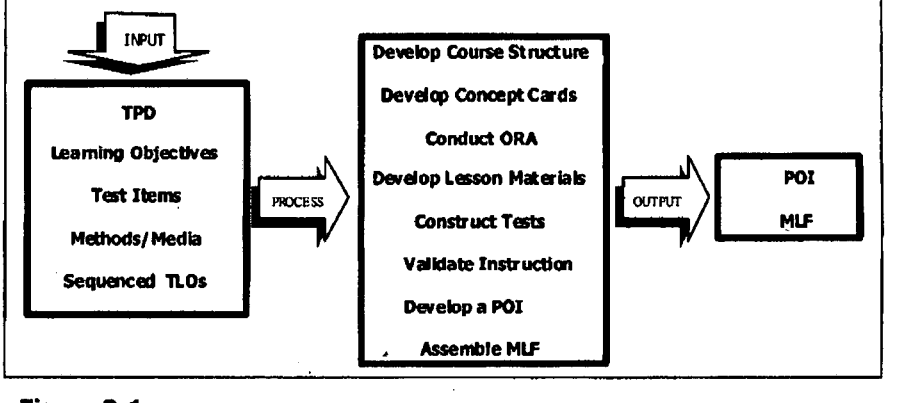


Figure 3-1

4001. DEVELOP COURSE STRUCTURE

SECTION 1

The purpose of developing course structure is to determine how much content is appropriate for a single lesson or a single exam and arrange the lessons and exams in a logical sequence. The course structure provides an outline of how the lessons in the course will flow from start to finish. Course structure is not a course schedule. However, the course structure provides a guideline for developing the course schedule. A course structure contains lesson titles, methods, academic hours, and lesson designators.

STEPS FOR DEVELOPING COURSE STRUCTURE

The four steps for developing course structure are: review source materials, determine lesson/exam content, estimate instructional hours, and assign lesson/exam titles and designators.

Review Source Material

STEP 1

The **first step** in developing course structure is to review the following items:

a. **The Learning Objective Worksheets (LOW) for the course that contains the Terminal Learning Objectives (TLO) and their associated Enabling Learning Objectives (ELO), the delivery system, and test items.**

b. **Directives from higher headquarters that may influence the length of the course.**

c. **School Standing Operating Procedures (SOP) for any additional school academic requirements that may affect the course.**

Determine Lessons/Exam Content

STEP 2

The **second step** in developing course structure is to decide how many objectives are appropriate for a single lesson or exam. There is a process used to determine lessons/exams.

See the Process of Determining Lesson/Exam Content on the next page:

Process of Determining Lesson/Exam Content

Review Objectives. When reviewing the objectives, consider the following:

1. **The complexity of an objective.** If it is lengthy or technical, the lesson may need to be divided into several lessons.
2. **The domain of the objective.** In general, objectives in the cognitive domain require fewer resources to teach. Several cognitive objectives may be reached during one lesson. However, an objective in the psychomotor domain can require more methods and more resources. Therefore, it may require more than one lesson.
3. **Select closely related objectives.** If multiple objectives are chosen for one lesson, select those objectives that are closely related. When combined, they must make a logical, self-contained group suitable for an individual lesson.
   - ☑ Learning objectives are organized so that the group has a natural beginning and ending point.
   - ☑ Look for "natural breaks" in the sequenced learning objectives that indicate major changes in subject matter (e.g., changing from one system to another or going from knowledge-based instruction to performance-based instruction.)

Consider Target Population Description (TPD). The level of experience the average student will bring into the classroom must be considered. Due to their lack of experience, entry-level students may not be able to comprehend multiple objectives in a single lesson. Remember that the students are seeing it for the first time.

Assign Lesson/Exam Titles. All lessons and exams are assigned titles (i.e., Perform Preventive Maintenance on the M16A2 Rifle). The titles must be meaningful and relate to the lesson or exam content.

Estimate Instructional Hours

STEP 3

Estimate Hours. An estimate of the hours required for each lesson is necessary to ensure that the proposed curriculum does not exceed the maximum training days authorized for the course. Academic time includes all hours devoted to instruction, review, evaluation, re-testing of the TLOs/ELOs, and organized physical training that requires instructor supervision. Some other non-academic events, such as course overview, end of course critiques, or training aid maintenance, should be included in this estimate. All other events not directly related to the structure of the course are administrative in nature and not considered when building course structure. If the estimate exceeds the maximum authorized training days, the FLC must contact CG, TECOM (GTD/ATD) for guidance. When estimating instructional time, consult and review the following:

See How to Estimate Instructional Hours on the next page:

Steps for Estimating Instructional Hours

1) Time requirements for similar lessons in other approved courses. This will give you an estimate of how long it may take to teach your lesson.

2) The number and complexity of learning objectives within each lesson. A learning objective's complexity is based upon whether its behavior is knowledge-based or performance-based, what conditions must be present, and how the behavior is evaluated.

