

THE ROLE OF THE TRAINING SITUATION ANALYSIS  
IN U.S. MARINE CORPS TRAINING SYSTEMS ACQUISITION

Charles A. Beagles  
and  
Dennis S. Duke  
Naval Training Systems Center  
Orlando, FL

ABSTRACT

The Marine Corps is experiencing major equipment changes in almost every occupational field. These changes are impacting the training pipeline and especially the formal schools. This paper describes how the Training Situation Analysis (TSA) is used to cope with these rapid changes and their impacts upon Marine Corps formal school training. The TSA, as conducted for a Marine Corps formal school, functions as a management plan that identifies the training need, considers alternatives and specifies the solution for the need, and describes how the solution should be implemented.

The purpose of this paper is to describe the planning function that the Training Situation Analysis (TSA), plays in the process of the U.S. Marine Corps training system design and acquisition. Until recently, the Marine Corps had few supportive means for the planning, acquisition, and life cycle management of major training systems to support its formal school training. With advanced technology impacting virtually every occupational field in the Marine Corps, the need for major training systems has emerged. This paper is essentially a "lessons learned" presentation which describes how the TSA has evolved in the past six years to become the major planning and managerial tool used to meet this need.

It is important to note that during the late 70's and early 80's the use of the TSA term at the Naval Training Systems Center (NAVTRASYSCEN) developed in two distinct yet related areas. First, it is used to refer to and describe traditional front-end-analysis as it relates to training devices and simulators. In this context, the TSA is a technical document that contains information required to develop a statement of military characteristics (MC) and/or training device alternatives. An excellent review of the TSA as used in this role can be found in Mulligan, Hinton, and Ryan, (1). The second use of the TSA is as a management plan that analyzes training requirements, identifies solutions for those requirements, presents a step-wise plan to implement the solutions, and contains cost data as appropriate. Since the

second use of the TSA is as a management plan, it is written for Marine decision makers in a format which is suitable for staffing action. This paper elaborates upon this second type of TSA.

REASONS FOR INITIATING THE TSA

The TSA process begins with the identification and definition of needs, most often referred to as training requirements. There are three generic reasons for conducting a TSA:

- o First, new operational equipment is introduced into a particular occupational field. This new technology impact results in increased or changed training needs in the formal schools and/or the Fleet Marine Force (FMF). As a minimum, this requires an analysis of potential change to the curriculum.
- o Second, there are problems within the existing program of instruction or instructional delivery system at the formal school. These problems are usually identified when the performance of the students in the school or graduates in the FMF is sub-standard.
- o Third, a School Director may decide that although his school is performing satisfactorily, there is a desire to improve effectiveness or efficiency of training using the latest in training technology.

Solutions to these needs will generally require major changes within the formal school. Managing meaningful change within any organization is difficult and challenging. The TSA is one of the few constructive and positive tools available to Marine Commanders which help them deal with some of the more difficult aspects of change in formal schools. When considering any type of change in an organization, some generic and critical questions occur. Why change? What change to make? How to implement the change? What's the cost? The difficulty in answering these questions as they pertain to formal school training is exacerbated by two factors. First the meaningful change may be highly technical in nature. Identifying and procuring the technology may require specialized skills not resident on the school staff. Secondly, the various elements in the Marine Corps training support community must respond in a carefully coordinated manner to implement the change process. A plan is required to insure this coordination. Responsibility for functions such as policy, funding, procurement logistics, and curriculum approval, often reside at separate commands/locations. The TSA's one purpose is to assist Marine decision makers in accomplishing their managerial functions of acquiring the resources and planning for resource distribution by coordinating their efforts in order to enhance the training in the formal schools.

#### ORGANIZATION AND CONTENT OF THE TSA

The TSA guides the change process by providing the following four categories of information.

- o It identifies and quantifies the training requirement. This section addresses why change is necessary by quantifying to the best extent possible, what the training need is (the gap between the current status and what should be).
- o It identifies a solution or a set of alternatives for the training requirement. This section also develops a technical rationale for the specific training alternatives to meet the requirement. The change solution may include any or all of the following: use of training devices, new media, more instructors, or new or renovated facilities.
- o It presents an implementation strategy for effecting the proposed solution.
- o It presents associated cost data or economic analysis to justify the proposed solution.

Assembling this information properly is facilitated by a planning model which translates the information from the analysis process into the format of an action plan. The purpose of the following paragraphs is to provide an overview of this analysis and translation process. Technical detail on the conduct of the analysis is not provided.

The technical approach used in most of the Marine Corps TSA's follows the system analysis model developed by Kaufman(2). This method consists of a set of procedures that direct what must be done to meet identified and documented training requirements. The system approach has been defined as "A process by which needs are identified, problems selected, requirements for a problem solutions are identified, solutions are chosen from alternatives, methods and means are obtained and implemented, results are evaluated, and required revisions to all or part of the system are made so that the training requirements are met." (2, P.2) The organization of the TSA report generally follows the elements in this definition; however, the TSA will contain, as a minimum, the four categories of information described above.

