



Research Report 1964

**Front-End Analysis Methods for
the Noncommissioned Officer Education System**

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February 2013

**United States Army Research Institute
for the Behavioral and Social Sciences**

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FRONT-END ANALYSIS METHODS FOR NONCOMMISSIONED OFFICER EDUCATION SYSTEM

EXECUTIVE SUMMARY

Research Requirement:

At the request of the Institute for Noncommissioned Officer Professional Development (INCOPD), in order to support the process by which training site decisions are made within the Noncommissioned Officer Education System (NCOES), this research effort sought to identify the factors associated with optimal placement of critical tasks for training initially focusing on a critical task's enduring criticality over time. The primary goal was to aid the NCOES in distinguishing between tasks that are best suited for institutional, unit, and self-development training sites.

Procedure:

Through the use of subject matter expert (SME) interviews and Critical Task and Site Selection Board (CTSSB) observations, the project team conducted a thorough analysis to identify the traits that characterize tasks ideally trained in the institutional environment, unit training environment, or self-development training environment. Using the outcomes of this analysis, we developed a front-end analysis (FEA) methodology based in these distinguishing traits that assists in differentiating those tasks that are appropriate for institutional training from those tasks that are better suited for training at the unit, or via individual self-development. The FEA methodology supports individuals involved in recommending training sites for individual tasks by providing a simple way to systematically evaluate the characteristics of a task to produce a site recommendation.

The FEA methodology was instantiated into a Microsoft Excel based Site Selection Tool (SST). Users respond to a series of questions embodying the traits identified by the SME interviews and captured in the FEA methodology. Utilizing branching logic representing the FEA and user responses, the SST makes a recommendation for training site location. The validity of the Site Selection Tool's (SSTs) recommendations was assessed via SME interviews and three CTSSB pilot tests (using MOSs 19A, 35T and 35G). The research team relied heavily on user comments and suggestions, as well as feedback from experienced CTSSB administrators, to modify the tool's functionality following each round of assessment. Suggested revisions to the interface and internal logic driving the SST recommendations were made based on universal suitability to the Army at large.

Findings:

CTSSB administrators, course managers, and task-analysis groups generally supported the incorporation of the SST into the CTSSB process. Board members, who are novice site-selectors, were also generally supportive, but less so than the CTSSB administrators, as the board members are not generally aware of the additional factors important to consider in site-selection,

nor privy to the pitfalls of a CTSSB conducted relying solely upon discussion. However, the SST does not negate or overrule human judgment but instead complements human judgment in that the SST (1) requires CTSSB board members to consider important site selection factors that may not be immediately apparent to them, and (2) highlights tasks where high levels of disagreement exist in order to prioritize discussion. Board members retain the ability to disagree with SST's recommendation and such disagreement is incorporated into the SST's calculations of consensus.

Utilization and Dissemination of Findings:

The SST is intended to aid the Army at large in making better training site determination decisions. As such, it will be made available as widely as possible. The sponsor for this research effort, the INCOPD, will retain copies of the SST files and user guides. Although the tool was developed primarily for use in NCOES training decision-making, the tool can also be used for Officer Education System (OES) and functional course training decisions. The tool will also be available for download on the Army Training Network and through the U.S. Army Research Institute. Included in the Appendices are user guides to support the technical implementation and tips and suggestions for incorporating the SST into the CTSSB process.

FRONT-END ANALYSIS METHODS FOR NONCOMMISSIONED OFFICER EDUCATION SYSTEM

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Front-End Analysis Methods for the Noncommissioned Officer Education System

Introduction

At the broadest level, the United States Army categorizes individual tasks that Soldiers must perform into two categories: (1) common tasks, such as completing personnel evaluations or basic rifle marksmanship, that are required of all Soldiers across the force and (2) Military Occupational Specialty (MOS) specific tasks that are unique to a particular branch and duty position. For instance, as MOS-specific tasks, an infantryman is required to load and unload the M240 coaxial machine gun on the Bradley Fighting Vehicle, while an intelligence system maintainer must be able to maintain the data link for the Guardrail Common Sensor System. The Army further distinguishes between tasks that are critical to performance, and those that are not. Critical tasks are those considered to be of utmost importance for Soldiers to properly perform their job as United States (U.S.) Army Soldiers, and therefore receive greater attention and resources for training. In addition to critical tasks that are common to all Soldiers, each MOS maintains a critical task list that reflects the Army MOS proponent's top training and job-performance priorities.

Once identified as critical, the responsibility for initially training the tasks must be assigned to the institution, the unit, or the individual Noncommissioned Officer (NCO) (i.e., self-development). Several considerations must be made when identifying training site. The Critical Task and Site Selection Board (CTSSB) is a management device that provides quality control for this decision process, but there is little formalized direction on how the optimal training site is selected, given the characteristics of the tasks or knowledge, skills, and abilities (KSAs) to be trained. Site selection factors may include effectiveness and efficiency, time available at the institutions, the equipment and facilities available, whether or not the instructional strategies are feasible, and the ability to engage the learner with the media available (U.S. TRADOC, May, 1999; U.S. Department of Defense, June, 2004). These elements have been employed as part of the recommendation and decision process for selecting the appropriate training delivery medium within a course for distance learning, which is frequently used as a training method for self-development.

While the unit is ultimately responsible for ensuring its Noncommissioned Officers (NCOs) are proficient in the critical tasks, both common and MOS-specific, NCOs also receive initial task training through classroom instruction provided by the NCO Education System (NCOES) and the NCO Academies, and via self-development. The NCOES is responsible for providing institutional training via the Warrior Leader Course (WLC, focused on training Sergeants who are new NCOs), the Advanced Leader Course (ALC, intended for Staff Sergeants), the Senior Leader Course (SLC, intended for Sergeants First Class), and the Sergeants Major Course (SMC, for new Sergeants Major). Both WLC and SMC address common Soldier tasks exclusively, and are attended by NCOs of all MOSs. In contrast, each Army branch/MOS's Noncommissioned Officer Academy (NCOA) conducts its own ALC and SLC, with a focus on the particular skill sets required of NCOs in that specific MOS. As a result, each NCO Academy develops and updates a unique curriculum for ALC and SLC to meet the needs of its NCO population. Interspersed with these resident courses is a selection of distributed

Learning (dL) courses that constitute NCO self-development prerequisites for WLC, ALC, SLC, and SMC. For example, prior to attending the MOS-specific portion of ALC, NCOs must complete the ALC Phase 1 dL course, which is common core training for MOS-independent content. In common use, dL is often seen as synonymous with self-development. Strictly speaking, however, self-development need not be conducted via dL, although dL is a common method employed by the Army to provide structure to self-development tasks.

Resourcing and time constraints seem to be key considerations for placing training in an institutional setting. At first blush, schoolhouses may seem to be cost effective in that the curricula can be used repeatedly to train many Soldiers. However, the transportation and housing expenses associated with resident institutional courses may offset gains associated with mass delivery of training. In line with this reasoning, following an extensive review by the Defense Science Board Task Force prior to the events of September 11, 2001, the Office of the Undersecretary of Defense for Acquisition recommended that a full *half* of schoolhouse training should be moved to unit-based training within the upcoming five years (Braddock & Chatham, 2001). Such a move would have saved the Army at least \$114,000,000 per year in per diem costs alone. More savings would have been realized in terms of lessening unit disruption. The events of September 11th precluded this from occurring, yet the goal of moving much of institutional training to the unit remains today. Moreover, as the implementation of the recent Army Learning Model (ALM; U.S. TRADOC, January, 2011a) takes root and gains traction, a greater onus will be placed on NCOs to be accountable for their own learning and become active participants in their own training. This is true not only in formal training environments, but also outside of the classroom as reflected by the Army's growing emphasis on encouraging NCOs to be lifelong learners. Ideally, an underlying match would exist between task and training site that targets the core nature of the task rather than resource and logistical concerns.

The rationale for distinguishing tasks that are enduring across operational environments from tasks that are specific to a current operational environment stems in part from the time and resource demands associated with revising institutional programs of instruction (POI). Because POI changes are labor intensive and time consuming, the institutional training environment is not particularly conducive to rapid modifications to curricula as a result of current operational demands. To support recent combat operations in Iraq and Afghanistan, however, institutions have in fact diverted their time and resources, and adapted their curricula, to meet the new training requirements that have emerged as a result of evolving mission requirements. This approach has arguably produced an NCO corps better equipped for combat operations. Yet concurrently, it has recast the institution as a mechanism to broadly deliver new and high-priority training, leveraging the institution's reach to huge populations of NCOs. For instance, the WLC, which is attended by infantrymen, cooks, and veterinarians alike, added counter-Improvised Explosive Device (CIED) training to the course to ensure all NCOs receive at least rudimentary skills to avoid what is currently the most significant battlefield threat. Similarly, institutional training has also been leveraged to deliver refresher training on basic Army skills that may not be the primary purpose of a course. Often, it is unclear which tasks and training requirements reflect new and enduring tasks that warrant institutional training, vice new but temporary requirements that may not be optimally suited for institutional training. As the Army transitions away from the heavy operational tempo of the past decade of war, and implements the tenets of the ALM, the Army can realign its training goals to reflect ideal training environments.

Aside from resource and logistical concerns, however, there remains a more fundamental concern regarding whether some tasks are differentially suited for training in the institution, at the unit, or via self-development. Task characteristics and training demands may more appropriately dictate the optimal placement of a task in a training site. Traditionally, Army institutional training has been reserved for addressing enduring individual skills that represent the core skill sets of NCOs, and emphasizing the doctrinally correct approach. In contrast, the unit trains NCOs for the particular knowledge or task requirements, and tactics, techniques, and procedures (TTPs), specific to its current or upcoming mission. For example, a medical unit expecting to encounter a predominance of a certain type of injury on its next deployment may well focus unit training time on critical tasks that reflect those likely injuries. Similarly, a unit deploying to Iraq conducts different language and culture preparation than one deploying to Afghanistan. In short, the institution's traditional role is to train doctrinally correct skills required by all NCOs within an MOS or across the force, while unit training typically addresses unit Standard Operating Procedures (SOPs) and TTPs that reflect current needs and best practices from theater. From a time and resource perspective, regularly updating institutional POIs is costly. To make matters worse, the time-consuming and lengthy nature of modifying POIs may result in initially highly important tasks becoming out-of-date by the time that the POI modification is approved and implemented. Thus, some tasks continue to be trained in an institutional environment past the time when they were deemed critical. The Army's process for updating the assignment of tasks to institutional, unit, or self-development training sites, occurs roughly once every three years via the CTSSB procedure (TRADOC, 2004). As a result, tasks may linger in an institutional POI long past their prime, resulting in valuable institutional training time spent in non-optimal ways. As institutional training courses are governed by strict schedules, time spent training these low priority or even unnecessary tasks could be better allocated to more important tasks. Thus, task durability has come into question as a primary consideration for site selection.

Adaptations of the institution's training mission have resulted in changes to its traditional role and indications from cadre and students that task training sites are misaligned. Students and cadre have expressed concern that valuable institutional training time is spent training content specific to current operations that is unrelated to a course's primary mission and is outside the proponent's domain. Another concern is that institutions train material that NCOs have already learned on the job. This muddying of the traditional distinctions between training site purpose has led to redundancy, such as when training content is repeated, at times identically, across multiple training sites. Conversely, there has been an inappropriate elimination of some critical tasks from institutional training due to time and resource constraints, and a resistance to increasing the length of the course to accommodate for added training content.

The objective of this research effort was to identify the factors associated with optimal placement of tasks for training, in order to support the process by which such decisions are made within the NCOES. The research was framed with the assumption of durability as a primary discriminating factor, but left open the potential for other factors or variables to discriminate between training site suitability. While we recognize the value of the research outcomes for better understanding training site selection factors, the primary goal was to aid the NCOES in distinguishing between tasks that are best suited for institutional, unit, and self-development

training sites. To that end, we conducted a thorough analysis of the traits that characterize a task ideally trained in the institutional environment, traits of a task ideal for unit training, and those of a task ideally suited to self-development. Using the outcomes of this analysis, we developed a front-end analysis (FEA) methodology that assists in differentiating those tasks that are appropriate for institutional training from those tasks that are better suited for training at the unit level, or via individual self-development. The FEA methodology would therefore support individuals involved in recommending training sites for individual tasks, by providing a simple way to systematically evaluate the characteristics of a task to produce a site recommendation.

Our approach to this research effort included a literature review to identify the Army's current processes related to placing tasks for training, and other service and industry practices associated with matching tasks and training requirements to sites and media. The *Background* section of this report describes these practices and associated challenges to more clearly frame the research requirement and the context. Upon completion of the literature review, an analysis of site selection factors commenced, as described in the *Analysis of Site Selection Factors* section, to identify the most critical task characteristics for consideration when identifying the optimal site for training. The focus of this research effort was the NCOES, which encompasses WLC, ALC, and SLC. SMC was not included in this study. As such, the researchers conducted observations of the Army's CTSSB process in which the training site determination recommendations are made, and interviewed board members and subject matter experts (SMEs) with knowledge and experience in ascertaining the qualities of tasks that are most amenable to institutional, unit, and self-development training. From these observations and interviews, an analysis was conducted that revealed several consistent factors indicating variables upon which tasks could be discriminated for the purposes of determining training site location. These factors were then formulated into a logic tree reflecting the priority and order of consideration reflecting SMEs' distinctions between training site considerations. The resulting logic tree allowed for the generation of the FEA methodology for recommending placement of critical tasks into a training site. This methodology was then embedded into a Site Selection Tool (SST) to support novice site selectors and improve the quality of their recommendations. A popular, user-friendly, widely-available and U.S. Department of Defense (DoD) supported software was utilized to maximize ease of adoption. The procedure and outcomes of the FEA methodology and SST development efforts are detailed in the *Site Selection Methodology and Tool* section. Next, the SST was assessed via multiple iterations in Army CTSSBs with the Armor School and the Military Intelligence School. After each assessment and implementation of the tool, the research team considered and included a selection of proposed revisions based on user feedback. The assessment process and key outcomes influencing revisions to the SST are described in the section titled *Site Selection Tool Assessment*. Finally, program outcomes and implications for use of the products are presented in the *Discussion and Conclusions*.

Background

In U.S. Army Training and Doctrine Command (TRADOC) Pamphlet 350-70-6, the Army outlines its process for reviewing and updating critical task lists. This process provides guidelines for selecting critical tasks for each MOS as part of the CTSSB process. CTSSBs are responsible for refining an MOS critical task list and recommending training sites. CTSSBs are

conducted for all NCOES courses by each course/MOS proponent and result in an updated critical task list for the MOS.

In line with the Army's analysis, design, development, implementation, and evaluation (ADDIE) process for training, TRADOC guidelines indicate that this review process should occur every three years and include a comprehensive review of the tasks that are conducted by NCOs in a given MOS. While TRADOC presents guidelines for both individual and collective tasks in TRADOC Pamphlet 350-70-6, this research effort focused solely on individual tasks. See Figure 1 for an overview of this process, as described in Pamphlet 350-70-6.

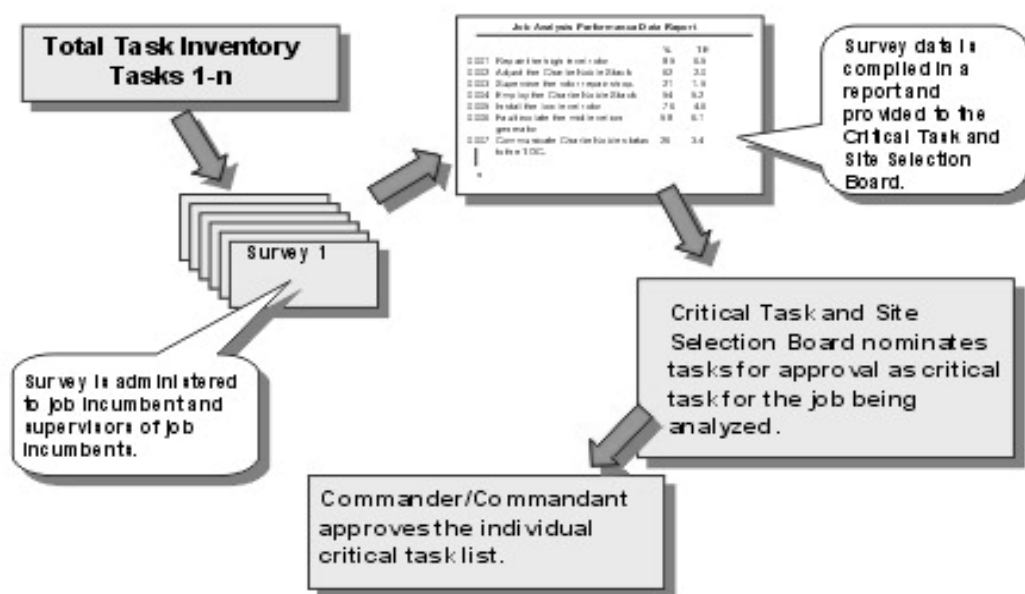


Figure 1. Total task inventory¹

Figure 1 provides an overview of the prescribed process, but in practice, some departures occur. In brief, the process includes the following steps.