3) The amount of time spent performing the task on the job. Normally, teaching a task takes longer than performing it on the job.

4) Review the instructional method selected for each learning objective. For instance, performance-based instruction with practical application will take longer to conduct than a lecture.

5) Total the number of hours and divide by 8 (the minimum number of training hours per day under peacetime training conditions). This will provide the estimated number of training days for the course.

6) Then review approved POI or CG, TECOM development directive. The POI or directive will state the training days authorized for the course.

Assign Lesson/Exam Titles and Designators

Assign Lesson/Exam Designators. These codes are a quick way to identify a lesson or exam. Designators must be purposeful, relate to the lessons, and numbered sequentially. They can be written in any format, provided they are meaningful (e.g., TBS.1 for Lesson 1 of The Basic School Course; BIC.10 for Lesson 10 of the Basic Infantryman Course). School SOP will provide guidance for the assignment of designators. Figure 3-2 Below is a sample course structure.

STEP 4

SAMPLE COURSE STRUCTURE

TD-1 Lesson	Method	DESIG	Est Hours
_____SAT Overview	__L	IT-00	1.5
_____ Effective Comm	__L/D/PA/G	IT-01	2.5
_____Effective Comm Exam	X (W)	IT-04	1
_____Conduct a Lesson	L/D/PA/G	IT-04	2
_____Conduct a Lesson Exam	X (P)	IT-08	1

Figure 3-2

4002. DEVELOP CONCEPT CARDS

SECTION 2

A concept card is a document that gives the reader a snapshot of one entire lesson, exam, or administrative event during a program of instruction. It identifies all of the learning objectives, instructional methods and media, and the resources required to conduct the entire lesson, exam, or event. Concept cards have both a primary and a secondary purpose. The primary purpose is to provide the school with a way to manage its resources. The secondary purpose of a concept card is to document the FLCs plan for implementing the ITEs within the instructional setting. Concept cards make up the bulk of Section IV of the Program of Instruction (POI) and are produced in MCTIMS. A concept card must be produced for each lesson, exam, and administrative event for inclusion in the Master Lesson File (MLF).

A Concept Card must be produced for inclusion in the Master Lesson File (MLF)

CATEGORIES OF CONCEPT CARDS

There are two categories of concept cards: **Academic and Administrative.**

Academic Concept Card. There are three specific types of academic concept cards: Lesson Purpose, Task Oriented, and Exam.

1. **Lesson Purpose.** Lesson purpose concept cards are created when the instructional content is not specifically related to an ITE for the course and does not address any TLOs/ELOs. The lesson purpose concept card will have a clearly defined lesson purpose statement reflecting the rationale for presenting the lesson (i.e., orientation or overview). Although Lesson Purpose should be minimized since it uses school resources and time without evaluation, the overall importance to the effectiveness of the POI must be considered when determining the amount of Lesson Purpose time. Coordination with the GTD Task Analyst is essential in determining if T&R events need to be added or if Lesson Purpose classes are the appropriate solution.

2. **Task Oriented.** Task oriented concept cards identify the instructional content as it relates to at least one task within the task list for the course. They address one or more TLO(s) and the associated ELOs being taught.

3. **Exam.** Exam concept cards capture the resources required for the evaluation of at least one task within the task list (ITE/T&R Event) for the course. One exam concept card is created for each initial exam administered over the course of instruction. Retesting is a remedial action available to school commanders but must be accomplished with resources provided for the course. These hours do not go toward the 40 hour training week. Exceptions to this policy may be authorized by CG TECOM.

Three specific types of academic concept cards

Every task oriented/exam concept card will have the TLO and associated ELOs that the lesson/exam supports.

Administrative. Administrative concept cards capture all of the non-instructional information required to conduct the course. An example would be the graduation ceremony upon completion of a course. Administrative concept cards are found in Annex Z of the POI.

CONCEPT CARD ELEMENTS

MCTIMS is the program used by the Marine Corps to record all elements of the concept card. See MCO 1553.2_ Appendix O-11 for a sample paper-based Concept Card. The elements of a concept card are:

MCTIMS will indicate the date printed in the upper right hand corner.

Heading. The information in the heading will include the name of the course, letter of the annex, and the title of the annex .

Annexes A through Y are reserved for academic concept cards (task oriented, lesson purpose or exam).

Annex. Annexes are established with an alpha designator to represent subject areas into which concept cards are grouped. They may be established according to the functional areas by which ITEs/T&R events are organized or according to some other logical grouping. Annexes A through Y are reserved for academic concept cards (task-oriented, lesson purpose or exam). Exam concept cards may be assigned to the same annex in which the related task oriented cards appear or may be assigned a separate annex of their own. Annex Z is reserved exclusively for administrative concept cards.

Lesson, Exam, Event ID. The lesson, exam, or event ID is assigned during the development of the course schedule and is recorded here.

Lesson, Exam, Event Title. The lesson, exam, or event title is assigned during the development of the course schedule and is recorded here.