The following are examples of the four categories or the types of information that a TSA might produce. While these examples seem rather simplistic in their presentation, in reality a considerable degree of work must be accomplished to produce each. The purpose of these examples is to demonstrate the logical progression of information that culminates in an implementation plan which is suitable for use by the appropriate decision makers.

#### Identify and Quantify the Training Requirement

The intent of this process is to produce a factual statement in terms of student throughput, training hours, etc. of the training requirement. The impact of the proposed change must become clearly apparent to the decision maker.

#### Identification of the Training Requirement

The identification of a training requirement usually involves identifying the source and nature of the requirement. For example, a particular occupational field is receiving new automated data processing equipment (ADPE) and software that will perform an integral part of the MOS mission. Consequently, the formal school must produce Marines who are trained to operate this new system. This training must be accomplished prior to the time the system is implemented. Since the system is new, there is no training on this

system being provided in the school. Obviously there exists a need for training on the new system.

Quantification of the Training Requirement The next step is to quantify the training requirement which specifies more precisely how much of what kind of training is to be provided in which environment. For example, by working with the school personnel, it was determined that the training for the new system may be integrated into 13 existing courses. Course content objectives and length of the time required to train these objectives are then determined. As an example of how the new training requirement would affect the 13 courses, one course required an additional 74 hours of instruction per student on the new system to meet the training objectives. These additional hours times an annual student load of 350 produced an increase of 25,900 annual training man hours. This procedure is followed for all 13 courses and revealed that approximately 60,000 man hours of new system training are required at the formal school.

Once the training requirement is identified and quantified, the next step in the development of a management oriented TSA is to determine how the school can meet the training requirement. Of course in the actual planning process some overlap between these steps is expected.

#### Identify the Training Solution

In this category, information regarding what is to be changed in the formal school to meet the training requirement is developed. As part of this process alternatives for meeting the training requirement are identified and evaluated.

Two major elements compose this step. First, the appropriate instructional delivery system must be chosen. An instructional delivery system includes the student and all elements with which he interacts to achieve the designated instructional objectives. For example, the instructional delivery system chosen for this example may be the Operational System in Laboratory with Classroom Instruction. The method used in choosing this particular delivery system is derived from the Technique for Choosing Cost-Effective Instructional Delivery Systems<sup>(3)</sup>. This means that the platform instruction must be modified/developed, and that the school must also support this instruction by providing the new system equipment in a laboratory environment. In order to develop this laboratory, the school staff will require assistance from the Marine Corps Training Support Community.

The second major element of this step involves determining the most efficient means for developing this instructional delivery system especially acquiring the laboratory. This element is composed of a number of planning events. This planning emphasizes identifying what must be done and not how it must be done. The events (steps) that are required to accomplish the acquisition and installation of the instructional delivery system become the milestones in the implementation strategy which is discussed in subsequent paragraphs. Each event is stated here in broad terms and should be taken as if sub-tasks may or may not be included. Sometimes it is necessary for these sub-tasks to be identified as part of the plan. For example, one step in the plan may be to construct an automated data processing equipment (ADPE) data base that the students can use in the ADPE on-line laboratory. This function may consist of a number of sub-tasks that must be initially identified, such as creating data base elements, entering data, etc. Sub-tasks can be identified to any level of specificity or detail necessary for complete planning as required by the implementation strategy. Kaufman<sup>(2)</sup> contains elaborate detail on how to conduct the analysis required to identify these sub-tasks. Examples of the events resulting from the planning process for the new system (ADPE) laboratory for a formal school are listed below. (Note: No specific sequencing of these steps is implied in this example.)

1. The training laboratory ADPE procured and installed.
2. A training data base developed.
3. A training data base software control program developed.
4. A facility Renovation Plan developed (including cost).
5. Instructor training completed.
6. New ADPE system instructional content for all courses is developed.
7. The table of organization, of the school modified to support the additional training content.
8. An on-line Training Schedule is developed.
9. Facility Renovation Funding approved.
10. Facilities Renovation Completed.
11. Some instructional laboratory collateral equipment (computer station desks, chairs, etc.) is procured.

As noted above, the level of detail presented in the TSA on how to accomplish the above mentioned events can vary. If the event is rather simple, as in event number 11, "procure collateral equipment for classroom training", the method of procuring this equipment and the identification of funds to be utilized is usually the responsibility of one specialized department in the Marine Corps training support system. The procedures that must be followed to acquire this equipment are relatively routine and specific methodologies and regulations are well known by the responsible individuals. Therefore, further elaboration on this particular event is not needed. However, if an event is more complicated, i.e., procurement of ADPE, where regulations and procedures are not always clear cut, then alternative courses of action may have to be identified with responsible principals identified and associated cost data carefully calculated. This step may also include the specification of types of funds which may be utilized. Time deadlines for accomplishing certain actions may also have to be identified. The planning focus now shifts to the implementation strategy within the Marine Corps training support community.