CTSSBs are conducted on a three year schedule, or sooner if a need arises based on critical incidents, performance deficiencies, law or doctrine changes, or for other reasons. Upon instigation, the first phase is a job analysis, generally conducted by training developers (General Schedule 1750) and SMEs in the content domain. The job analysis phase involves soliciting feedback from individuals holding the duty position under review. To begin the job analysis, first a Total Task Inventory list must be developed. This list represents the totality of tasks that the organizers (training developers, task analysis group, etc.) believe the CTSSB should consider for a critical task list. The list is compiled from various resources including existing critical tasks lists, subject matter experts, collective task lists, mission analysis, and analysis of surveys and other task performance data. See Figure 2 below.

¹ Originally published in TRADOC PAM 350-70-6 (2004).

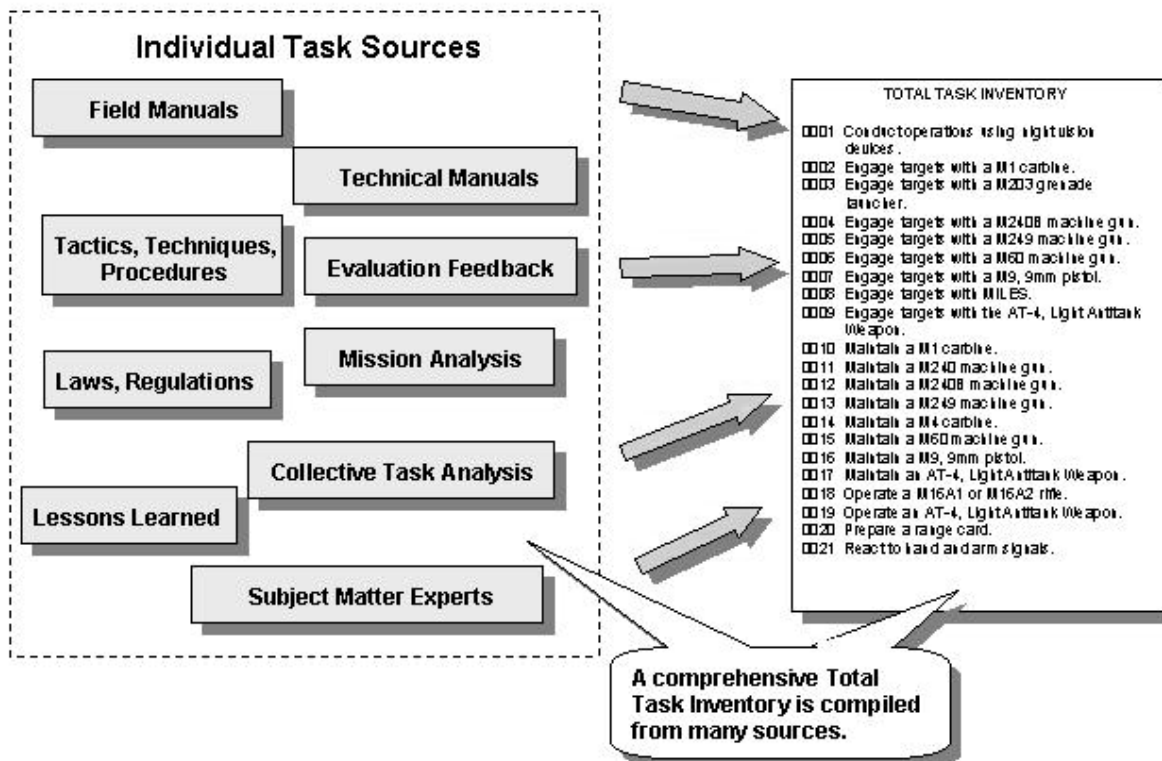


Figure 2. Building a total task inventory²

The process relies heavily upon input from SMEs, those individuals who possess a thorough knowledge of the job, including the duties of the job as well as the tasks. Because SME input is essential to developing the Total Task Inventory, it is important that only those SMEs with the highest level of expertise are selected for input into this process (U.S. TRADOC, September, 2004). Once the Total Task Inventory is built, a job analysis survey is administered to individuals holding the MOS. This data can be collected by automated systems, such as AUTOGEN.³

The purpose of the job analysis survey is to garner information about the role of the tasks in job performance for the MOS under review. Training developers base the specific information they solicit about these tasks on task selection models, of which a variety are available across the Army. Their main function is to prioritize and rank the tasks in order of their importance in several different areas.

Eleven task selection models are recognized doctrinally, though the following five models are the ones most frequently used to judge task criticality:

² Originally published in TRADOC PAM 350-70-6 (2004).

³ AUTOGEN is an ARI survey product used to collect data. Beginning in FY13, this product will not be available thru ARI, including training developers or others who wish to utilize it for their training analysis needs as part of the CTTSB process.

- *Difficulty-Importance-Frequency Model* - Tasks are identified as critical based on the difficulty, importance, and frequency with which they are performed.
- *Four Factor Model* - Tasks are identified as critical based on their percent of total job performance and their difficulty to learn.
- *Probability of Task Criticality Model* - Tasks are identified as critical based on occupational data, analysis, requirements, and structure of the program.
- *Training Emphasis (TE) Model* - Tasks are identified as critical based on the TE factor, which is collected from supervisors and/or jobholders. It reflects the job incumbent's and the supervisor's judgment concerning how much emphasis to give the task in training. The TE is the most used single training factor for critical task selection.
- *Eight Factor Model* – Tasks are identified as critical based on judges' ratings of the tasks on a scale from one (1) to six (6), with a higher rating indicating greater importance, on eight separate dimensions. That is, tasks are identified as critical based on (1) the percent of NCOs performing the task (across the Army), (2) the percent of time spent performing this task, (3) the severity of the consequence of inadequately performing the task, (4) the tolerance of the task to a delay in conducting it, (5) the frequency of performing this task, (6) the difficulty in learning this task, (7) the probability of deficient performance, and (8) the immediacy of performing the task (i.e., how automated performance must become).

The manner in which the job analysis is distributed varies across proponents from a top-down directive to participate to word-of-mouth and from specific requests for sponsoring units to mass-email solicitations. The results of the job analysis survey are analyzed and prepared for presentation to the CTSSB members to guide their decisions regarding task criticality. Thus, in addition to the subjective nature of ratings, these models are used to “apply statistically valid task selection data to identify critical individual tasks” (p. 81, U.S. TRADOC, September, 2004). Although the job analysis is intended to precede the board's convention, this step is sometimes replaced by board members providing their own ratings of the tasks in the total task inventory during the CTSSB, or sometimes may be dropped entirely if time and resources do not permit, in favor of a simple critical/non-critical vote.

The development of the total task inventory and the job analysis are to be conducted prior to the board's convening. For the actual board meeting, representatives from the U.S. Army Forces Command (FORSCOM) (including Reserve Component) are solicited. The manner in which they are solicited varies, but the goal is to secure representation by individuals with recent and valuable operational experience from a wide range of backgrounds. At times, individuals are hand-selected or personally invited by proponents, while other times individuals are nominated at units' discretion. Voting members should be supervisors of (one or two levels above) the duty position under review and must include representation from National Guard and/or Army Reserve. Boards may also include non-voting members with subject matter expertise to include SMEs of higher or lower rank, civilian training developers, instructors, and so forth. Boards are facilitated by a non-voting chairperson.

CTSSBs are generally a week in duration and typically consist of four primary objectives,

each of which maps to a set of activities within the CTSSB:

1. *Introduction, instructions, and guidance.* The CTSSB begins with the administrator and chairperson setting the stage for the board members. During this time, board members are briefed on the purpose and outcomes of the CTSSB. They are oriented on how to apply their experience to the goals of the CTSSB. And, they are given instructions for how to rate task criticality and recommend training sites for each task.
2. *Updating the task list.* The next stage of the CTSSB usually consists of reviewing the task list in question, making a determination as a group as to which tasks should be deleted or modified, and suggesting tasks to be added to the list. In other words, the board revises the MOS task list to ensure it is keeping step with requirements for NCOs as they support their units. As previously discussed, the one exception to this activity lies at the WLC CTSSB, which is run by the U.S. Army Sergeants Major Academy (USASMA). The common core tasks reviewed there are maintained by a range of MOSs across the Army, and are therefore not within the purview of USASMA to delete or revise.
3. *Ratings of task criticality.* In the third stage of the CTSSB, the board applies one of the task selection models previously discussed to rate the criticality of each task on the list. At the end of this stage, every task has a criticality rating associated with it, usually on a scale from 1 to 5 or 1 to 6. In addition, the board administrators typically identify a criticality cut off point (e.g., 3.2 on a 5-point scale), where all tasks falling at or above that rating are deemed critical and thus become higher priority training requirements.
4. *Site selection.* The final stage of the CTSSB is site selection. At the discretion of the board administrator, the board may recommend initial training sites for only the critical tasks, or for all tasks on the list. As we have described, the board may recommend institution, unit, or self-development. Within the institution option, a board may identify a functional course rather than an NCOES course to address training for the task.

The board begins its process of *updating the task list* by reviewing the Total Task Inventory list developed by the job/task analysis or training development team. If a job analysis survey was conducted, the results may be presented to the board. Either on the basis of the job analysis results and/or in conjunction with board member expertise, the board votes to *rate task criticality* of each task in the total task inventory. Specific voting procedures vary, but may include numerical ratings (e.g., a 1-5 scale with a specified cut-point), or a simple yes/no vote. Specific frameworks also vary, as does adherence to a single framework; however, one of the aforementioned task selection models is frequently applied. The voting procedure usually includes discussion on each task. As would be expected, group dynamics and individual personalities can at times have strong influences on the votes of individual board members. As might be expected, board results tend to reflect the specific backgrounds of the individuals who comprise the board, reflecting unique perspectives of their own units' missions and experiences regarding what constitutes a critical task and what does not. Determination of what qualifies as a critical task varies, and no firm rules guide this decision. Usually, the score qualifying for criticality is set either by precedent or by the board chair or board administrator. In the case of a numerical rating, each task is generally assigned a score taken as a calculated average of each

board member's rating; if the average score is above the designated critical value (e.g., a 3 or higher on a scale of 1-5), it becomes a critical task. In the case of a simple yes/no vote for criticality, the board chair or administrator will set an acceptable consensus level (frequently a simple majority). In conjunction with establishing a critical task list, boards may take the opportunity to modify the tasks by revising portions of a task title, description, and at times, conditions and standards. Tasks may also be added to the list as recommended new tasks for the MOS.

Following the identification of critical tasks, all boards include a *site selection* phase. While several models to establish task criticality can be identified, no formal or standardized mechanism exists for initial training site determinations, either within the CTSSB context or elsewhere in the Army systems. However, the Army has begun to focus more attention on training site determination. An integrated training environment (ITE), which incorporates both institutional and unit-based training, is currently underway (U.S. TRADOC, January, 2011b). This holistic ITE will synchronize and balance both unit and institutional training environments. This approach recommends that NCOs and leaders should be trained to develop their individual cognitive, interpersonal, and cultural skills in the institutional learning environment. These individual skills are then transformed from individual, adaptive skills into collective, adaptive skills to meet unit readiness, via unit training that is better equipped to replicate the difficulties and complications of the current operational environment. By introducing complex and challenging unit training opportunities, leaders and units gain the experience and skills required to execute full-spectrum operations. As such, the ITE provides commanders and leaders with the flexibility and adaptability in planning, preparing, and executing both types of training programs, whether institutionally based or unit-based (U.S. TRADOC, January, 2011b).

Within the CTSSB context, the site determination process is less standardized and is given less emphasis than the task criticality phase. While members of the CTSSB bring substantial operational experience and expertise to the board, seldom does a board member have any prior experience sitting on a CTSSB or selecting sites for task training. In other words, all board members are novice site selectors, unaided by any formal process or guidance. While their MOS-related expertise and their duty position experience is highly valued and gives them the necessary knowledge to properly characterize a task, board members are unlikely to know which characteristics about a task align it best with a specific training site.

The site selection phase of the CTSSB generally includes an informal discussion, and usually, but not always, a board vote. Often, one or two board members make a general recommendation for training site, and this recommendation prevails unless strong disagreement is voiced. Informally, it has been suggested that a bias exists toward assigning tasks to an institutional setting, for three possible reasons. First, there seems to be an implicit belief that the institution trains the most critical individual tasks, while the unit focuses on training collective tasks and those individual tasks of lesser criticality. Secondly, the board is intentionally comprised of individuals from units. Recommending that a task be trained at the unit (such as their own) essentially increases the board members' requirement to find training time and access facilities and equipment at their home unit, so there may be reluctance toward assigning tasks to unit training. Finally, site selection recommendations are arguably influenced by current practices, meaning that tasks currently trained at the institution may continue to be recommended

for institutional training due to board member familiarity with such placement. The outcomes of this research effort were thus intended to lend a degree of standardization to the site selection process, improve its effectiveness and efficiency, and streamline the decision process to give board members a tool with which to make training site recommendations that are grounded in criteria established by SMEs in site determination.

Following the CTSSB, course personnel review the CTSSB's recommendations for the critical task list and site selection, apply their own knowledge and experience regarding appropriate site placement, and submit their recommendations to the Commandant. The Commandant makes any edits he/she deems necessary, accounting for his/her own expertise and understanding of Army needs and available resources. Finally, the new critical task list is published, and in the case of institutional and self-development training, course curricula are developed to account for any newly included tasks.

There are two noteworthy exceptions to this general process: the Warrior Leader Course (WLC) and the Sergeants Major Course (SMC). WLC provides training on common core tasks for SPCs and SGTs across the Army and SMC, provides training on common core tasks for all Sergeants Major. The USASMA is responsible for the content of these two courses and updates to the curriculum, but does not have the authority to modify the tasks themselves, which are created and maintained by other proponents. The USASMA does not have the authority to edit tasks belonging to other proponents, so the board can only vote in regards to whether the task, as it is written, should be critical for the respective course. As the CTSSBs for these two courses focus on preparing NCOs on common tasks necessary for NCOs at the beginning (i.e., WLC) and culmination (i.e., SMC) of their service in the NCO corps, the tasks that these boards consider for inclusion in their respective courses are much more varied and represent tasks from across many Army MOSs and duty positions, such as basic infantry soldiering skills (e.g., land navigation), general leadership (e.g., completing NCO Evaluation Reports), and professional development lessons (e.g., sexual harassment training). As such, these boards are comprised of individuals across multiple MOSs. Within single MOS CTSSBs, opinion and expertise variations exist and can spur heated discussion. This effect can be even more pronounced for CTSSBs that must broach a considerably broader and more diverse array of Army experiences.

Analysis of Site Selection Factors

The requirement for an improved capability to determine optimal training sites is apparent. To fill the void with guidance and support for the site selection recommendation process, researchers conducted an analysis of factors in support of site selection decisions or recommendations by skilled and experienced individuals. The site selection factors were identified through data collection in the form of SME interviews and CTSSB observations, as well as a qualitative data analysis. Characteristics associated with enduring and non-enduring tasks were also investigated. The analyses described herein formed the basis of the SST design, to improve the effectiveness and efficiency of site selection recommendations by CTSSBs. The following sections detail first the identification of critical factors, the development of the FEA methodology and logic, and then the technical development of the SST which conveys the FEA in the form of a user-interactive tool. The assessment and revisions of the SST are then

presented to explain how the SST incorporated user feedback and additional modifications to improve functionality.