Hours (Total). The total amount of time required to conduct a lesson, event, or exam is reflected here. This is automatically calculated within MCTIMS based on the total of hours allocated to individual methods. See hours (per method) below.

Method. Instructional methods selected during the design phase and recorded on the LOW are assigned to the concept card. This is done not only for quality control, but also as a quick reference. The method is recorded as a code or abbreviation.

Hours (per method). The overall time for the lesson is broken down to reflect how much time is allotted for each of the selected methods.

Student Instructor (S:I) Ratio. The student instructor ratio is determined so that it complements the selected method. For example, a ratio of 30:1 (students :instructor) would be appropriate for a lecture. During practical application where additional instructors are required for closer supervision of the students, a 30:5 ratio might be necessary. The difference in these two ratios is determined by how the practical application exercise is actually conducted. Are the students and instructors working in a small group, or are additional instructors merely added to the classroom for additional control? Mathematically, MCTIMS will treat the ratios the same for the Instructor Computation Worksheet (Lockstep). Curriculum developers must remember the concept card provides a "snapshot" of what is actually transpiring in the classroom.

Media. Media that were selected during the design phase and recorded on the LOW are assigned to the concept card. This is done not only for quality control, but also as a quick reference. The media are recorded as a code or abbreviation.

Learning Objectives. On task oriented or exam concept cards, the learning objectives included in the lesson for that task are recorded. A TLO should only appear on a Concept Card for a lesson or exam during which students will actually perform the TLO.

Lesson Purpose. A detailed lesson purpose statement will replace the learning objectives on a Lesson Purpose Concept Card.

Ammo Requirements. Those learning objectives requiring ammunition for instruction and evaluation must have the Department of Defense Identification Code (DODIC) and nomenclature for each ammunition type used. This information can be found in MCO P8011.4_ Marine Corps Table of Allowance for class V (w) material (peacetime). The DODICs are broken down by the number of rounds per student, expended and unexpended, during the execution of the lesson. The number of support rounds, expended and unexpended, are also recorded by DODIC. Ammo allocations for a lesson must reflect the relationship between TLOs and the ITEs they are developed from. ITEs establish the ammo requirement and those DODICS and amounts must be transferred to the lesson by TLO. There must be parity between the ammo requirements in the T&R and POI.

(DODIC) - Department of Defense Identification Code

Notes. This section can be used to provide a word picture describing the execution of the class, exam, or event. It can be used to capture, in detail, any information that clarifies additional instructional and resource requirments such as:

Any logistical requirements identified on task oriented concept cards will be transposed to the Instructor Preparation Worksheet.

- ✓ Safety (e.g., Highest initial and residual Risk Assessment Codes [RAC])
- ✓ Justification of exam method
- ✓ Instructor ratios (e.g., justification of additional instructors for different methods and safety)
- ✓ Logistical requirements (e.g., requests for transportation, ammunition, or ranges, etc...)
- ✓ External personnel support (e.g., corpsman, RSO, contractors, guest lecturers)
- ✓ External facilities (e.g., pool, laboratories)
- ✓ External equipment support (e.g., helicopters, computers, radios, tanks etc...)

References. References are source documents that include doctrinal publications, technical manuals, field manuals, and Marine Corps Orders. These references provide guidance for performing the task in accordance with the given conditions and standards.

Signature Blocks. MCTIMS allows names or titles of up to five officials to be entered on the concept card for the purpose of routing/approval. Routing and approval procedures are normally found in the FLC SOP.

Optional Items. Phase and group designators are optional elements that can be entered to identify certain timeframes or instructional teams responsible for specific instruction during implementation of the POI. For example, Recruit training has Forming, 1st, 2nd and 3rd Phase. During 2nd phase Weapons and Field Training Battalion (WFTB) is responsible for the instruction of marksmanship skills.

SECTION 3

4003. CONDUCT AN OPERATIONAL RISK ASSESSMENT (ORA)

The FLC conducts an Operational Risk Assessment (ORA) on all events, lessons and exams. The concept of Risk Management formalizes the process of training safely and efficiently. Rather than relying solely on individual experience to achieve the best results, risk management provides careful analysis and control of hazards in each lesson. Refer to MCO 1553.2_ for ORM and High Risk Training (HRT) procedures and requirements.

SECTION 4

4004. DEVELOP LESSON MATERIALS

The purpose of developing instruction is to generate the lesson plans, student outlines, supplemental student material, media, and an Instructor Preparation Guide (IPG) to support the training. Curriculum developers must create materials that support student learning and compliment instruction. Real world relevance is the key in the development of lesson materials to maximize the transfer of learning from the instructional setting to the job. Relevance dramatically increases the student's motivation to learn and retain those skills that will help in the performance of the job. The steps in developing lesson materials include securing resources, writing the lesson plan and student materials, developing the media, and creating an Instructor Preparation Guide.

SECURE RESOURCES

LOW – Learning Objective Worksheet.