#### The Implementation Strategy

The value of the implementation strategy becomes apparent with the realization that a major change at a Marine Corps school requires the coordinated efforts of several major commands that constitute the Marine Corps Training Support Community. By addressing the necessary actions along with the timing factor in a critical path format, the implementing decisions that are made in separate headquarters can be acknowledged within the perspective of the complete project plan. Those actions which involve the procurement of a training device require the closest coordination. For example, Headquarters, Marine Corps is usually tasked with the responsibility of formulating policy and making funding decisions for major training devices. The particular Marine Corps Base involved may have responsibility for making a facility modification to house the training device. The formal school may have to make curriculum changes and train instructors. The Naval Training Systems Center may function as the principle development agency for the training device. The latter task includes developing the military characteristics, management of the actual design and development of the device as well as providing the life cycle support of the device.

The implementation plan identifies what actions must occur to make the change in the formal school, what agency

or command has responsibility for each action, and when that action must be completed in order to meet the Ready for Training Date. Once these responsibilities and dates are known, the events in the profile are placed on a critical path. The critical path identifies the sequence, duration, and inter-relationship among the events.

In the example above, the 11 events (steps) which are necessary to establish the ADPE laboratory become the elements on the critical path. Each event is assigned an action agency and the decisions regarding policy and funds are delineated. If the plan is approved, then each action agency indicates whether or not it can respond to the proposed schedule. If delays are necessary, then the impacts upon other events are readily known and managed.

#### Cost Data

The fourth and final category of information presented in the TSA is cost data. The cost data is usually presented in one of two forms, depending on the implementation strategy. The first form involves the computation of simple direct costs for the resources that must be acquired, i.e., the costs of classroom furniture or media. The second form of cost information is in the form of economic analyses. The principal purpose of the latter analysis is to select the most efficient means from among the proposed changes to training.

#### The Effectiveness of the TSA

A direct benefit of the TSA is that it allows the Deputy Chief of Staff for Training at Headquarters, Marine Corps to effect readiness in the out years by addressing Military Occupational Training on a macro-planning level versus a "piece-meal" approach. This is possible because the TSA, in its action plan format provides essential information enabling the identification of future training requirements for the Program Objective Memorandum (POM) process. In addition, the TSA provides the school commander the basis for planning meaningful changes that can be both immediate and long range.

#### SUMMARY

The TSA is at once, a requirement analysis and an action plan that is an aid to the management of changes in formal school training. The formal school TSA has two components. The first component provides the technical information which identifies the training need, proposes a technical solution(s), and provides associated costs for implementing that solution(s). The second component provide the implementation strategy which describes

the process required to implement the technical solution. In the past six years several major TSA's have been conducted for various Marine Corps formal schools. The results associated with the development and use of these TSA's were increased school assets in the form of more instructors, new or improved facilities, acquisition of various training devices, and/or instructional media. However, the main result has been better trained Marines and reduced training cost.

#### REFERENCES

1. Mulligan, B. E., Hinton, W. M., and Ryan, L. E. (1985). Approaches to Analysis. Orlando, FL: Aviation Plans and Analysis Branch, Naval Training Systems Center.
2. Kaufman, R. A. (1972). Education System Planning. New Jersey: Prentice-Hall.
3. Braby, R., Henry, J. M., Parrish, W. F., Swope, W. M. (1975). A Technique for Choosing Cost-Effective Instructional Delivery Systems. TAEG Technical Report 16 Orlando, FL: Naval Training Systems Center.

#### ABOUT THE AUTHORS

Dr. Charles A. Beagles is the Project Manager for USMC Formal Schools and Analysis projects at the Naval Training Systems Center (NAVTRASYSCEN). He has worked in training analysis and design since 1976. Prior to joining the NAVTRASYSCEN he worked at the Center for Needs Assessment and Planning, Florida State University. Dr. Beagles is a former Marine Corps Captain and served as a Rifle Company Commander in Vietnam. He holds a Ph.D. degree from Florida State University in educational psychology.

Dennis Duke is a Senior Training Analyst at the Naval Training Systems Center. His primary responsibilities involve coordinating and undertaking front-end analysis efforts for the Marine Corps. Mr. Duke holds an M.A. in communication-models and systems design, an M.B.A. in contract management, an EdS in Administration and is currently completing his doctoral dissertation. He has had experience in technical communication electronics instruction and curriculum development, contract management, integrated logistics support and organizational needs analysis.