Methodology

Determining Site Selection Factors

Participants. Participants in the SME interviews were obtained telephonically and from three site visits: Fort Bliss, TX, Fort Benning, GA, and Fort Huachuca, AZ.⁴ Interviewee criteria were set forth as follows:

- Individual possesses exceptional knowledge and experience in identifying tasks that are best suited for institutional training, unit training, or individual self-development.
- Individual is experienced in identifying tasks that were misplaced in institutional training when they were better suited for unit training, or vice versa.
- Individual is experienced in CTSSBs.
- Individual is familiar with the Army Learning Model (ALM) and its implications for developing and placing training.

Most interview candidates were identified in advance of the research team's visit to each site, with attempts to match the criteria as closely as possible. These interviewees represented job roles such as Noncommissioned Officer Education System (NCOES) course chiefs and course managers; Noncommissioned Officer Academy (NCOA) former and current commandants and deputies; training and course developers; NCOES senior instructors; and other key individuals in the Task Analysis and Instructional Development branches. All interviewees were either active duty personnel, or retired Army officers or NCOs currently serving as government civilians. Additional interviewees were selected once on site, and these individuals were all first-time board members (active duty) representing the operational force on a CTSSB. As such, they were not SMEs in site selection per se, but represented a user population whose perspective required consideration. Finally, telephonic interviews were conducted with representatives from the Coast Guard's Performance Technology Center. In all, 35 individuals were interviewed in 32 interview sessions. Table 1 summarizes the interview participants by site.

Table 1
Summary of Interview Participants by Site and Type

Interview Site	Number of Active Duty SMEs	Number of Civilian SMEs	Number of CTSSB Members (non-SMEs)	Totals
Fort Bliss	7	3	4	14
Fort Benning	7	4	1	12
Fort Huachuca	1	5		6
Telephonic (Coast Guard)	1	2		3
Totals	16	14	5	35

⁴ Individuals interviewed at the three sites were not necessarily residents of the sites. A subset of the participants were on temporary duty when interviewed.

Observations were conducted at two sites. Researchers observed portions of a Fort Bliss CTSSB, which reviewed common core tasks for criticality and inclusion in Warrior Leader Course (WLC), and a Fort Benning Infantry Officer (11A) CTSSB, which reviewed infantry Lieutenant (LT) and Captain (CPT) tasks for inclusion in the Infantry Basic Officer Leader Course and the Maneuver Captain's Career Course, respectively. Although the latter was not an NCOES board, we relied on observations of the board's process, which are sufficiently similar to NCO boards to warrant inclusion in the data collection.⁵

Materials. Interviews were conducted using an Informed Consent Form, a Privacy Act Statement, Task Lists, and a Data Collection Protocol.

Informed Consent Form. The Informed Consent Form (see Appendix A) introduced the purpose of the study, described the interview objectives, clearly indicated that participation was voluntary and could be terminated at any time, and assured interviewees that their responses would not be attributable to them personally. In addition, points of contact were provided for questions concerning the study and questions about individuals' rights as interviewees. The participant signed the consent form to acknowledge that the he/she was volunteering to participate, was at least 18 years of age, and was willing to have his or her interview digitally recorded.⁶ Interviewees retained the Consent Form for their records, while the researchers retained the signature pages.

Privacy Act Statement. Similar to the Informed Consent Form, the Privacy Act Statement (see Appendix B) summarized the purpose of the study and reminded interviewees of their rights to confidentiality and voluntary participation. Interviewees retained a copy of the Privacy Act Statement for their records.

Task Lists. Prior to data collection at each site, the task list to be reviewed at the CTSSB, or in the case of Fort Huachuca, relevant to the interviewees, was obtained. Lists were culled for tasks whose training placement appeared to the research team's SME to fall into one of the following categories: clearly institution trained; clearly unit trained; clearly appropriate for self-development; new (i.e., recently added) tasks; and controversial tasks and tasks whose placement is not apparent. Once tasks were identified that were believed to fall into those categories, two or three partial lists of 60-80 tasks were compiled for use as examples to be discussed during the interviews.

⁵ The Infantry and Armor NCO and Officer boards are conducted by the same office, and therefore utilize nearly identical procedures across the NCO and Officer boards.

⁶ Digital recordings were made solely to facilitate note-taking. The participants were made aware of this purpose.

Data Collection Protocol. The data collection protocol (see Appendix C) consisted of a semi-structured interview script for the lead interviewer to follow, to ensure that all lines of questioning were fully addressed within each interview. The protocol began with a statement of the interview objectives, followed by a description of the interview purpose. The next step in the protocol was to elicit demographic information, and specific questions were prepared for both active duty and civilian personnel. The remainder of the protocol, representing the preponderance of the interview time, addressed three lines of questioning. The first line of questioning was site selection, specifically, the factors or characteristics to be considered when slotting a task for training. This section elicited data through both general questions about types of tasks that should be initially trained in institutional, unit, and self-development settings, and probes for specific incidents in which tasks were potentially assigned in a non-optimal manner. The next line of questioning addressed the characteristics of enduring and non-enduring tasks. Its queries focused on defining “enduring” and “non-enduring” from the interviewee’s perspective, and determining the extent to which the durability of a task is considered when placing it for training. In addition, the partial task lists from a MOS relevant to the interviewee was presented at this stage in the interview, and participants were asked to discuss where they would recommend certain tasks be trained, and the rationale for those judgments. Finally, the last line of questioning in the protocol addressed topics related to how to best support current CTSSB processes with an improved site selection method and tool. These questions revolved around who should be the target audience for the tool and how the tool could be used to support their site selection recommendations.

Procedure. The procedure included both SME interviews and CTSSB observations.

Interviews. Interviews were conducted by a research psychologist and supported by a military SME member of the research team. In most cases, interviews were conducted with a single participant; however, in three cases, two SMEs were interviewed together. Every interview lasted between 60 and 90 minutes.

Interviews began with presentation of the Informed Consent Form and the Privacy Act Statement. Once the interviewee read the forms and signed his or her consent, the interviewer requested verbal permission to digitally record the interview. Permissions were given without exception, and recordings commenced. The data collection protocol was then administered, beginning with the interviewers describing the purpose of the study and clarifying the participant’s questions if necessary, and then collecting demographic data about the participant. The majority of the interview time was typically spent discussing the rationale for training tasks at particular sites, the relative advantages and disadvantages offered by each site, and the challenges associated with selecting sites for training, especially the resource limitations. In addition, researchers elicited information about the CTSSB process and outcomes, current initiatives for improvement, and other barriers associated with maintaining task lists and updating institutional training. At the end of each interview, participants were given the opportunity to ask questions of the research team, and were provided contact information to pass on additional comments if desired.

Observations. Members of the research team, including two psychologists and one military SME, conducted observations of two CTSSBs. While the manner in which these boards

are conducted varies widely, the typical one-week duration of a CTSSB was true for boards we observed.

Researcher observations took place in conjunction with interviews at two of the three sites, and priority of scheduling always went to the interviews. Therefore, total observation time amounted to approximately ten hours during the first week-long CTSSB and six hours during the second week-long CTSSB. In each case, researchers observed the instruction and guidance provided to board members by the administrators and chairmen. When possible, the researchers attempted to observe portions of the CTSSBs during which group discussion occurred, such as during task criticality ratings or site selection. Notes were taken throughout the observation process to capture factors and task characteristics referenced during both task criticality and site selection discussions, note questions and challenges identified by board members, and document the process followed by the group.

Analysis. Participant numbers were assigned to each interviewee and names were removed from all the data records. Notes were compiled for analysis and a total of 15 interviews were transcribed. A three-stage qualitative analysis process ensued. Participant numbers were associated with data throughout the analysis process to ensure continuous traceability back to the raw data.

Analysis Stage 1 – Sweep through the Data. The primary research objective was to determine the task characteristics (including task endurability) and other issues site selection experts consider to distinguish between critical tasks that are ideally suited to training in the institution, the unit, or self-development. In order to answer the research question, the traits that make a task best suited to one training environment over another must be identified. As such, the team judged that six types of information should be extract from the interviewee responses and observations pertinent to site selection decisions. An additional four types of information were identified as elements pertaining to the context in which site selection recommendations are made, and therefore relevant to the goal of developing a site selection methodology and support tool. In the first stage of the analysis, a sweep was conducted through observation and interview data to identify the factors and task characteristics identified as pertinent to site selection, characteristics associated with enduring or non-enduring tasks, challenges associated with site selection, ideas for improving site selection, and other issues of relevance to the project goals. For each interviewee, relevant data were extracted and entered into data tables with the following ten specific headers as data groupings:

1. Factors considered when recommending tasks for institutional training
2. Examples of tasks suited to institutional training
3. Factors considered when recommending tasks for unit training
4. Examples of tasks suited to unit training
5. Factors considered when recommending tasks for self-development
6. Examples of tasks suited to self-development
7. Challenges associated with site selection
8. Challenges associated with determining whether a task is enduring or non-enduring
9. Other issues of interest to the process
10. Ideas for supporting or improving the site selection process

Analysis Stage 2 – Definition of Site Selection Factors. Once the relevant data were extracted from the interview records, an informal thematic analysis was conducted. Items described as factors for site selection (items 1, 3, and 5 in the list above) were sorted into groups of like items as judged by the research team. While interviewees’ terminology varied, their descriptions of and rationale for the factors and considerations reported conveyed that terminology notwithstanding, similar concerns, ideas, and considerations were applied to site selection. The research team ensured proper interpretation of the interviewees’ reports by including the interviewer, who had first hand exposure to the data collected, in the analysis. Two researchers conducted this thematic analysis and resolved differences when their groupings did not agree. The data groupings, and the inclusion or exclusion of factors in each grouping, were further verified by the team’s military SME. Each grouping was then labeled, resulting in a single descriptor for the same concept communicated in different ways by interviewees. These labels became the 36 site selection factors. Frequencies were calculated across the data set to determine the number of interviewees reporting each factor, regardless of whether they aligned the factor with the institution, the unit, or self-development. Therefore, each factor was stated as a neutral element, such that it could be rated as having a value across a continuum, or as a yes or no judgment. For instance, on the *Universality* factor, a task could be judged as high, medium, or low as to the requirement for and relevancy to every unit across the MOS. Similarly, on the *Hands-On/Motor Skills* factor, a task could be judged as either requiring or not requiring hands-on motor skills to perform. Factors that were not reported by at least three SMEs were discarded from the set as non-essential. Each remaining factor was then defined to reflect the meaning conveyed by the associated data items.

Characteristics of enduring and non-enduring tasks were also extracted from the data tables and listed, using the research team’s judgment as to data elements constituting characteristics. However, due to a lack of SME support for the application of task durability as a site selection factor, few characteristics were proffered and so frequency counts for these characteristics were not recorded. Rather, the concept of task durability was more appropriately represented by a subset of the site selection factors already indicated by SMEs, most notably those related to the universality, permanence, and foundational nature of tasks. Therefore, the research objective to specify characteristics of enduring and non-enduring tasks was reframed as a goal to identify the breadth of site selection factors comprising the concept of durability. Ultimately, as described in *Analysis Stage 3* below and illustrated in Table 2, “Enduring Army Standards” was identified as a category of site selection factors representative of the concept and characteristics of task durability.

Analysis Stage 3 – Factor Categorization. In the final analysis stage, site selection factors defined in Stage 2 were further categorized by *type/category* of factor, for two reasons. First, the large number and diverse nature of the site selection factors resulting from the analysis made the set unwieldy without an organizing framework. Some factors pertained to the instructional setting that best promoted learning. Others related to practicalities such as time and resource availability. Still others had to do with the nature of the task as a component of the MOS. Second, organizing the factors into categories would allow for highlighting the relationships among factors and the clusters that often correlate with each other. For example, a task judged high on the *Universality* factor was often also judged high on the *Core Task*,

Foundational, and *Need for Standardization* factors. These factors all contributed to the description of a task that is central to the MOS and maintains criticality over the course of time. Likewise, a task for which *Safety* is a highly important factor is often also high on the *Risk* factor. Within a category of factors, some factors discriminated between training site in an identical or nearly identical manner, and others factors within a category had unique discrimination patterns that provided unique insight to training site selection above and beyond the other factors in the same category. Utilizing the category approach, factors that did not contribute to site determination via a unique discrimination pattern could be excluded from consideration in the streamlined front-end analysis methodology.

The first step in this categorization stage was to sort the factors into like groupings. Two researchers conducted individual sorts. The factor definitions were closely examined throughout the sorting process. The two researchers then compared their sorts and resolved their disagreements. Each grouping was given an initial label. The categories and their contents were then presented to the team's military subject matter expert for his review. Once again, disagreements were resolved. A final total of five categories were defined. Category labels were then finalized to maximize communicability to a military user audience.

Findings

Site Selection Factors Outcome

A total of 36 site selection factors were identified across five categories. They appear in Table 2, below, with their definitions. Table 3 provides frequency counts associated with each factor, for both Army and Coast Guard interview participants.

Table 2
Site Selection Factors

Site Selection Factors		
Category	Factor	Definition
Task Performance	Safety	The danger associated with training or performing the task, and as a result the extent to which safety measures must be put in place to avoid injury.
	Risk	Whether significant risk (life, limb, eyesight) is associated with incorrect performance, either in training or operational contexts.
	Doctrinal Basis	The extent of the requirement to train the textbook solution and repercussions of incorrect performance.
	Frequency of Performance	The regularity with which the task will be performed.
	Current Force Proficiency	The degree of skill currently held by NCOs across the Force or MOS.
	Unit-Specificity and MOS-Specificity	The degree to which the task is driven by mission requirements of a particular unit, and therefore subject to unit SOP vice generalized doctrine. The degree to which the task is specific to a particular MOS and not conducted by Soldiers from other MOSs.
Enduring Army Standards	Universality	The extent to which the task is required by and relevant to units across the Force or across the MOS.
	Core Task	The extent to which the task is an enduring capability or building block of the MOS, meaning that all Soldiers in the MOS are expected to be able to perform the task.
	Need for Standardization	The importance associated with ensuring the task has been instructed to a common baseline, via a thorough, consistent, and standardized manner, to each and every NCO. This includes instruction regarding the importance of correct performance as opposed to taking shortcuts in training the process.
	Need for Control	The importance associated with ensuring task training has been delivered and performance has been assessed for each and every NCO.
	Foundational	The degree to which the task represents the basic building blocks of a skill set or the underlying knowledge required as context for a larger set of tasks.
	Leadership	The importance or centrality of the task for an effective leader.
	Doctrinal	The degree to which the task relates to a broad concept of battle that applies across mission contexts vice a specific implementation of the concept to a particular mission or environment.
	Task Criticality	The overall importance attributed to the task.
	Train-the-Trainer	The extent to which learners are expected to train the task to other Soldiers at the unit.
Instructional Affordances	Peer Learning Benefit	The degree to which there is a learning advantage associated with exposure to and discussion of the experiences of Soldiers from other units or backgrounds.