LAW – Learning Analysis Worksheet

The development of instructional materials begins with acquiring all the resources necessary for instruction. A final review of the concept card for the lesson needs to be made to ensure that required resources are available. The concept card will provide the methods to use, how much time is allowed for each method, the type of media, instructor/student ratio, and other notes regarding the lesson. In addition to the concept card, the Learning Analysis Worksheet(s) (LAWs), Learning Objective Worksheet(s) (LOWs), and all applicable references are reviewed to provide the background and thought process from the Design phase. This information will assist the curriculum developer in ensuring that the written lesson meets the intended lesson goals.

WRITE A LESSON PLAN

The lesson plan is a comprehensive document that details the strategy to be used in teaching the learning objectives. Before learning the mechanics of writing a lesson plan, it is important to understand the function and components of the lesson plan.

The lesson plan is a comprehensive document that details the strategy to be used in teaching the learning objectives.

Function of a Lesson Plan.

The lesson plan has three functions:

a. First, it provides the instructor, regardless of individual level of expertise, with a detailed script establishing all the information concerning preparation and delivery of the lesson content.

b. Second, it establishes continuity and standardization of instruction so that the same information is taught every time.

c. Third, it provides a historical document of what has been taught at the FLC.

Components of a Lesson Plan

The title page, introduction, body, and summary are the primary components found in a lesson plan. Refer to MCO 1553.2_ Appendix O-16 for a sample of the format to use when writing the lesson plan.

Title Page. The title page is the cover sheet for the lesson plan.

Introduction. The introduction is written to gain the attention of the student at the beginning of the lesson and provide an overview of what the student can expect in relation to the lesson. There are seven parts to an introduction. They are the gain attention, overview, learning objectives, method and media, evaluation, Safety/Cease Training brief (per the ORAW) and the transition into the body. These parts will be discussed in more detail later in this section.

Refer to MCO 1553.2_ Appendix O-16 for a sample of the format to use when writing the lesson plan.

Body. The body of a lesson plan is a detailed script of the content to be presented. It is written to cover all of the information necessary to master the learning objectives for the lesson. It includes the main ideas, lesson content, transitions, instructor notes, and cues for the instructor.

Summary. The summary provides a review of the main ideas, reinforces the importance of the content, and includes administrative instructions for the students.

How to Write a Lesson Plan

Writing the lesson plan involves producing a detailed script that establishes what needs to be said and done during the lesson so that the students are able to meet the learning objectives. The lesson plan is written in the following sequence:

- ☑ **Title Page.**
- ☑ **Body.**
- ☑ **Introduction.**
- ☑ **Insert Transitions, Instructor Notes, and Cues.**
- ☑ **Summary.**

The title page is produced first. Next, the body is outlined and written so that a conceptual framework is established. This conceptual framework establishes the main ideas and the sequence in which they will be introduced. Since the introduction provides an overview of the conceptual framework, it is written after the body is developed. Once the introduction is completed, transitions, instructor notes, and cues are inserted into the lesson. Last, the summary is written to bring closure to the lesson.

The following steps detail how to write each component:

STEP 1

Title Page. The title page contains the school's name and address centered at the top. Centered in the middle of the page are the lesson title, lesson designator, course title, course identification number, and the date the lesson was developed or revised. At the bottom of the page is the signature block and date of approval. (See MCO 1553.2_ Appendix O-16 for a sample lesson plan.)

STEP 2

Writing the Body. When writing the body the curriculum developer establishes and sequences the main ideas, inserts content, provides examples, determines and inserts methods. This is done in a manner so that the material flows and aids the transfer of learning.

Steps in writing the body are as follows:

- ☑ **Establish Main Ideas.**
- ☑ **Sequence Main Ideas.**
- ☑ **Insert Content.**
- ☑ **Provide Examples.**
- ☑ **Determine Placement of Methods.**
- ☑ **Insert Methods.**

1. **Establish Main Ideas.** Within the body, main ideas are numbered 1, 2, 3, and so on. As a general rule, the main ideas correspond with the learning objectives. However, there are times when an ELO is complex and must be broken into more than one main idea. The main ideas need to be bold, underlined, and uppercase so that they can be easily distinguished from the rest of the lesson content by the instructor. The grouped and sequenced knowledge and skills that were produced during the learning analysis can be used to break the main ideas into specific subheadings detailing the outline. Such knowledge and skills provide the curriculum developer with more comprehensive information to cover within the lesson.

The format for the body is as follows:

1. **MAIN IDEA #1.**
   a. **Paragraph Heading.**
      (1) Paragraph Heading.
         (a) Paragraph Heading.
            1. Paragraph Heading.
               a. Paragraph Heading.

2. **Sequence Main Ideas.** The main ideas are normally presented in the same order as the learning objectives. The initial sequence of the learning objectives was determined during the Design Phase. However, the curriculum developer may have to re-sequence the main ideas to ensure that the lesson plan flows logically, student retention is maximized, and logistical constraints are met.