Site Selection Factors		
Category	Factor	Definition
	Small Group Instruction	The degree to which there is a learning advantage associated with a small student group facilitated by an instructor.
	Question & Answer	The degree to which students are likely to require clarification of concepts during the instruction.
	Practical Application	The degree to which there is a learning advantage associated with practical application exercises or other hands-on elements of the instruction.
	Confidence Building	The extent to which learning outcomes depend on an instructor building learner confidence.
	Residence of Expertise	The location at which task subject-matter experts are most likely to reside, either as a result of prior experience or doctrinal study.
	Need for Observation-Based Assessment	Whether performance must be evaluated against a standard via observed performance versus within a computer-graded test, such as a multiple choice exam.
Site Affordances	Need for Equipment	The degree to which equipment (weapons, vehicles, systems) is required to train the task.
	Access to Equipment	Whether the necessary equipment for training the task is available at the institution or available at most units.
	Time Available to Train	The amount of time available to train the task, most often given a limited course length.
	Time Required to Train	The amount of time necessary to provide sufficient task instruction.
	Annual Training or Qualification	Whether or not there is an annual training or qualification requirement that is satisfied at the unit.
	Integration Ability	Whether the training for the task can be easily incorporated into training that already exists for other tasks.
	Training Updates	The likelihood that task standards will change and instruction will require modification to keep pace with the evolving standards.
Nature of Knowledge	Hands-On/Motor Skills	The extent to which task performance and training requires motor or hands-on performance, or physical manipulation of tools, equipment, or items.
	Basic Facts and Procedures	Whether the task instruction is based on declarative and/or factual knowledge (including historical information or procedural steps), that are relatively easy to learn.
	Task Complexity	The effort required to learn the task, usually based on the degree of difficulty of the conceptual or procedural knowledge.
	Creative and	Whether the task requires complex cognitive skills, creativity, or critical thinking to perform.

Site Selection Factors		
Category	Factor	Definition
	Critical Thinking	
	Detail	The degree to which the task consists of highly detailed elements of a process, procedure, or knowledge set.
	Segmentability	The extent to which the knowledge that comprises the task instruction can be divided into segments and instructed at different times.
	Difficulty to Retain	The degree to which refresher training is required to preserve learner knowledge or skills.

Table 3
Army and Coast Guard Factor Frequency Counts

Factor	Army Frequency (n=29)	Coast Guard Frequency (n=3)
Task Performance		
Safety	6	2
Risk	6	2
Doctrinal Basis	13	3
Frequency of Performance	4	3
Current Force Proficiency	3	2
Unit-Specificity and MOS-Specificity	14	0
Enduring Army Standards		
Universality	11	1
Core Task	12	0
Need for Standardization	9	3
Need for Control	7	3
Foundational	12	2
Leadership	7	0
Doctrinal	17	0
Task Criticality	8	2
Train-the-Trainer	2	0
Instructional Affordances		
Peer Learning Benefit	7	1
Small Group Instruction	3	0
Question & Answer	5	1
Practical Application	17	0
Confidence Building	3	1
Residence of Expertise	7	1
Need for Observation-Based Assessment	6	0
Site Affordances		
Need for Equipment	12	2
Access to Equipment	12	1
Time Available to Train	8	2
Time Required to Train	5	1
Annual Training or Qualification	3	0
Integration Ability	4	0
Training Updates	5	2
Nature of the Knowledge		
Hands-On/Motor Skills	17	2
Basic Facts and Procedures	15	2
Task Complexity	7	2
Creative and Critical Thinking	11	1
Detail	3	0
Segmentability	5	0
Difficulty to Retain	8	1

Task Endurability

Task endurability was largely considered by the SMEs to be the longevity of the task, or its likelihood to remain constant across time. Endurability was frequently associated with the foundational nature of the task and its universal application across operational contexts – both of which were reported as site selection factors. Tasks perceived to be non-enduring fell into one of two categories. First, tasks can be non-enduring if they stem from a particular adversary or region of the world, and TTPs that are produced as a result. Tasks can also be non-enduring if they are associated with a specific technology-based system (as opposed to the outcome produced by the system) that will be modified or replaced as a result of technological advances.

The concept of task endurability was considered by some SMEs to be theoretically sound. It made logical sense that institutional resources should not be applied to tasks whose criticality and relevance will not persist. However, in practice, no SME reported having considered task endurability in the past as a distinct factor for site selection, nor did SMEs identify endurability as particularly important when assessing the task list provided as a part of the interview protocol.

Judgments about whether tasks are enduring or non-enduring were reported as complex and difficult, mainly due to the fact that identifying enduring tasks requires some speculation as to future world events. Several other challenges add to the complication.

Interview participants submit that oftentimes terminology changes to reflect a novel instantiation of an old concept. For example, in the last decade of combat, improvised explosive devices (IEDs) have been recognized as one of the primary weapons used by the adversary. If we take the definition for task endurability related to adversary and theater-specific TTP, then tasks related to countering IEDs would be defined as non-enduring. However, SMEs have argued that IEDs are in actuality a new name for what was previously termed landmines, as used in the Vietnam era, and booby traps, as used by countless other adversaries. And, the belief is that future adversaries will also employ similar weapons and tactics.

One set of SMEs representing task analysis activities reported ongoing efforts to modify the task descriptions in a manner that would minimize any discussion about permanent versus temporary, or enduring versus non-enduring tasks. Some tasks designate, in their title, a particular system or piece of equipment employed by the NCO. This task analysis group argues that what is critical to performance is not the particular tool applied so much as the function and outcome the tool supports. While the impetus for their task modification efforts stems, in this case, from a lack of system standardization across units staffed by NCOs from the MOSs, the point remains that functions are more likely to be enduring rather than tools.

A group of interviewees re-framed the question of *enduring* tasks into one of *emerging* tasks. An emerging task might be defined as one that materializes as a result of global changes to how nations or other entities engage in conflict, or evolutions of political interests and national security policies. In contrast with the concept of task endurability, task emergence might be considered to be more permanent in nature and associated with a phase of international conditions and common practices in global conflict, vice a specific regional task requirement.

Some of the participants in our interviews described how the role of our military and elements within the force has evolved over time, thus producing a new set of requirements that tend to emerge over a period not necessarily linked to a specific regional conflict. In the parlance of military historians and scholars, the current phase of conflict can be described as “fourth generation warfare” (Hammes, 2006), which includes elements of Vietnam-era guerilla fighting through present day counterinsurgency operations in Iraq and Afghanistan. Perhaps the best exemplar of this concept is the changing role of the infantry unit over the course of the past decade, from a maneuver warfare mindset to asymmetric warfare in a counterinsurgency environment. Small unit leaders perform tactical questioning and other similar tasks related to human intelligence gathering, engagements with formal and informal civilian leaders, and biometrics collections. These task areas were previously primarily associated with intelligence, civil affairs, and military police MOSs, respectively, but have emerged as infantry requirements. Furthermore, new tasks have emerged for the Army as a whole in the area of site exploitation and forensics collection, prompted by both operational needs and technological advances. These are likely to reflect a semi-permanent way of operating in asymmetric environments. If and when these emerging tasks are classified as critical for a particular MOS through the CTSSB process, the optimal training site must be determined via consideration of site selection factors such as those identified herein.

Large degrees of variability existed in the other comments made by SMEs regarding endurance as a discrete factor for placing tasks for training. However, nine factors were identified as related to task endurance, and categorized as Enduring Army Standards (see Table 2, above).

Front End Analysis Methodology and Site Selection Tool

Once the factors for site selection were identified, the research team produced a front-end analysis methodology for site selection recommendations. The methodology was then instantiated in a SST that would be highly accessible and immediately usable for CTSSBs. The following sections describe the development of the FEA, and then describe the SST in its current iteration. Interim versions, features, and assessments are described in later sections.

Front-End Analysis Methodology

Development of the Front-End Analysis Methodology. The purpose of the FEA methodology was to produce an efficient, effective process, grounded in SME considerations, for producing a training site recommendation based upon key characteristics of the task. Since it would have been futile to produce a methodology that produced the “right” site selection in every instance, the design of the methodology was instead driven by the need for a streamlined process that would produce a valid recommendation for most all tasks except under outlier circumstances. With an aim to define a highly efficient methodology, therefore, only the factors that are principal discriminators for site placement were included in the methodology. Each of the five factor categories was reviewed to identify the factors that appear to be highly related (e.g., a task that is high on *Universality* is often also high on *Need for Standardization*) and thus, for the purposes of the methodology, redundant. In addition, factors that were seen as critical and key determinants, such as *Safety* or *Peer Learning Benefit*, were identified as candidate

discriminators for the methodology. To identify these candidates, the research team and the team's military SME made the initial judgment as to which factors provided strong and clear discrimination between tasks suited for institution, unit, or self-development training sites. Factors that made finer discriminations that were less clear, made discriminations between a minority of tasks, or were redundant with each other were deemed of lower value to the methodology. For example, safety is always the utmost concern for the Army whenever training or missions are concerned. Safety concerns can also easily distinguish between tasks suited for independent self-study without SME cautionary oversight, and tasks requiring the close watch of an expert trainer. As such, *Safety* was considered a highly important factor in the FEA methodology. The *Risk* factor is similar enough to *Safety* to be considered redundant, and therefore was excluded from the methodology as an independent discriminator. (However, *Safety* and *Risk* were later merged into a single discriminator in the FEA methodology.)

Finally, factors deemed difficult for a CTSSB board member to assess due to their limited knowledge of the institution's POI and resources, such as *Time Available to Train or Integration Ability*, were excluded as candidates. An initial list of candidate principal discriminators was prepared. This process was aided by the inputs of the military SME who was a member of the research team.

A flow chart diagram was iteratively generated along with the identification of candidate discriminators. The flow chart's logic chain was determined by identifying the factors that were highly discriminatory (i.e., making large distinctions between training sites, like *Safety*) and those that were moderate in discriminatory ability (i.e., making moderate distinctions and justifications between training sites). Those with higher discrimination capabilities were included early in the logic flow; factors deemed moderate in their discriminatory ability followed. In addition, some factors were included later in the logic chain (or possibly skipped altogether depending upon the particular path a user follows), if the factor was seen as irrelevant based upon answers to earlier questions. For example, when considering whether a task should be trained via self-development, if a task requires access to actual (and not simulated) equipment access, then the task is a poor fit for self-development/dL (as equipment would be difficult to attain for self-development and dL). In this example, asking whether a task is too difficult to be learned via self-development is a moot point because the complexity of the task is a secondary consideration to whether or not the training can be resourced via self-development. This same logic approach of prioritizing factors was considered for the development of the entire flow chart. The flow chart logic chain was vetted and revised (as described later in this report) through the team's military SME, the research sponsor, training development and CTSSB SMEs, and the assessment and validation phases of this research effort.

In some cases, two discriminating factors were combined to enhance the clarity or add emphasis to the discrimination the eventual user would be asked to make. Each candidate discriminator or pair of discriminators was re-framed as a yes/no question to be answered by the user about the task, and represented in the flow chart as such. Affirmative or negative responses would define the branch to the next discriminator in the chart. Later in the development process, following user feedback, the affirmative and negative response options were modified to allow for responses along a continuum – high, medium, or low – for a subset of the discriminators. The flow chart was conceptualized to begin with a series of questions designed to first

recommend or eliminate self-development as the training site; then recommend or eliminate the institution as the site; and finally recommend the unit if the other two sites were eliminated, and if the unit was equipped to provide the training.

Early versions of the flow chart diagram were vetted by the research team and stakeholders to assess the face validity of the discriminators included and excluded (i.e., were obvious important factors excluded or missing), and to gauge the suitability of the rules for branching from one question to the next and finally to a site recommendation. In addition, a series of NCO tasks taken from multiple MOSs were subjected to the flow chart algorithm by the team's military SME to examine the legitimacy of the site recommendations produced when applying the methodology. The discriminating factors, wording of questions, and branching rules were modified as a result of these internal reviews.

Front-End Analysis Methodology Outcome. Fourteen factors were ultimately identified as principal discriminators for site selection and articulated in a series of twelve questions in the methodology. Table 4 identifies the discriminators, how they were combined and reframed within the FEA methodology, the short and long versions of the question (for space considerations in the eventual SST), and their response options.

Table 4
Discriminators of the Front-End Analysis Methodology

Factor	Short Question	Long Question	Response Options	Definition
Safety	Safety Concern	DURING TRAINING, what is the risk of injury to personnel or damage to equipment when training this task?	High, Medium, Low	The danger associated with training or performing the task. Significant risk (life, limb, eyesight) may be linked with incorrect performance, either in training or operational contexts. This question is about the degree of risk associated with conducting the task.
Risk				
Need for Equipment	Equipment and hands-on training required?	Is actual equipment – a weapon, vehicle, or system – and hands-on training, instead of an equipment substitute, required to train this task?	Yes, No	The extent to which task performance and training requires motor or hands-on performance, or physical manipulation of tools, equipment, or items. This question is about whether the training must employ the actual equipment that would be used operationally, or whether computer based training, a simulation, or a classroom-based substitute can be used instead.
Hands-on Motor Skills				
Task Complexity	Difficult to learn?	How complex or difficult to learn is this task?	High, Medium, Low	The effort required to learn the task, usually based on the degree of difficulty of the concepts or procedures involved. Tasks that are more complex require a human trainer for instruction, to provide examples, and to answer questions. This question is about the degree of task complexity.
Need for Observation-Based Assessment	Assess performance by watching face-to-face?	Does a trainer need to watch performance face-to-face to assess it?	Yes, No	The extent to which a Soldier's performance must be observed in order to evaluate it against the standard. This question refers to whether a trainer is required to watch NCOs perform the task, in person, in order to conduct an accurate assessment.
Training Updates	Updates needed more than yearly?	Will the training change more than once a year?	Yes, No	The likelihood that task standards will change and instruction will require modification to keep the pace with the evolving conditions. If

Factor	Short Question	Long Question	Response Options	Definition
				the training content will change more than once a year, the task is probably not a good fit for self-development.
Residence of Expertise	SMEs available or accessible at unit?	Are SMEs readily available or accessible to train this task at the unit?	Yes, No	The extent to which trainers, small unit leaders, or subject matter experts are training the task at the unit. This question refers to whether subject matter expertise typically exists at the unit, whether those SMEs are readily available to NCOs for training, or whether SMEs can be easily <i>brought</i> to the unit.
Annual training or qualification	Annual qual./cert. at unit?	Is recurring qualification or certification conducted at unit?	Yes, No	Whether or not there is an annual training or qualification requirement that is satisfied at the unit. The rationale behind this question is that when annual testing occurs at the unit, there is a strong likelihood that NCOs receive the required training at the unit.
Universality	Universal task, uniform training required?	Is the task universal and requiring uniformity of training across the MOS?	Yes, No	This question has two parts. Universality is about the extent to which the task is relevant to NCOs across the Force or across the MOS, regardless of job assignment. Standardization refers to how important it is that all Soldiers learn to conduct the task using the same procedure. This question asks whether most NCOs will employ the task on the job, and whether they must know or use the book standard to be effective.
Need for Standardization				
Need for Control	Reliable and controlled assessment?	Is a reliable and controlled assessment highly important?	Yes, No	The importance associated with ensuring task training has been delivered and performance has been assessed for each and every NCO. Some tasks require an extra degree of assurance that every Soldier who has gone through the training actually grasps the task and can perform it effectively. This question refers to the criticality that an instructor be present to ensure

Factor	Short Question	Long Question	Response Options	Definition
				each and every NCO is trained to standard.
Peer Learning Benefit	Peer-to-peer learning critical and required?	Is sharing experiences with peers from other units critical and required to maximize learning?	Yes, No	The degree to which there is a learning advantage associated with exposure to the experiences of Soldiers from other units or backgrounds. When a task, such as a combat tactic, must be adjusted for execution in different mission types or operational environments, there is great learning value in hearing examples of the many ways to conduct a task. This question refers to whether there is a particular benefit from exposure to peers from different units who can speak to how mission or environmental factors impact task execution.
Leadership	Criticality to leadership?	How critical is the task to the leadership role?	High, Medium, Low	The importance or centrality of the task for being an effective leader. This question is about whether or not the task is one of the core functions of a leader.
Access to Equipment	Safety/equipment available at unit?	Do most units have the safety measures and equipment readily available to perform training?	Yes, No	Whether the necessary equipment or safety measures for training the task are present and available at most units. This question provides a check to ensure that if a task is recommended for training exclusively at the unit, most units across the Army will have the means to conduct that training.

The flow chart diagram depicting the final FEA methodology, using the questions in Table 4 above, is shown in Figure 3. The methodology is intended to be applied to each task individually. Users begin with Question 1, regarding the *Safety* discriminating factor, and progress through the flow chart based on their responses to each question as defined by the arrows.