3. **Insert Content.** Content is now inserted to explain, in detail, the main ideas and subheadings. The information is compiled from the references noted on the concept card (e.g., technical manuals, Orders, and reference publications). It is the curriculum developer's responsibility to ensure that the information is explained in such a way that the instructor can easily understand the content.

4. **Provide Examples.** In addition to the teaching points, real world examples and experiences are placed in the outline to aid the learning process and provide realism for students. The material must be structured to present a variety of examples to explain a topic. The use of multiple examples helps students with varying experience and comprehension levels better understand the material. Examples also emphasize how to do or how not to do something and why.

5. **Determine Placement of Methods.** The methods that were determined during the Design Phase are listed on the concept card. However, the placement of the method in the lesson plan is determined at the time that the lesson plan is being developed. For performance-based learning, the placement of lecture, demonstration, and practical application methods in the lesson plan is important to the learning process and level of retention.

   a. **Lecture (Formal/Informal).** Lecture is assumed as the method for presenting the content of the lesson unless another method is noted. All other methods will have an associated instructor note and specific directions for employing that method. Lecture is generally used to provide the foundational knowledge required for the development of skills or attitudes. For instance, lecture is generally used before demonstration and practical application so that the students are familiar with the process or procedures before seeing and performing them.

   b. **Demonstration.** Demonstrations usually take place during or following the lecture. When using demonstration, the instructor explains the process or procedure while performing it for students. Demonstrations can be placed anywhere in the lesson, but are normally placed immediately prior to the practical application.

   c. **Practical Application.** Whenever students are learning a new skill or acquiring knowledge, they should be given the opportunity to practice what was taught. The more practice students are given during instruction, the more likely students are to retain the information and apply it to the job. When a practical application is involved, decisions must be made on the placement and frequency of the practice session(s) (massed versus distributed). Additionally, it must be determined whether the task(s) need to be taught as a whole or broken into parts (whole versus part practice sessions). More detail on these type of practice sessions are discussed below along with a chart to aid in this decision making process.

❶	**Massed Versus Distributed Practice Sessions**
❶	**Whole Versus Part Practice Sessions**

➢ **Massed Versus Distributed Practice Sessions.** In *massed* practice, the learner engages in one or a few intensive, extended periods of practice with little or no rest between. The alternate form of practice is called *distributed*, in which the learner participates in many relatively short practice sessions spaced over time.

Based on the time constraints of the course, the curriculum developer must decide whether to divide practice periods into segments of **distributed practice** or plan one continuous session of massed practice. For instance, **distributed practice** interspersed with rest periods permits more efficient learning of psychomotor skills than does massed practice. The reason for this is that rest periods allow students to overcome the fatigue that builds up when performing the same procedures continuously. The greater the length or difficulty of the task, the more appropriate distributed practice is relative to massed practice.

	Shorter & More Frequent	**Longer and Less Frequent**
If the Task	Is simple, repetitive, or boring Demands intense concentration Is fatiguing Demands close attention to detail	Is complex Has many elements Requires warm-up Is a new one for the performer
If the Learner	Is young or immature (unable to sustain activity) Has short attention span Has poor concentration skills Fatigues easily	Is older or more mature Is able to concentrate for long periods of time Has good ability to focus attention Tires less easily

Smith and Ragan (1999), *Instructional Design,* 2nd Edition.

➢ **Whole Versus Part Practice Sessions.** The curriculum developer must decide if it is more efficient to teach an entire task at each practice session (whole) or to teach individual subtasks initially (part) and begin combining them as the student masters each subtask. For tasks that have highly interrelated subtasks (e.g., preparation of an operations order), the whole method is more efficient than the part method. When tasks do not have highly interrelated subtasks (e.g., preventive maintenance of the M16 rifle), the part method is superior to the whole method.

	Emphasize Whole	**Emphasize Parts**
If the Task	Has highly dependent (integrated) parts Is simple Is not meaningful in parts Is made up of simultaneously performed parts	Has highly individual parts Is very complex Is made up of individual skills Requires limited work on parts or different segments
If the Learner	Is able to remember long sequences Has a long attention span Is highly skilled	Has a limited memory span Is not able to concentrate for a long period of time Is having difficulty with a particular part Cannot succeed with the whole method

Smith and Ragan (1999), *Instructional Design,* 2nd Edition.

a. **Other Methods.** During the Design phase, the appropriate method(s) for each learning objective was determined and placed on the Learning Objective Worksheet (LOW). The placement of method(s) in the lesson plan is determined by where the content for each learning objective is being taught. However, there are methods that can cover multiple learning objectives. One such method is the case study that is placed at the end of the lesson for reinforcement. Before making decisions concerning the placement of alternate methods, consider the following:

- ☑ The amount of knowledge and/or skill that the student needs as prerequisite for the method to enhance the learning process.
- ☑ The amount of knowledge and/or skill that the student brings into the lesson.

6. **Insert Methods.** Whenever there is a method, other than lecture, inserted in a lesson plan, specific instructions must be provided to the instructor. This provides the instructor with the details so that he/she is able to implement instruction as intended. When practical-application is inserted into the outline, practice and provide help headings are indicated to offer detail to the instructor. All other methods will have student role and instructor role headings. These headings are described in detail below.

   a. **Practical Application.** There are three headings used when inserting practical application. An example of the format follows.

      - ☑ Practical Application Heading. This heading is uppercase, bold, and underlined. Beside practical application, general information is provided to include group size, if applicable, and setup (handouts, turn charts, actual items to distribute, etc.) for the practical application. The purpose of the practical application and the desired outcome should be explained.
      - ☑ Practice Heading. This heading is uppercase and bold. Beside practice, the curriculum developer describes in detail step-by-step instructions for what the student's role in the practical application will be.
      - ☑ Provide-Help Heading. This heading is also uppercase and bold. Underneath the provide help heading are three subheadings describing the instructor's role before, during, and after the practical application. The subheadings include the safety brief, supervision and guidance, and debrief.

PRACTICAL APPLICATION. Provide general information to include group size, if applicable, and setup (handouts, turn charts, actual items to distribute, etc.). Provide the purpose of the practical application.
PRACTICE: Describe in detail step-by-step instructions for what the student's role in the practical application will be.
PROVIDE-HELP: Describe the Instructor's role.
1. Safety Brief: (per the ORAW) This is a brief to the students on safety precautions and what to do if there is a mishap.
2. Supervision and Guidance: Describe what the instructor is doing during the PA, i.e., moving about the room, assisting students, answering questions.
3. Debrief: (If applicable) Allow participants opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the practical application.

Example of format for Practical Application

b. **Other Methods**. There are also three headings used when inserting other methods. An example of the format is on the next page.

- ☑ Method Heading. The method heading identifies the method being used. This heading is uppercase, bold, and underlined. Beside the method, general information is provided to include group size, if applicable, and setup (handouts, turn charts, actual items to distribute, etc.). The purpose and desired outcome should also be explained here.
- ☑ Student Role Heading. This heading is uppercase and bold. Beside student role, the curriculum developer describes in detail step-by-step instructions for what the student's role is during the method.
- ☑ Instructor Role Heading. This heading is also uppercase and bold. Beside instructor role are three subheadings describing the instructor's role before, during, and after method implementation. The subheadings include the safety brief, supervision and guidance, and debrief.

Example of format used for methods other than practical application.

DEMONSTRATION. Provide general information to include group size, if applicable, and setup (handouts, turn charts, actual items to distribute, etc.).

STUDENT ROLE: Describe in detail step-by-step instructions for what the student's role during the demonstration will be.

INSTRUCTOR ROLE: Describe Instructor's role.
1. Safety Brief: (per the ORAW) This is a brief to students on safety precautions and what to do if there is a mishap.
2. Supervision and Guidance: Describe a detailed script of exactly what the instructor is doing during the demonstration.
3. Debrief: (If applicable) Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the demonstration.

STEP 3

Write the Introduction. There are seven parts to an introduction. They are the gain attention, overview, learning objectives, method (and media), evaluation, Safety/Cease Training brief, and the transition into the body.

Gain Attention. The gain attention is developed to capture the students' interest. It must relate to the lesson content and inform the students why the information is important. The gain attention needs to provide the student with why he/she needs to learn the information. This is often referred to as the WIIFM ("What's in it for me?"). According to adult learning principles, adults are motivated to learn to the extent that they perceive what they learn is applicable to what they do. By providing the relevance and intent of the lesson, the attention of the students is gained. The curriculum developer needs to provide in the lesson plan a completed gain attention, along with a few other possible ideas. Extra lines are placed below the gain attention so that the instructor can personalize the completed gain attention or use one of his/her own ideas. Any changes within the lesson plan need to be approved by the appropriate personnel in accordance with the FLC Standing Operating Procedures (SOP).

The following items can be used for gain attentions:

- ☑ **Video clip.**
- ☑ **Skit.**
- ☑ **Historical/actual event.**
- ☑ **Rhetorical question.**
- ☑ **Unexpected/surprising statement.**

Types of gain attentions that can be used.

Regardless of the type of gain attention used, its elapsed time should be in proportion to the overall length of the lesson. For example, a gain attention for a one-hour class should be no more than 3-5 minutes.

1. **Overview**. In the overview, the instructors can first introduce themselves along with their qualifications or experience. The overview then describes the intended outcome of the instruction and the conceptual framework of the lesson. A conceptual framework informs students of the learning agenda for the lesson by stating the main ideas that will be covered to achieve the desired outcome. By providing the conceptual framework, student anxiety is decreased. Adult learners prefer to be oriented to what will be covered. The overview may also state the lesson's relationship to other lessons within the course, if applicable.