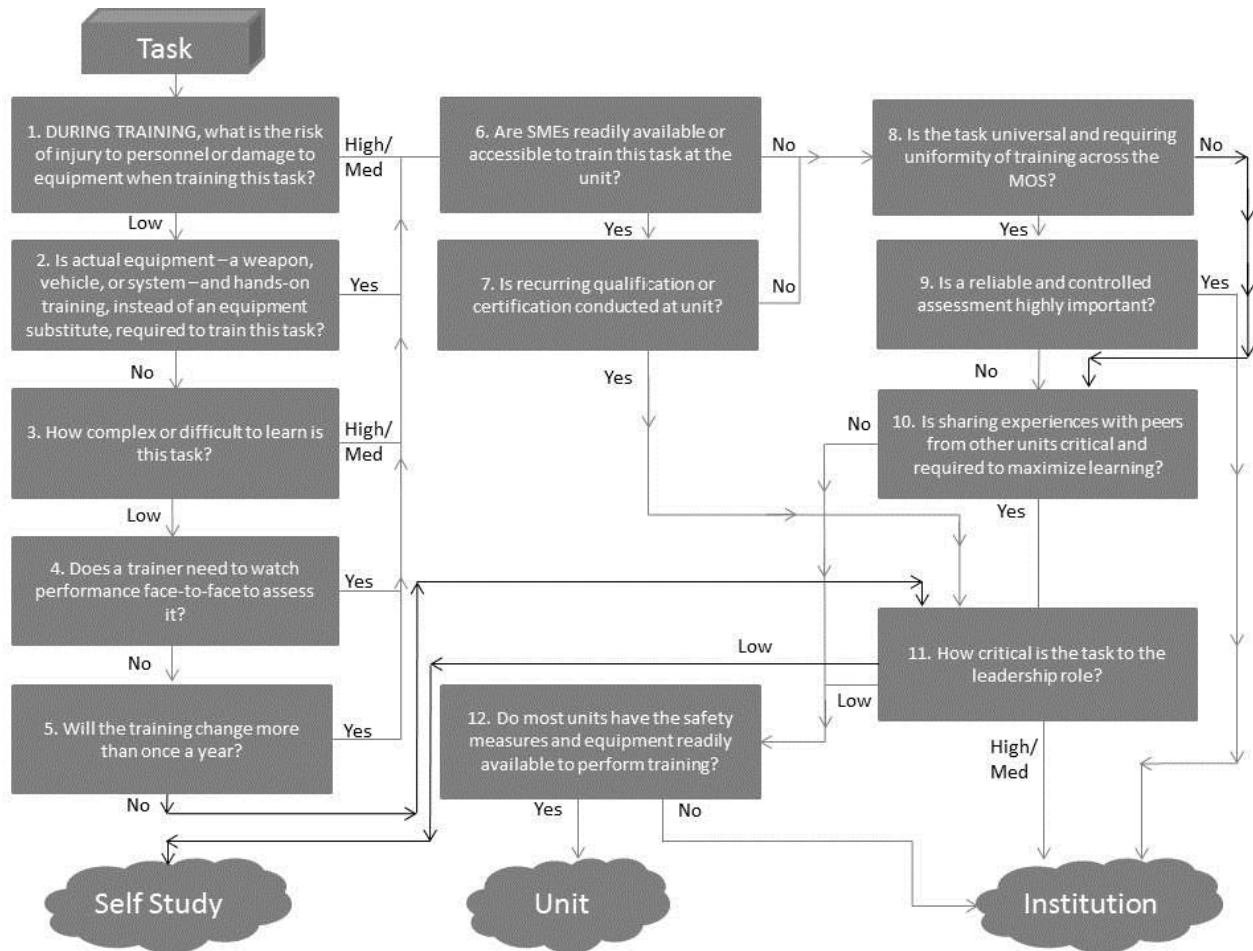


Figure 3. Front-end analysis methodology

Once satisfied that the FEA methodology illustrated in the flow chart diagram represented a sound process that could be demonstrated to SMEs for their feedback, the team initiated development of the SST.

Site Selection Tool

Development of the Site Selection Tool. The primary objective of the SST was to support CTSSB members, who are novice site selectors, in making better use of their operational experience to make robust site selection recommendations. Therefore, the FEA methodology was instantiated into the SST with the goal of seamless integration of the tool into the CTSSB context and process. The SST was not envisioned as a replacement for the judgment of the board members. Instead, the goal was to improve the quality of human recommendations by ensuring

all the important factors are considered.

The current site selection process, as observed by the research team, entails a group discussion of site placement for those tasks identified by the board's vote as critical. However, the discussion is typically driven by a combination of gut instinct and current practice (i.e., "where are we currently training this task?") to reach a site recommendation. Furthermore, the group dynamic may be such that one or two individuals monopolize the discussion by virtue of their assertiveness. Since each individual represents one unit, the result may be limited contribution or no input at all from key operational elements whose agents are present at the board meeting, but who are overridden by more assertive personalities of representatives from other units. Therefore, a secondary objective of the site selection methodology and tool was to enable equal voting on site selection from all board members, just as is the case with the task criticality ratings. The SST was not envisioned as a means of bypassing the group discussion of task placement. In contrast, we aimed to improve the efficiency of the group discussion by clearly differentiating the tasks on which board members agree and thus require no discussion, from those tasks for which there is variability across board member opinions and thus do require discussion.

The SST development phase was initiated by identifying a medium that would best support both CTSSB members and the administrators of CTSSBs. Web-based tools and survey platforms were considered for their potential to be accessible from any Army computer via Army Knowledge Online (AKO). However, we ultimately selected Microsoft Excel as the platform in which to build the tool. Excel is currently used by most CTSSBs to manage the criticality ratings. Therefore, CTSSB administrators are familiar with the software's functionality, task list inputs would only require a simple copy and paste, and an Excel tool is conceptually consistent with the manner by which CTSSBs are conducted. Furthermore, a product built in Excel would not be subject to restrictions on software that can be installed on Army computers, and would thereby be immediately accessible to the target audience.⁷ The SST was programmed using Microsoft's programming tool, Visual Basic 2010. The resulting user experience was one in which the SST automatically and differentially produced outputs in response to user inputs in a manner similar to, but more advanced than, Excel's formula capability.

Two versions of the SST were created. A User version of the SST, in the form of a macro-enabled spreadsheet, was created to lead board members through the series of questions comprising the FEA methodology, and resulted in an SST recommendation based on the flow chart branching logic. Users were also queried for their agreement with the SST recommendation and their personal site selection recommendation, if it differed from the system's recommendation.

An Administrator version of the SST was also created. This version enabled the CTSSB administrator first to input the finalized critical task list into the SST and disseminate it across CTSSB members (i.e., the computers they would use in an Army computer lab). Then,

⁷ Newly developed software is subject to a review process to obtain a Certificate of Networthiness (CON). Obtaining a CON is a prolonged process of a year or more, and updated CONs must be periodically obtained upon expiration of the original. By building the SST in a recognized Army software platform (i.e., Excel), the SST falls under the existing CON.

subsequent to user completion, the administrator would merge the data of the board members and create a compiled set of recommendations. As part of the compilation function, the SST would also highlight those tasks for which board member consensus did not achieve a desired threshold (i.e., 50%, 60%, 70%, or 80%, as selected by the Administrator). Once user data are compiled and tasks highlighted for discussion, the Administrator version can be viewed by either the board as a group, or by the board chair alone, to facilitate discussion on low-consensus tasks. Both User and Administrator versions of the SST functionality and interface were modified as a result of four rounds of feedback (described in *Site Selection Tool Assessment*).

Site Selection Tool Outcome. The User version of the SST is depicted in Figure 4. Critical tasks and their numeric designators are inserted by the administrator in the first two columns of the spreadsheet. The third column (Column C) is vacant for the criticality rating to likewise be entered by the administrator, if so desired; however, this column is optional. By default, this column is hidden and is not visible in Figure 4. The next 12 columns comprise the questions to be answered by the user about the task in question. They reflect the 12 principal discriminator questions from the FEA methodology. As illustrated, the short version of the question is viewable at all times. Users can hover the mouse over the red caret (triangle in upper corner of the cell) to view the long version of the question. The detailed definitions of each question are available to users as a separate tab in the Excel workbook, and included in Appendix D.

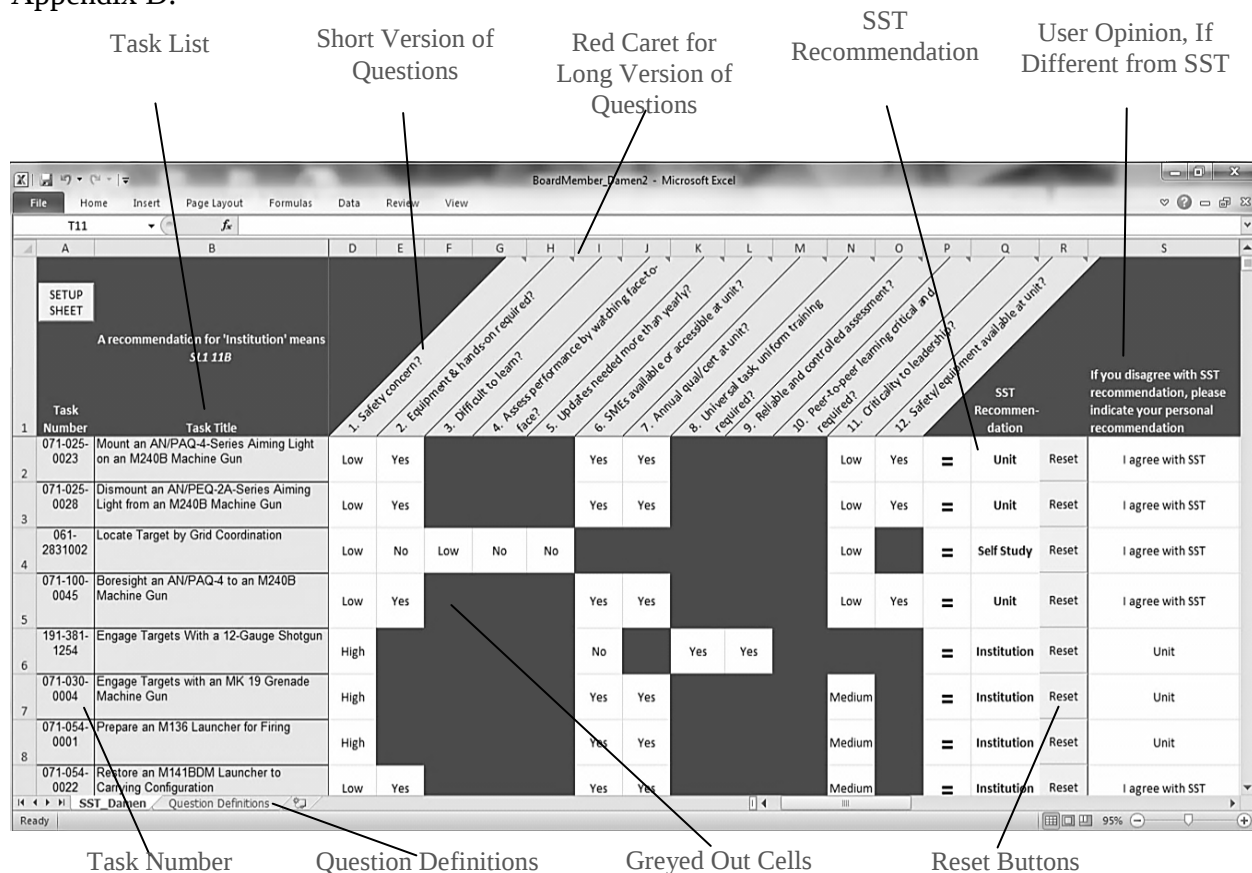


Figure 4. Interface of the board member SST

The branching algorithm depicted above in Figure 4 is replicated in the SST by graying out the cells for which an answer is not required. For example, if a user selects “high” or “medium” on Question 1, then Questions 2-5 will be grayed out and the cursor will appear in the box for Question 6. Once the user has input an answer to each question required for a given task according to the branching algorithm, the SST will automatically populate the “SST Recommendation” cell with one of three possible outcomes: Institution, Unit, or Self-development. If the user disagrees with the SST recommendation, he or she may identify a different site recommendation in column S (Board Member Opinion), including a selection of “Institutional-Functional” to reflect the desire for the task to be trained in an institutional setting, but in a functional course vice the course being reviewed.⁸ A Reset button is provided in Column R to enable the user to clear the row of answers if he or she wishes to make adjustments to a response other than the last question answered. Finally, users may choose to insert comments about the task in the final column, if desired (see Figure 5).

Task List SST Recommendation User Opinion, If Different from SST User Comments

Task Number	Task Title	1. Face-to-face?	2. More than yearly?	3. Available or accessible at unit?	4. Annual qual cert. at unit?	5. Uniform training required?	6. Peer-to-peer assessment?	7. Criticality to leadership?	8. Safety equipment available at unit?	SST Recommendation	Reset	User Opinion, If Different from SST	User Comments
071-025-0023	Mount an AN/PAQ-4-Series Aiming Light on an M240B Machine Gun	Yes								Unit	Reset	I agree with SST	
071-025-0028	Dismount an AN/PAQ-4-Series Aiming Light from an M240B Machine Gun	Yes								Unit	Reset	I agree with SST	
061-2831002	Locate Target by Grid Coordination									Self Study	Reset	I agree with SST	
071-100-0045	Boresight an AN/PAQ-4 to an M240B Machine Gun	Yes								Unit	Reset	I agree with SST	
191-381-1254	Engage Targets With a 12-Gauge Shotgun		Yes	Yes						Institution	Reset	Unit	This task can be trained at the installation MPs can assist with this task
071-030-0004	Engage Targets with an MK 19 Grenade Machine Gun	Yes								Institution	Reset	Unit	I believe this task should be trained at the unit SMEs at the unit
071-054-0001	Prepare an M136 Launcher for Firing	Yes								Institution	Reset	Unit	I believe this task should be trained at the unit SMEs at the unit
071-054-0022	Restore an M141BDM Launcher to Carrying Configuration	Yes								Institution	Reset	I agree with SST	

Figure 5. User task comments in SST

The Administrator version of the SST (see Figure 6) compiles the data from the completed User forms using macros created in Visual Basic and provides two frequency counts for site placement votes: one for the SST Recommendations and one for the Board Member Opinions (Column S from the Board Member SST version). Prior to compilation, the

⁸ The “Institutional-Functional” site recommendation was added to account for tasks that may not be best suited for a formal NCOES course (i.e., WLC, ALC, SLC), but which board members still believed should be taught by the institution/schoolhouse. “Institutional-Functional” is not an option that the SST will recommend, but can be selected by the board member in the personal opinion column.

administrator may designate a threshold for consensus to be applied by the SST – 50%, 60%, 70%, or 80%. These choices are provided to ensure the SST is of value to CTSSBs regardless of the number of voting members or other group differences that may call for higher or lower agreement thresholds. When consensus across the board members does not reach the threshold in either of the consensus columns (i.e., SST Recommendation or Board Member Opinion), the row is highlighted amber. The highlighting designates the task to the Board Administrator as requiring group discussion, either on the basis of low consensus with the SST’s recommendation, or on the basis of low consensus across the board members’ personal opinions. In the former case, the Board Member Opinion column may assist in resolving the site selection recommendation. In the latter case, the SST potentially has revealed a difference in training needs across units as represented by the board members, which is deserving of group dialogue.