2. **Learning Objectives**. Learning objectives are presented early in the lesson to inform students what knowledge or skill is required for successful completion. It is critical for students to understand at the outset of a lesson what is expected of them. A lesson presents at least one (or more) Terminal Learning Objective(s) (TLOs) and the Enabling Learning Objective(s) (ELOs) associated with the listed TLOs. Listing the TLOs provides focus for both the student and instructor. The TLOs are the desired goal(s) within the lesson plan and the ELOs are the main ideas that support the TLOs. The TLOs and ELOs are transferred to the lesson plan verbatim and in the same sequence as they appear on the concept card. For lesson purpose classes, a statement is placed in this section to state "there are no formal learning objectives."

3. **Method/Media**. The method/media section describes the delivery system that was selected in the learning analysis. This information is found on both the concept card and Learning Objective Worksheet (LOW). In addition, the method/media section of the introduction is the natural area to place administrative instructions that affect the delivery of the lesson. An instructor note must be inserted immediately following this section to ensure these instructions are delivered to the students.

An example of the format for the note explaining Instructional Rating Forms (IRF) is below:

INSTRUCTOR NOTE
Explain Instructional Rating Forms.

Insert instructor note to explain IRFs between the Method/Media and the Evaluation portion of the Introduction.

5. **Evaluation**. Most learners want to know how, when, and where they will be tested on a lesson's content. In order to reduce student anxiety, the evaluation section of the introduction describes the type of evaluation, time, and location (i.e., "in accordance with the training schedule") of where the students' knowledge or skills will be evaluated. This information can be obtained from the training schedule and the exam concept card. For lesson purpose classes, there are no formal evaluations.

6. **Safety/Cease Training (CT) Brief**. Lessons that involve risk of injury, or damage to equipment must include a safety brief. Explaining to the students that hazards have been identified and controls implemented to minimize the risks will reduce anxiety about the training. Identified controls and hazards are provided from the ORAW completed on the lesson. This also serves to make the students safety conscious before the first main idea is introduced. Additionally, the CT will be briefed if all students are required to know and initiate a stoppage of training. Regardless of the student's role, the instructor is responsible for reviewing and executing the CT policy for the lesson spelled out on the Operational Risk Assessment Worksheet located in the Master Lesson File (MLF).

When developing the Safety/Cease Training brief, refer directly to the ORA worksheet.

7. **Transition**. A transition is placed between the introduction and the first main idea. This transition is where the instructor ensures all students have an understanding of what is going to be taught, how it is going to be taught, how they will be evaluated, and Safety/Cease Training procedures. The transition then introduces the first main idea. The curriculum developer must provide the transition, along with blank lines, so that the instructor can personalize.

An example of a transition into the body of a lesson.

TRANSITION: Are there any questions about what will be covered, how it will be covered, or how you will be evaluated? Do you have any questions about the safety or Cease Training procedures? Now let's talk about (first main idea).

_____

Insert Transitions, Instructor Notes, and Cues. Now that the body is outlined and the introduction is developed, the next step is to insert transitions, instructor notes, and cues (time, media, and break) into the lesson.

STEP 4

1. **Types of Transitions to Insert**. Transitions tie together the different components, methods, and main ideas within the lesson by smoothly summarizing one main idea and introducing the next idea. The transition should reinforce the conceptual framework, allowing the instructor to probe and gather feedback from the students.

   a. **Transition**. A transition is placed between the introduction and the first main idea, between each main idea in the lesson, and between the last main idea and the summary. A transition contains three elements: review, probe, and introduce.

      ☑ Review. The review is done by smoothly summarizing the main idea that was just taught. The students are then asked if they have any questions about the information covered so far.

- Probe. The probe allows the instructor to confirm student comprehension by asking questions and accepting feedback. At least one question should be asked during a transition that relates to the last main idea covered. The curriculum developer writes the question to be posed and its intended answer directly in the lesson plan. Questions need to be challenging and cover the critical point of the last main idea. Unless a direct question actually appears in the transition, inexperienced instructors may not ask a probing question. However, blank lines are left at the end of each transition so that the instructor has room to personalize each transition. If the instructor personalizes the transition, he/she must be sure to review, probe, and introduce the next main idea. The transition should not be the only place where questions are posed. (Refer to Section 4301 for more on questioning.)

- Introduce next main idea. The introduction of the next main idea takes the instructor smoothly into the content to be covered next.

A transition contains three elements: review, probe, and introduce.

To sum it up, after a review of the main idea, an overhead question appears to allow students an opportunity to ask any question on the material (i.e., "Are there any questions on ___?"). This is followed by at least one direct question that will be asked during the transition. It comes from the last main idea taught (i.e., Q: "What is the... A:"). Then the next main idea is introduced.