Task List

Votes and Consensus on SST Recommendation

Set % Consensus Button

Votes and Self Consensus on User Opinion

All User Comments

Task Number

Individual User Responses

Tasks for Group Discussion Highlighted Amber

Task Number	Task Title	Task Criticality	SST Recommendation				Board Member Opinion				Comments	
			Institution	Unit	Self Study	% Consensus	Institution/Functional	Unit	Self Study	% Consensus		
071-025-0023	Mount an AN/PAQ-4-Series Aiming Light on an M240B Machine Gun		2	2	0	50%	2	0	2	0	50%	
071-025-0028	Dismount an AN/PEQ-2A-Series Aiming Light from an M240B Machine Gun		2	2	0	50%	2	0	2	0	50%	
061-283-1002	Locate Target by Grid Coordination		0	0	4	100%	0	0	0	4	100%	
071-100-0045	Boresight an AN/PAQ-4 to an M240B Machine Gun		3	1	0	75%	2	0	2	0	50%	SMEs at the unit
191-381-1254	Engage Targets With a 12-Gauge Shotgun		4	0	0	100%	2	0	2	0	50%	This task can be trained at the Installation MPs can assist with this task I checked the block SMEs at the Unit and still recommended institution
071-030-0004	Engage Targets with an MK 19 Grenade Machine Gun		4	0	0	100%	3	0	1	0	75%	I believe this task should be trained at the unit SMEs at the unit
071-054-0001	Prepare an M136 Launcher for Firing		3	1	0	75%	2	0	2	0	50%	I believe this task should be trained at the unit SMEs at the unit
071-054-0022	Restore an M141BDM Launcher to Carrying Configuration		3	1	0	75%	3	0	1	0	75%	
071-025-0015	Mount an M240B Machine Gun on an M122A1 Tripod		3	1	0	75%	3	0	1	0	75%	

Figure 6. Interface of the administrator SST

SST Implementation Guidance. To support implementation of the SST during CTSSBs, additional materials were produced. Step-by-step instructions for the administrator set up, board member execution, and administrator data compilation are available (see Appendix E). To ensure the intended interpretation of each principal discriminator in the series of questions, a reference sheet was prepared to include detailed definitions and rationale behind each question in the SST (see Appendix D). A short set of recommendations for the CTSSB administrator was also created to aid in the implementation of the SST within the CTSSB process. In some

circumstances, a CTSSB must be conducted in a secure facility where the critical task list may not be input into a non-secure computer terminal. Under these circumstances, the paper-based flow chart may be used as a substitute to the SST. Thus, instructions have also been prepared with recommendations for employing the FEA methodology absent the SST.

Site Selection Tool Assessment

The final version of the SST, as described in the previous section, underwent a series of assessment studies to establish its usability and validity, by collecting user feedback and refining the tool accordingly. In this section, we describe in detail the assessment studies conducted concurrently with the SST development iteration efforts.

The assessment of the SST examined both the usability of the system and the face validity of its site selection recommendations, by piloting the tool in the context of actual CTSSBs. Observations and feedback were collected from the target user groups – CTSSB board members and administrators. By evaluating the SST in its intended use setting, we were also able to examine its ability to integrate with the broader CTSSB process, and modify implementation recommendations to users accordingly. All assessment activities were conducted iteratively with the SST development, such that user inputs in each round of assessment informed revisions made to the subsequent version of the tool. The formal assessment sessions totaled three.

Pre-Assessment

Prior to the formal evaluation sessions, pre-assessment activities were conducted. The primary purpose of these activities was to obtain SME feedback regarding the logic chain and branching mechanisms in the FEA methodology and User SST, to ensure the face validity of the tool's site recommendations. Four telephonic feedback sessions were conducted with SMEs previously interviewed during the development phase. The SMEs received a briefing on the discriminators and the flow chart diagram, then viewed a demonstration of the SST. Partial task lists representing the SME's MOS were input into the SST, and the SMEs responded to the questions to produce an SST recommendation for each task. The participants were thus able to judge the SST recommendation in comparison to their own judgment of site placement for a given task, as a means of assessing the quality of the branching logic. As a result of these sessions, the following modifications were made:

- The terminology of some questions was altered to ensure its intended meaning for the military user audience.
- Since SMEs judged it too difficult to answer Questions 1 (Safety concern?), 3 (Difficult to learn?), and 11 (Critical to leadership?) in the affirmative or negative, the response choices for these queries were changed from “yes” or “no” to “high,” “medium,” or “low.” A response of “high” or “medium” was then equated to a “yes” response in the branching logic, and a response of “low” was equated to a “no” response.
- The consensus threshold was set to highlight red those tasks with 0-69% agreement, and to highlight amber those tasks with 70-79% agreement. Tasks with 80% or

- higher agreement would not be highlighted, indicating no need to discuss the site recommendation.
- At this stage of development, tasks would be highlighted when certain response combinations were met that suggested a questionable site recommendation. For instance, if users indicated that a task was universal and required uniformity of training, and that it benefitted from peer learning, but other responses slotted the task for unit training, that task row would be highlighted to prompt a discussion about whether it might be better suited for the institution. As a result of the pre-assessment feedback sessions, two sets of response combinations were dubbed as producing recommendations deserving of group discussion. Upon further evaluation in Round One, however, this functionality was abandoned altogether in favor of soliciting board member opinions in addition to the SST recommendation.

Assessment Study One

The first round of assessment was conducted in conjunction with the 19A (i.e., Armor Officer) CTSSB at Fort Benning, GA, reviewing both LT and CPT tasks for the Armored Officer Basic Leader Course (ABOLC) and the Maneuver Captains' Career Course, respectively. Although the SST was developed based upon NCOES requirements, scheduling constraints precluded waiting for an NCO board. The research team and sponsor judged the CTSSB process to be sufficiently similar between NCO and Officer boards to allow for evaluation of the SST integration with the CTSSB procedure. Moreover, at Fort Benning, both the Armor Officer and NCO boards are conducted by the same organization utilizing the same procedures, regardless of whether the tasks are intended for Officers or NCOs. This practice is common across the Army. In light of the differences between entry level officer tasks and mid-level NCO tasks, we were prepared to see the preponderance of the tasks skewed toward institutional training, reflecting a need for the Army educational system to formally train basic skills before sending Officers to their first unit.

The assessment study design included three components: (1) comparison of pre-SST task placement to SST and post-SST placement; (2) comparison of SST location recommendations to human location recommendations; and (3) user feedback. User reaction surveys were collected from CTSSB board members and the chairman, and feedback was collected from board members, the board chair, and administrators in the context of a post-test focus group.

Participants. Eight members comprised the 19A board. They were a mix of CPTs and Majors (MAJs) representing cavalry, armor, and infantry units, the National Guard, and two non-units. The SST was tested by all eight board members and the Lieutenant Colonel (LTC) who chaired the board.

Materials. The assessment was conducted using an Informed Consent Form, Privacy Act Statement, User Reaction Survey, Focus Group Protocol, and both User and Administrator versions of the SST.

Informed Consent Form. The Informed Consent Form (see Appendix A) introduced the purpose of the study, described the assessment objectives, clearly indicated that participation was

voluntary and could be terminated at any time, and assured participants that their responses would not be attributable to them personally. In addition, points of contact were provided for questions concerning the study and questions about individuals' rights as interviewees. The participant signed the consent form to acknowledge that the individual was volunteering to participate, was at least 18 years of age, and was willing to have his or her feedback digitally recorded, if necessary. Participants retained the Consent Form for their records, while the researchers retained the signature pages.

Privacy Act Statement. Similar to the Informed Consent Form, the Privacy Act Statement (see Appendix B) summarized the purpose of the assessment and reminded participants of their rights to confidentiality and voluntary participation. Individuals retained a copy of the Privacy Act Statement for their records.

User Reaction Survey. The User Reaction Survey (see Appendix F) consisted of two pages. In Part One, participants answered 13 questions using a five-point Likert scale where 1 = strongly disagree and 5 = strongly agree. Queries addressed the SST's overall value, clarity, ease of use, and impact on the site selection process. In Part Two, four open-ended questions elicited user opinions regarding the SST's valuable features, distracting or irrelevant features, change requirements, and integration with the CTSSB process.

Focus Group Protocol. The Focus Group Protocol (see Appendix G), initially prepared as a protocol for individual post-SST interviews, was created to elicit more detailed feedback and rationale for suggested SST modifications via discussion of the users' experience with the tool. Lines of questioning focused on the usability of the tool and its functionality, the clarity and interpretation of the questions, and suggestions for including it as part of the CTSSB process.

Site Selection Tool. The User and Administrator SSTs were loaded onto computers in a computer lab in close proximity to the CTSSB meeting room. A subset of the 19A LT critical tasks was input into the tool prior to testing.

Procedure. Prior to the board, an Armor SME from the research team generated two lists of 80 19A tasks that were roughly matched in terms of topics and content. The intention was to create two task lists containing representation of each of the 13 subject areas recognized by the Armor branch.⁹ These matched lists were to be used during the CTSSB as the basis from which to extract two sets of 40 critical tasks that would be compared for site selection with the SST's embedded logic, and without the SST using human judgment alone. The task lists were created in advance to save time during the actual board meeting, recognizing that some of the tasks on the two sample lists could potentially be voted non-critical during the criticality voting phase. This did indeed happen, necessitated the addition of alternate tasks to the two sample lists, as described more fully below.

⁹ The 13 subject areas include (1) Communications, (2) CBRN (Chemical Biological Radiological, and Nuclear), (3) Mines, Minefields, Demolitions, (4) Weapons, Grenade launcher, Anti-tank weapon, (5) Long Range Advanced Scout Surveillance System (LRAS3), (6) Night Vision Devices, (7) BFV-CFV, Gunnery, (8) Stryker, HMMWV, (9) M1A1 Tank, M1A2 SEP, Gunnery, (10) Individual Skills, (11) Urban Operations, (12) Tactics, Platoon Operations/Reports, and (13) Range Operations, Logistics.

The board convened and began their process, independent of the SST, by validating the LT and CPT task lists (indicating tasks that require modification or are no longer valid) and rating the criticality of each task on a scale from 1 to 5. These activities consumed the first three days of the CTSSB. The CTSSB determined that all tasks with mean ratings of 3.0 or above would be considered critical tasks.

The research team then used the task spreadsheet produced by the CTSSB, with final task criticality ratings, to identify the criticality rating assigned to each of the tasks on the two 80-task lists generated prior to the board. Tasks from the two matched lists rated as 3.5 or above were highlighted for potential inclusion in the final lists of tasks to be included in the assessment study. One of the task lists contained 38 tasks rated 3.5 or above. The other list contained 33 tasks rated 3.5 or above. These two pared down lists were used as the basis for building Task Set A (no-SST) and Task Set B (SST) to be included in the assessment. The lists were placed in a spreadsheet side by side. Criticality ratings were input into the spreadsheet. Average criticality ratings were calculated for each subject area, with care taken to roughly match the average criticality rating of tasks within each subject area. The researchers and Armor SME reviewed these tasks and generated finalized matched Task Sets comprised of 40 tasks each, by adding tasks from the master critical task list as needed. Tasks were thus ultimately matched for both average criticality ratings across the subject areas, and for task content. For example, the task to “mount a M240B machine gun on a vehicle” was considered to match the task to “mount a Caliber .50 M2 machine gun on a vehicle.” As a result of attrition due to low criticality ratings, one of the 13 subject areas was not represented in the final Task Sets. Once the finalized matched task lists of 40 tasks were compiled, they were highlighted in the master 19A critical task list.

Task Set A (no-SST) consisted of 40 critical tasks and was provided to the CTSSB for human judgment via group discussion prior to introduction of the SST. Task Set B (SST) consisted of an additional 40 critical tasks. Task Set B was incorporated as the first 40 rows of the SST, and Task Set A was incorporated as the second 40 rows of the SST. With this design, we were poised to compare site recommendations emerging from a board discussion with those produced by the SST’s logic, as well as the tally of individual board member inputs.

SST Administration Outcomes. The structure of the first assessment was as follows. To begin the period of testing on Day 4 of the CTSSB, the research team’s Armor SME briefed the board as to the procedure that would be implemented regarding site selection. Four phases comprised the process. Phase I was the conventional review of the Set A tasks, where the board convened to apply the group’s unaided judgment to place the 40 tasks in training sites. In Phase II, each board member and the board chair used the SST individually to identify sites for Set B followed by Set A tasks. In Phase III, the group reconvened to discuss the outcomes of the SST for the Set B tasks, and to settle on a final site recommendation for the record. Finally, Phase IV involved administration of the User Reaction Survey to the eight board members and the board chair. A focus group was then conducted with the full board and administrators who coordinate and organize all the CTSSBs for the Fort Benning site. Focus group topics included (1) usability of the tool and interface; (2) relevance and clarity of the questions within the SST; and (3) usage of the SST in the context of CTSSBs.

In Phase I of the testing, the board conducted its normal group site selection process on Task Set A. This involved identifying a location for each task in sequence, with group discussion of the task as needed. In most cases of the 40, the board chair identified the location. In fewer than 10 instances, the group discussed placement. In each of these cases, discussion lasted between 30 seconds and two minutes. The factors considered in the discussion were recorded by one researcher. In all, the process of identifying training location for the 40 tasks in Set A lasted approximately fifteen minutes.

The group then broke and relocated to the computer lab. They were briefed on the SST, including purpose of the tool and instructions for its use. They proceeded to independently review the 80 tasks and identify a site for each, requiring between 35 and 60 minutes to complete the SST process for all 80 tasks.

Researchers used the administrator compilation function to merge the results of the eight board members. As a non-voting member, the board chair was purposely excluded from the merged results. At this stage of development, the SST prompted users to simply agree or disagree with the SST Recommendation, in lieu of identifying their Board Member Opinion for site selection, as is the case in the final version of the tool. Therefore, in the first assessment study, the prototype compilation function automatically highlighted individuals' concurrence with the SST site recommendations when the concurrence was 70-79% (amber) or less than 69% (red). In addition, researchers manually calculated the consensus across board members. A total of four calculations were generated by applying two separate sets of consensus thresholds: a high (75% and 62.5%) and low (62.5% and 50%) threshold calculation for *concurrence* (agreement with the SST's recommendation), and a high (75% and 62.5%) and low (62.5% and 50%) threshold calculation for *consensus* (agreement across board members' SST recommendations).

Under the first, higher, concurrence threshold, agreement was calculated across board members on SST recommendations. Tasks were highlighted amber when agreement was six out of eight (75%) and highlighted red when agreement was five or fewer out of eight (62.5% or less). When agreement was seven or eight out of eight (87.5% or better), no highlights were applied. As a result, eight tasks were highlighted amber and 16 tasks, red. Consensus, adjusted for individual concurrence with the SST, was also calculated. When an individual did not concur with the SST, researchers assumed the individual's site vote was for institution or unit, but not self-development, given the nature of the tasks under review.¹⁰ The same highlighting scheme was applied. Under this highlighting scheme, 13 tasks were amber and 10 were red.

Under the second, lower, concurrence threshold, agreement was again calculated across board members on SST recommendations. This time, tasks were highlighted amber when agreement was five out of eight (62.5%) and highlighted red when agreement was four or fewer out of eight (50% or less). When agreement was six or greater out of eight (75% or better), no highlights were applied. Twelve tasks were thereby highlighted amber, and four tasks, red. In

¹⁰ While this assumption proved accurate for the CTSSB in question, the need to make such an assumption produced a design modification, namely, for the SST to prompt users for their personal site recommendation (i.e., Board Member Opinion) vice the simple agreement or disagreement with the SST's recommendation, to ensure clarity as to the preferred training site.

addition, consensus across board members, adjusted for individual concurrence, was likewise calculated for this second threshold, producing four amber and five red highlighted tasks.

The compiled recommendations for Task Set B were provided to the board, with the final task highlighting scheme applied (i.e., adjusted for individual concurrence, with agreement <62.5% highlighted amber and <50% highlighted red). A total of nine of the 40 tasks were highlighted amber or red. The board then discussed the placement of those nine tasks, since they represented tasks where substantial disagreement existed across the board. One researcher captured the rationale behind the placement of each of those nine tasks.

Assessment Study Two

The second round of assessment was conducted in conjunction with the 35G (i.e., Geospatial Imagery Analyst) CTSSB held at Fort Belvoir, VA. Due to the classification of 35G tasks and the subsequent restrictions on computer use during the board, the research team examined the utility of administering a paper-based SST during this CTSSB.

Participants. A total of 22 individuals utilized the paper-based SST during the 35G CTSSB. These individuals included 35G Staff Sergeants (SSGs), Sergeant First Class (SFC), Master Sergeants (MSGs), Warrant Officers, and civilian training personnel (including the board chair, training developer SMEs, and others). A total of five voting board members and 10 non-voting board members completed the user reaction survey and participated in the focus group.