An example of a transition is in the shaded box below:

TRANSITION: Now that we've talked about why the SAT is important, are there any questions? QUESTION: Why does the Marine Corps use the Systems Approach to Training? ANSWER: The process reduces subjectivity in how formal school decisions are made regarding curriculum and instruction. Now, let's talk about how the SAT is used in the FLC environment.

b. **Interim Transitions**. Interim transitions are used when a method (e.g., practical application, demonstration, etc.) or break is inserted within the main idea. These transitions are placed before the new method to provide the instructor with guidelines of how to transition from the lecture to the next method or break. Once the method or break is complete, another transition must be placed to close out the method and transition back to lecture. An interim transition is different from other transitions because it does not require a probing question. If a new main idea is to be introduced following the method or break, then a transition should be written to review, probe, and introduce the next main idea.

Interim Transitions contain Elements:

1. **Review**
2. **Introduce method or next heading**

An example of an interim transition is in the shaded box below:

INTERIM TRANSITION: Thus far, we have discussed the techniques used for effective questioning. Does anyone have any questions about questioning techniques? At this point, we're going to do a practical application where you will use the different questioning techniques.

2. **Insert Instructor Notes**. Instructor notes include information pertinent to the conduct of the lesson and can appear throughout the lesson. These notes are normally short and concise. Instructor notes are especially valuable to alternate instructors. As with cues, instructor notes should stand out from the normal text as illustrated below with a text box.

An example of the format for an instructor note is below:

INSTRUCTOR NOTE
Have the students refer to TM 9-2350-264-10-1 for preparing the driver's station on the M1A1 tank.

3. **Insert Cues**. There are three types of cues contained in the lesson to assist the instructor with the presentation of the material. All cues must stand out from the regular text of the lesson. The three types of cues are:

3 Types of Cues

1. **Time Cues**
2. **Media Cues**
3. **Break Cues**

- ☑ **Time Cues**. Time cues are approximations for the amount of time required by the instructor to present each lesson component.
  - Main Headings. Time cues for main headings (Introduction, Body, and Summary) are placed right justified of the heading. The cue is bold, capitalized, and in parenthesis **(30 MIN)**. The main heading time cues (Introduction, Body, and Summary) add up to equal the total lesson time.
  - Main Ideas. Time cues for the main ideas within the Body are placed two spaces after the main idea. The main idea cue is bold, natural-cased text, and in parenthesis **(30 min)**. All main idea time cues add up to the Body time cue. The sum of all the main heading time cues [and, at times, method time cues (see below)] in a lesson plan equals the total time for the lesson reflected on the concept card.
  - Methods. The time allotted for a particular method (demonstration, practical application, case study, etc.) is explained within the method instructions, with the **exception** of one case. If a method is not within a main idea, then it has its own time cue. For example, if three main ideas are covered and a practical application is inserted at the end to practice material covered in all of the main ideas (mass practice), then that practical application is given its own time cue since the method is not associated with any **one** main idea.

One exception within time cues for methods

- ☑ **Media Cues**. Media cues are placed throughout the lesson to tell the instructor what media to use and when to present it during the lesson. An alpha/numeric designator is used to identify specific medium at a specific point in the lesson. For example, **(ON SLIDE #1)** indicates to the instructor to employ slide #1 of the presentation.
- ☑ **Breaks Cues**. Students are more likely to retain information if breaks are built into the course. It is generally recommended to allow a ten-minute break after every 50 minutes of instruction. Remember, it is important for the instructor to summarize information via a transition from day-to-day, lesson-to-lesson, and before and after breaks so the flow of instruction is not disrupted. A related activity can also be inserted to regain the students' attention to the subject material after the break.

NOTE: A break cue is not counted as a separate time cue when it is within a main idea. However, if the break cue falls between main ideas, then it becomes a time cue. In a case where a break cue becomes a time cue, the main idea time cues and the break cue are added together to equal the Body time cue.

An example of the format for a break cue is below:

(BREAK - 10 Min)

STEP 5

Review Lesson Plan and ORA. Compare the lesson plan with the ORA worksheet to ensure that all hazards have been identified and that the controls have been integrated into the lesson plan.

STEP 6

Write the Summary. The summary is a short paragraph which restates the main ideas (conceptual framework) discussed during the lesson. The summary is not used to re-teach material nor introduce new material; it is concise. No questions are asked or answered during the summary of a lesson. All questions should have been answered in the body and in the transitions. The summary needs to provide closure, a "mini-WIIFM," quote, or similar item, which will confirm why it is important for the student to remember what was taught. The final element of the summary given to the student is closing instructions, i.e. "Fill out IRFs and take a ten-minute break."

IRF – Instructional Rating Form.

STUDENT MATERIALS

Student materials serve as a guide to what is being presented in the course. These materials can provide class participants with additional facts and information. These materials also serve as a study guide that should be referred to during the course and/or as a job aid that students can take back to their unit following the completion of the course. When developing student materials, the appeal and ease of their use needs to be considered. These materials are supplied to aid the student in his/her learning. There are two types of student materials, student outlines, and supplemental student materials. Each is designed for a specific purpose that will aid the student during the course.

When developing student materials, the appeal and ease of their use needs to be considered.