Materials. In Study Two, paper copies of the flow chart diagram, shown in Figure 1, above, replaced the computer-based SST used in Study One. In addition, the User Reaction Survey applied in Study One was modified to consist of 12 Likert-scale queries rather than 13. All other materials were identical to those used in Study One.

Procedure. The 35G CTSSB is conducted in a secure setting and computer-based administration was not deemed permissible as a result. Therefore, a paper-based SST was developed. The 35G CTSSB board is run concurrently with the Warrant Officer 350G CTSSB, and some of these personnel were present during portions of the 35G CTSSB to serve in an advisory capacity. The 35G CTSSB convened and began its process, independent of the SST, by validating, modifying when needed, and rating the criticality of all 35G tasks at all skill levels. For the criticality vote, the board's process included a discussion of the task, its title and description, and a yes/no vote indicating whether a task should be considered critical. Consensus threshold was 50% or more (i.e., the majority rules). The board began with lower level skills (Skill Level 1/Skill Level 10: those considered for Advanced Individual Training/AIT) and moved up through Skill Level 4/Skill Level 40. After each criticality vote, the board members conducted a training site vote, sometimes but not always after a brief discussion.

After completing the Skill Level 2 (Skill Level 20) tasks, participants were briefed on the SST, including purpose of the tool and instructions for its use. Participants were then administered the Informed Consent and the Privacy Act Statement. Beginning with Skill Level 3 tasks (also known as Skill Level 30 tasks, and generally taught at ALC/SSG level), the 35G CTSSB analyzed approximately 50 tasks for the ALC and approximately 10 Skill Level 4 (also

known as Skill Level 40, SLC/SFC level) critical tasks for site recommendations using the paper-based SST. Applying an earlier version of the decision tree depicted in Figure 1, participants continued voting on the criticality of each remaining task and modifying the task as needed. After finalizing the task title and description and conducting the criticality vote, board members silently and individually worked through the paper-based SST. Beginning with Question 1 in the flow chart in Figure 3, participants answered each question with the same response options as the computer-based SST. Each task's site determination took approximately 1 minute.

After each round of site determination (for each task), the board chair asked each board member to report aloud the training site that the paper-based SST recommended. Then, the chair solicited the board member's personal training site recommendation. When agreement was not reached, the board discussed the task and reached a group consensus (although not always by conducting an additional vote), and the board administrator recorded the final training site decision. Due to the sensitive nature of the tasks and restrictions on note-taking in this environment, the research team did not record the specific training sites recommended by the paper-based SST, by the board members, or the final training site recorded. Rather, Assessment Study Two observations were focused on the process and feasibility of utilizing a paper-based SST, and the board members' feedback regarding the logic guiding the decision tree.

At the conclusion of the criticality and site determination votes for Skill Level 4 tasks, the research team administered the User Reaction Survey to the voting board members, non-voting board members, and other training personnel present. Voting board member surveys were held separate from the non-voting board member and advisory personnel surveys. After completion of the survey, one research psychologist conducted an abbreviated focus group using portions of the focus group protocol. Lines of questioning focused on understanding how accurate the tool's recommendations were and where editing, removing, or adding questions could improve the decision tree guiding the tool.

Two notable departures from the computer-based SST existed. The first was the lack of an administrator version to notate separately the SST concurrence and the board member opinion consensus. However, this process was somewhat paralleled by the chair, who elicited personal opinion recommendations in addition to the SST recommendation, and capitalized on discrepancies between the two opinions as a catalyst for discussion. In keeping with the general SST process, items of high disagreement were discussed, and the final CTSSB recorded recommendation resulted from this discussion.

The second notable departure from the computer-based SST was the voting process. Although board members generally worked independently while completing the paper-based SST, reporting their votes aloud in sequence may have caused board members to reconsider their responses while listening to others, perhaps changing their responses as a result of listening to the rationale of other board members. Likewise, the board members' personal opinions may have also been informed by listening to other board members' rationale during the personal opinion reporting process. This potential to preemptively influence votes before a discussion dilutes the effect of the SST's ability to tap into the varied opinions of board members. The process issues identified via this CTSSB experience were addressed in the final paper-based SST

instructions, by suggesting adaptations to reduce the potential influence on personal votes, and delaying the influence of others' until the group discussion.

Assessment Study Three

The final round of assessment was conducted during an NCO CTSSB at Fort Huachuca, AZ, covering the 35T MOS (Military Intelligence Systems Maintainer/Integrator). In this study, the entire critical task list was subjected to site recommendations via the SST.

This assessment study was designed to compare SST location recommendations to human location recommendations, and elicit user feedback. User reaction surveys were collected from CTSSB board members and chairs, and feedback was collected from board members, board chairs, and administrators in the context of a post-test focus group.

Participants. A total of 17 participants completed the computer-based SST and the User Reaction Survey, and participated in the focus group. All participants were voting CTSSB members with ranks of SSG, SFC, or MSG.

Materials. In Study Three, the computer-based SST was applied just as in Study One. All other materials were identical to those employed in Study Two.

Procedure. The 35T CTSSB board is run concurrently with the Warrant Officer 350T CTSSB, and some of these personnel were present during portions of the 35T CTSSB to serve in an advisory capacity. The 35T CTSSB convened and began its process, independent of the SST, by validating, modifying when needed, and rating the criticality of all 35T tasks at all skill levels. For the criticality vote, the board's process included a discussion of the task, its title and description, and a yes/no vote indicating whether a task should be considered critical. Consensus threshold was 50% or more (i.e., majority rules). The board began with lower level skills (Skill Level 1/Skill Level 10: those considered for AIT) and progressed through Skill Level 4/Skill Level 40. Like the 19A CTSSB but unlike the 35G CTSSB, the training site determination process was conducted as a separate phase following finalization of the critical task list.

This board was unique in that it represented a particularly heterogeneous group of three recently merged MOSs. As such, board members possessed considerably distinct military experiences, and were not familiar with every task in the total task inventory. Therefore, the board chair subdivided the group into separate working groups reflecting the unique areas of expertise. These working groups assessed the criticality of the tasks within their area of expertise and through discussion, decided upon the criticality of the tasks. These criticality recommendations were then passed to the larger CTSSB, which generally adopted them without modification.

After completing the criticality vote of all skill level tasks, the finalized critical task list was input into the computer-based SST, and the file was distributed to computers in an Army computer lab. Participants were briefed on the SST, including purpose of the tool and instructions for its use. Participants were then administered the Informed Consent and the Privacy Act Statement. They proceeded to independently review the 67 critical tasks and

identify a site for each, requiring approximately 60 minutes to complete the SST process for all tasks.

Researchers applied the administrator compilation function to merge the results of the 17 board members. The prototype compilation function automatically highlighted tasks red when consensus was not achieved for one of two measures: (1) SST recommendations did not attain a 65% consensus and board members opinion did not attain 65% consensus.

The compiled recommendations with the highlighted tasks were provided to the board. A total of 54 of the 67 tasks were highlighted as a function of one of the two flagging measures: 47 tasks were flagged as a result of low SST consensus and 42 tasks were flagged as a result of low board member opinion consensus. The board then re-voted or discussed the placement of those flagged tasks, since they represented tasks where substantial disagreement existed across the board.

Due to time constraints, before the CTSSB completed its discussion of the flagged tasks, the research team asked the voting board members to complete the User Reaction Survey. After completion of the survey, one research psychologist conducted an abbreviated focus group using portions of the focus group protocol. Participants received a copy of the decision tree from Figure 1 to illustrate the logic guiding the SST. Lines of questioning focused on understanding how accurate the tool's recommendations were and where the decision tree guiding the tool could be improved by editing, removing, or adding questions.

Results

Site selection data and user reactions were examined for the three studies. Each assessment site posed a unique challenge. The 19A board reviewed LT vice NCO tasks, and thus the majority of tasks required introductory training in the ABOLC (i.e., institutional) setting. The 35G board conducted a paper-based site selection methodology using only a small number of tasks. Finally, the 35T board reviewed tasks for a single MOS recently merged from three separate MOSs, and board members were only able to apply personal experience to one of those three MOSs. With these challenges in mind, the research team relied heavily on user comments and suggestions, as well as feedback from experienced CTSSB administrators, to modify the tool's functionality following each round of assessment.

Comparison of SST Recommendations to Board Member Opinions and Final Board Recommendations

Fort Benning 19A CTSSB. Task Set A – the list of 40 tasks assessed for site placement prior to application of the SST, and then again with the SST – was subjected to a comparison of SST recommendations with board member opinions. The board decided to change the final site recommendation as a result of the application of the SST in three out of the 11 instances from Task Set A when the SST recommendation differed from the initial, pre-SST board vote. This finding suggests that following use of the SST, board members adjusted their site selection considerations. In seven of these 11 cases, the final board decision did not match the tally of individual board member opinions as recorded within the SST. This finding suggests that the

SST may be more successful than the current processes at revealing differences of opinion between individual board members.

Within Task Set A alone, when the SST recommended the institution as the training site, individual board members agreed with the placement 83% of the time. However, when the SST recommended the unit as the training site, agreement decreased to only 34%. Within Task Set B alone, individuals agreed with the SST recommendation of institution 95% of the time and with the SST recommendation of unit training 40% of the time. Table 5 presents these results. The relatively high agreement with a vote for the institution and relatively low agreement with a vote for the unit is likely related to the perception that these LT tasks must be at least introduced in an institutional setting prior to the young officer reporting to duty at a unit. The tool did not recommend self-development for any of the tasks in Set A or Set B.

Agreement with the SST recommendations was also calculated by summing the board member results as a group. These results are also presented in Table 5. Within Task Set A, when comparing group consensus on the SST recommendations to group consensus on board members' personal site placement opinions at the 75% level (or six out of eight respondents), board members agreed with the SST recommendation 50% of the time. When the same agreement was measured at the 62.5% level (or five out of eight respondents), participants agreed with the SST 80% of the time.

Table 5

19A CTSSB Individual and Group Agreement with SST Recommendations

	19A CTSSB Task Set A	19A CTSSB Task Set B
Individual Agreement with SST Recommendation of Institution	83%	95%
Individual Agreement with SST Recommendation of Unit	34%	40%
Collective SST Recommendation and Collective Board Member Opinion (75% threshold)	50% (20/40)	57% (23/40)
Collective SST Recommendation and Collective Board Member Opinion (62.5% threshold)	80% (32/40)	82.5% (33/40)
Collective SST Recommendation and Final Group Decision (75% threshold)	52.5% (21/40)	55% (22/40)
Collective SST Recommendation and Final Group Decision (62.5% threshold)	77.5% (31/40)	75% (30/40)
Individual Board Members' Opinion and Final Group Decision (75% threshold)	75% (30/40)	80% (32/40)
Individual Board Members' Opinion and Final Group Decision (62.5% threshold)	75% (30/40)	90% (36/40)

SST recommendations were likewise compared to the board's final site selection recommendation. When measuring agreement within Task Set A at the 75% level, or six out of eight respondents, the SST recommendation matched the final board recommendation 52.5% of the time. Using a 62.5% threshold for measuring agreement, the SST agreed with the final board recommendation 77.5% of the time. Although there is not perfect agreement between the SST and the final board recommendation, the levels indicate that the SST captures similar factors and reasoning as those occurring within group discussion. Moreover, in Task Set B, when the group discussed and formally voted on tasks after they were subjected to the SST, the SST agreed with the final group decision more often than not. Regardless, utilizing the SST requires that board members consider many aspects of critical tasks that they may not automatically consider. Therefore, the quality of the responses after utilizing the SST, whether or not they agree with the final group decision, should be more reasoned. The value of the SST, even after group discussion, is evident in the 19A board in that after completing the SST on Task Set A, the board recognized additional factors deserving of consideration, and as such, revisited some of these tasks and revised their final group decision.

Finally, individual board member opinions on Task Set A as reported in the SST were compared with the final board recommendations. The individual board member votes were in agreement with the final board decisions 75% of the time under both the 75% and 62.5% levels.

When agreement between the SST and board members as a group was examined for Task Set B, the SST and board member opinion votes were in agreement 57% of the time at the 75% level (six out of eight participants) and 82.5% of the time at the 62.5% level (five out of eight respondents). The SST recommendation matched the final group recommendation 55% of the time at the 75% level (six out of eight) and 75% of the time at the 62.5% level (five out of eight votes). Finally, the individual board member votes were in agreement with the final board decisions 80% of the time under the 75% level, and 90% of the time at the 62.5% level. These results reflect the bias of the 19A CTSSB toward directing entry-level LT tasks to the institutional setting, even if the task characteristics suggest otherwise. This practice ensures that all incoming Armor officers receive introductory training across the preponderance of LT tasks prior to their first unit assignment. Interestingly, the results also reveal a degree of variability in board member opinions that may be unanticipated by CTSSB administrators and course managers.

Fort Belvoir 35G CTSSB. Due to the sensitive nature of the tasks and restrictions on note-taking in this environment, the research team did not record the specific training sites recommended by the paper-based SST, by the board members, or the final training site recorded. Rather, Assessment Study Two observations were focused on the process and feasibility of utilizing a paper-based SST, and the board members' feedback regarding the logic guiding the decision tree.

Fort Huachuca 35T CTSSB. The entire critical task list of 67 tasks was submitted to the SST for site selection. As a result of modifications to the tool's functionality following early rounds of assessment, data regarding individual board member agreement with the SST recommendation was not readily available in the compiled administrator SST. However, we can infer and approximate such agreement by summing the total SST site recommendations for each

task and comparing it to the summed totals of board member site votes for each task. With this calculation, board members agreed with the SST's recommendation of "institution" approximately 88.9% of the time, with "unit" approximately 97.6% of the time, and with "self-study" an estimated 86% of the time. These findings suggest the SST produces reliable site recommendations.

In stark contrast, the board as a group did not exhibit high levels of consensus with each other on either the SST recommendation nor board member opinions. In 47 cases out of 66 (71.2%), board member consensus on the SST recommendation was equal to or less than the 65% threshold. In other words, 12 or more out of the 17 board members concurred with each other's SST recommendation on about 29% of the tasks. Similarly, board member site placement opinions lacked greater than 65% consensus for 42 tasks out of 66 (63.6%), meaning that 12 or more of the 17 board members were in concurrence on personal site placement opinions only about 36% of the time. These findings highlight a lack of consistent judgment among board members with or without implementation of the SST, most likely due to the representation across three disparate MOSs. In fact, many board members reported informally that their insufficient expertise on many of the tasks hindered their ability to make confident site recommendations of their own. As a result, their less-informed responses introduced variation and noise into the participants' responses, weakening the group's ability to reach consensus. However, these findings also demonstrate that SST recommendations were trusted as reasonable when a lack of experience precluded a strong personal opinion.

User Reaction Surveys. Mean ratings were calculated for the survey questions for each of the three rounds of assessment, and appear in Table 6. While the ratings from the 35T CTSSB were generally lower than ratings at the other two sites, this difference can be attributed to the challenge of assessing tasks across three MOSs when each board member was able to represent only one. In fact, eight respondents noted the SST should be changed to allow for board members to opt out of responding if they lack experience in the task. This modification was made to the SST, so that board members could skip a task in the list and the Administrator's compilation would reflect a fewer number of votes.

In general, the respondents found the SST questions easy to understand and the tool simple to use. Moderate agreement was found with statements regarding the SST's value and impact on board members' consideration of a broader range of site selection factors. Of interest is the finding that user ratings were generally higher for use of the paper-based site selection methodology (in the 35G CTSSB) than for the computer-based SST. These differences may be attributable to the fact that apart from the classification issues precluding use of the computer lab, the SST was designed for an NCO board typified by the 35G board. It was not designed for introductory LT tasks, and it was not prepared for a situation where most board members were unfamiliar with the tasks under review. Lower ratings for the 19A board may also reflect use of an earlier, less refined version of the SST. The lower ratings by the 35T board may reflect the fact that these board members lacked a basis of comparison between site determination with and without the SST. For members having no exposure to the obstacles associated with free-form group discussion of optimal training sites, it may be impossible to judge the advantages of the SST for site determination.

Table 6

Mean Ratings on User Reaction Survey where 1 = Strongly Disagree and 5 = Strongly Agree

Assessment Survey Question	19A CTSSB Average (n=9)	35G CTSSB Average (n=15)	35T CTSSB Average (n=17)
1. The SST was valuable to me.	3.13	3.13	2.82
2. The questions in the SST were easy to understand.	4.33	4.33	2.53
3. The questions in the SST were easy to answer.	3.87	3.87	2.77
4. The SST was simple to use. ¹¹	4.00	3.40	2.82
5. I was able to be more objective with my site recommendations using the SST.	3.00		
6. I was able to produce better site recommendations using the SST.	2.78	3.29	2.77
7. The SST helped me to consider factors I would not have otherwise thought about when recommending a training site.	3.11	4.00	3.12
8. The training site recommendation generated by the SST typically met my expectations.	2.44	3.00	2.53
9. The SST is reliable.	2.56	3.29	2.47
10. The SST was accurate in recommending the correct site for each task.	2.67	3.00	2.29
11. Using the SST was NOT time consuming.	3.11	4.40	2.41
12. I would recommend the SST for future CTSSBs.	2.44	3.77	2.94
13. All components of the SST functioned properly.	3.44	3.33	3.88

Discussion of User Feedback

Overall verbal feedback on the SST was favorable. Notably, individuals who administer or are otherwise involved in CTSSBs on a regular basis reported more favorable opinions of the tool than board members, who have never before seen a CTSSB. Since the non-board members have a better basis of comparison with which to judge the value added and gaps filled by the SST, the research team lent more credence to their substantive comments than the board members.

Nonetheless, board member users did note that the SST functions as is intended – it results in them applying more thought and considering a broader range of factors when considering task placement, and it flags for group discussion those tasks that require a more in-depth dialogue about the optimal site placement. They saw value in the tool as a systematic process that enables the human to apply thought, and the system to analyze those judgments to produce a recommendation. They also noted the SST to be a better means of producing group discussion than the current practice, where no precursor exists at all to prompt discussion for a particular task.

¹¹ Questions 4 and 5 were combined into a single question during the 35G and 35T administrations.

Implementation of SST in the CTSSB Context. Although the SST was conceptualized as a tool to augment board member judgment, users often expressed a concern that the Army's intent may be otherwise. With current Army practices to increase the efficiency of various processes through online surveys and other mechanisms by which individual inputs are captured asynchronously, many feared the tool would be eventually posted online, with the requirement for board members to submit their site selections prior to convening of the board. This course of action was strongly discouraged.

Board members stated that the SST provides a "warm up" for contemplating the factors to be considered when recommending site placement. In a few cases, users recommended the SST be applied on Day 1 of the CTSSB with a sampling of the tasks, in order to organize and facilitate the task discussions that would occur over the course of the CTSSB week. A few individuals suggested the SST be applied prior to arrival at the CTSSB so that individual opinions and responses could be viewed without contamination from the group-think phenomenon or the influence of strong personalities driving the discussion. These suggestions were discarded due to the requirement to apply the SST only to the critical task list, which does not take shape until midway through the CTSSB. Moreover, utilizing the tool prior to the identification of critical tasks would also increase the time required for completion as all tasks would be assessed, not just the shorter critical task list. For some CTSSBs, this would be a substantially large number. Finally, from a purely practical standpoint, board members have limited preparation time between notification of their participation in the impending board and the boards' commencement, which could preclude implementation of the SST prior to arrival at the CTSSB.

Indicating High versus Low Consensus. The compilation of board member site recommendations in Studies One and Three illustrated a need to modify the means by which the SST highlights tasks for which consensus is low. In Study One, when LT tasks populated the SST, consensus improved when board member opinions were compared to SST recommendations. The primary driver for the difference between personal opinion and SST recommendation related to the fact that LT is the entry level rank in the officer corps. That is, because the ABOLC – the institutional POI under review – would be the LTs' first exposure to all the tasks on the list, it was deemed critical to address a substantial number of them in the institutional setting at least to an introductory level. In Study Three, the board was subject to a special circumstance in which three MOSs were undergoing a merger into one, every board member represented one of the MOSs, and therefore for every task, several board members were inexperienced in its conduct. As a result, consensus tended to be relatively low across the entire task set. In this board, the chair determined that a majority vote (i.e., >50%) was sufficient as a threshold. Because other CTSSBs will similarly experience special circumstances, whether it be having only a few board members, task lists that are outliers, or other task modifications within the MOS, the determination was made to provide customizable consensus thresholds. In the final version of the SST, the administrator may select from 50%, 60%, 70%, or 80% as the threshold applied by the SST. The decision to implement a higher or lower threshold is at the discretion of the board administrator and/or board chair, as he/she sees fit. Furthermore, since user groups were not discriminating the red from amber highlights in their discussions, only a single highlight color (amber) is applied in the final version of the tool.

NCOES versus Functional Courses. In every CTSSB, site selection is conducted considering one particular course as the “Institution.” The courses within the NCOES and therefore the focus of this study were WLC, and each MOS’s Advanced Leader Course (ALC) and Senior Leader Course (SLC). However, functional courses are also provided by the institutions, typically to provide for technical training on a particular system, vehicle, piece of equipment, or skill. Therefore, board members require an option to suggest a functional institutional course as the optimal site, vice the course under review as the institutional site. In early iterations of the SST, users were instructed to use the Comment column to identify tasks recommended for the Institution, but better suited to a functional course rather than NCOES course. However, the final version of the tool was modified to provide users the response option “Institutional-Functional” when asked where they would recommend the task be trained if they disagree with the SST’s recommendation. The SST itself does not recommend functional courses as a training site.

Gaming the System. Many individuals noted their propensity to “game the system,” meaning that they attempted to figure out the algorithms so that they could answer the questions to produce their desired site recommendation. To better control against gaming behaviors, the research team built in a means of reporting one’s personal opinion in a way that was weighted equally to the SST recommendation. However, this modification did not seem to decrease the gaming behaviors. We considered displaying the SST recommendations only after all questions were answered for every task, and the user clicked a button to submit the answers. However, this approach was jettisoned due to the additional time requirement it would have produced. We deemed it crucial to collect user opinions in addition to SST recommendations; modifying the functionality as described would require users to review the task list a second time to examine the SST recommendation and respond as to its agreement with their own personal opinion.

Availability of Equipment at the Institution. While the front-end analysis methodology and SST include a question as to whether units are likely to have the equipment required to train the task, a similar question regarding equipment available at the institution was purposefully withheld from the methodology and SST. However, board members who tested the SST suggested the tool should in fact include a question as to equipment availability at the institution. This suggestion was not implemented. The SMEs in the initial interviews described that course managers, developers, and instructors review the CTSSB results, and apply an additional level of judgment as to site placement recommendations based in part upon the institution’s resources (to include time, funding, and equipment). When institutional resourcing cannot support the CTSSB’s recommendations, the subsequent recommendations to the NCO Academy Commandant are adjusted accordingly. Therefore, any judgment regarding institutional resources is applied outside the CTSSB process, since board members are unable to accurately assess the resources of the institution. In contrast, however, board members *would* generally have knowledge of a unit’s access to equipment necessary for training, so they are capable of answering that question within the SST.

Subjectivity of Judgment. A few users noted that responses to the questions can be subjective, and viewed that as a negative trait of the SST. However, site selection by its nature cannot be a purely objective undertaking. The current site selection process is wholly subjective

with no guidelines for decision making. The SST provides a set of guidelines, similar to the task criticality ratings, within which to make a subjective recommendation.

Responding to All Principal Discriminators. A subset of users indicated a desire to answer all twelve questions for every task. They felt that some of the questions grayed out as a result of the branching logic were actually important questions. However, they simultaneously noted that they did not disagree with the SST's site recommendation in these instances, which means that answering an additional question would have no bearing on the final SST recommendation. The tool was designed to minimize the number of responses required to produce a sound recommendation, because in many cases the critical task list will number more than 100 tasks. The 19A task list for LTs consisted of more than 550 tasks. Therefore, the team did not modify the tool to allow users to answer all twelve questions for every task.

Discussion and Conclusions

Early indications suggest that the SST is indeed useful to support, but not replace, the human judgment applied by CTSSB board members for their site selection recommendations. While the Army moves toward the implementation of the Army Learning Model, which in part prescribes better use of technologies to support training requirements, the SST provides the force with a tool to make informed decisions as to tasks that can be trained via technology (i.e., structured self-development modules) versus those for which face-to-face classroom instruction with a skilled instructor is still preferable.

The SST is intended to aid the Army at large in making better training site determination decisions. This is accomplished in several ways. First, the SST encapsulates the expertise of diverse site-selection SMEs into a process that informs and educates board members on factors they should consider when making site-determination decisions. This education process improves the CTSSB board member's decision-making. However, it is important to reiterate that the SST does not mandate that each CTSSB follows the SST recommendation; every CTSSB has unique concerns and issues which may not be fully captured by the SME expertise represented in the SST. Instead, board members are free (and solicited) to express disagreement with the SST if they do in fact disagree. Second, some CTSSBs operate without extensive discussion or a formal vote (e.g., one or two members nominating a training site, which is confirmed if there are no objections). In these situations, the SST highlights areas of disagreement that may be overlooked by ensuring that minority opinions are recorded and less assertive individuals may be called to explain a valuable divergent opinion. In contrast, a third way the SST aids better training site decision making is in identifying the tasks that have high levels of existing agreement. In this way, CTSSBs do not spend valuable time discussing the minutiae of tasks upon which board members disagree when in fact board members *agree* on the broader issue of training site recommendation. Instead, the SST identifies tasks that already have high levels of agreement and need not be discussed, reserving valuable meeting time for the tasks upon which there is greater discrepancy and divergence of opinions.

However, it is critical that the users view and use SST outcomes appropriately and understand what the tool is and is not designed to do. The purpose of the tool is twofold: to ensure novice site selectors are cued to consider the full range of appropriate factors for site

selection, and to discriminate between tasks that do and do not require group discussion. The SST is not expected to produce an “accurate” site recommendation in every instance; the presence of special and varied circumstances precludes any automated system from producing a correct answer every time. Instead, CTSSBs should view tasks for which board member opinions do not coincide with SST recommendations as ripe for discussion. Rather than viewing these instances as failures by the SST, board members should consider them to be examples of the several occasions in which human intelligence trumps the workings of an automated system. Similarly, in instances when the SST reveals a lack of consensus across board members, the task calls for group discussion to understand the reasons for the differences of opinion. During the assessment phases, board members reported an uncertainty regarding the meaning of flagged/highlighted tasks. Initially, the impression was that the SST flagged tasks for which board members had answered incorrectly according to what the tool ordained. While steps have been taken to resolve this impression in the future (e.g., tasks are no longer highlighted red, which is often associated with inaccuracy), it is critical that the CTSSB chairperson or coordinator remind board members of the SST’s actual purpose. The tool makes recommendations about site location based upon board member inputs, but it will not always provide recommendations with which the board members agree. It is expected that some MOSs will present particularly unique training environments, and for these MOSs, a higher level of disagreement with the SST may exist than in other MOSs.

In applying the SST, we noted broader challenges associated with the conduct of CTSSBs. Leadership of the board is critical. With or without automated supports, the success of board outcomes depends on effective leadership to embrace the range of experiences resident in board members and facilitate a healthy debate that is not overtaken by a few strong personalities. As is commonly found in research into group dynamics, group polarization can occur such that an initial small majority is transformed into a substantial majority fairly quickly (Moscovici & Zavalloni, 1969). Dissenting opinions may not always be actively sought, and if individuals holding dissenting opinions are not outspoken or assertive individuals in this setting, the recorded group vote may represent only the opinion of a few individuals speaking for the group. While it may be easier for a single board member to dissent against the group when he or she is one of a few rather than one of many, the likelihood of having another dissenter increases with a greater number of people, again highlighting the complexity of greater versus fewer board members. In this same vein, research has repeatedly demonstrated that voicing one’s opinion in front of a group, when others have already made their opinions known, increases the likelihood that an individual will voice the existing group opinion (i.e., conform to the group’s opinion; Asch, 1954). We observed this voting process several times during this research effort. To reduce the social pressure to agree with other board members, private voting is a more reliable approach, and is enabled via the SST. Of course, private voting can be more time-consuming, particularly when boards must vote on several hundred tasks (as was the case in some of the observations for this effort).

The quality of the board members selected to represent the operating force, and the knowledge they bring to the board, is likewise crucial to success. The SST cannot be a substitute for lack of board member knowledge. During the assessment phase of this research effort, some board members indicated that the SST was not able to account for the complexity of operational experience, and that the board members could only vote based on their personal experience,

which would likely not represent the full array of potential experiences with a given task. While this is certainly true, this criticism holds for any group decision making process, including the criticality voting process. The usefulness of the SST is only as good as the expertise of the voting members, just as the validity of the criticality vote is only as good as the members' expertise. Some test users indicated a preference to indicate their level of expertise on the task, such as weighting the board members' votes by rank, time in service, and so forth. Because the board composition is mandated by TRADOC Pamphlet 350-70-6 and the same issues arise in the criticality voting phase, the decision was made not to include this functionality in the SST. This inherent limitation in human decision making is acknowledged, and to counteract it, attempts are made to recruit board members from a vast array of Army experiences. For example, some MOS CTSSBs include Soldiers representing both commander's staff positions as well as non-staff duty positions at lower echelons. Individuals whose primary experience resides at a staff position would likely have a substantially different opinion of what tasks are critical and where they should be trained than individuals whose experiences are in other duty contexts. Indeed, SMEs during our research acknowledged that variations in make up from one board to the next affects the critical task list. This experience presumably also affects the conceptualization of how a task is performed and trained, and thus opinions about training site location.

One board we observed included an MOS with three very distinct subgroups of expertise. For the criticality vote, this board divided into SME subgroups that voted on the criticality of tasks specific to their subject matter expertise. The larger board then deferred to the respective subgroups for their official vote of a task's criticality. During the assessment of the SST, however, all board members completed ratings of all tasks, and during the focus group they indicated that they preferred to opt out of rating tasks for which they felt they had no expertise, despite holding the relevant MOS. As a result of this user input, the SST was modified to allow for users to opt out of responding to particular tasks on the list. Further, the implementation guidance for the administrator offers advice for administrators who may wish to form subgroups of board members with varying expertise on a subset of critical tasks. In brief, the administrator could form subgroups and populate the task fields of these subgroups only with tasks that matched their respective expertise.

As mentioned above, some users expressed a desire to utilize the SST prior to the board convening, much as AUTOGEN is intended to be used as a pre-assessment of task criticality before the official board convenes. Although the SST was not conceptualized to be applied pre-CTSSB, and this approach faces unique obstacles such as including a greater number of tasks to rate (as the task list would not have been pared down to only the critical tasks), potential for technical difficulties, and a lack of an administrator to guide the user through the SST. However, despite these challenges, the use of the SST pre-CSTTB is certainly feasible. Administrators may wish to disseminate the tool to board members and have the board members utilize the SST on the total task list prior to arriving for the board. However, as CTSSBs may be eventually conducted solely through distributed means (via telecon or web-based collaboration platforms), the SST would easily accommodate such a transition.

Although the Site Selection Tool was developed with a focus on NCOES, the Army uses the same CTSSB process for OES and functional courses, as well. Generally, the tool and the results of this analysis are expected to be applicable to the OES as well, as there is no reason to

believe that the characteristics that distinguish NCO critical tasks best suited for specific training environments differ from those that distinguish Officer critical tasks. Indeed, the same process and many times the same people conduct Officer CTSSBs as do NCO CTSSBs, and this research includes feedback from individuals familiar with both Officer and NCO CTSSBs. Likewise, the tool may also be utilized for functional courses (such as Ranger School, Bradley Gunner Course, or Drill Sergeant School). However, the purpose of a CTSSB for a functional course seems to be more unique in that these boards assess which tasks should be included in the functional course POI with the primary decision point being to include or exclude a task from the course's POI, not a decision between three viable options (the institutional course, the unit, or self-development). As such, use of the SST in functional course CTSSBs should be considered carefully, although as the Army Learning Model is more fully implemented and more interest in training tasks via self-development or distributed learning occurs even within function courses, this unique concern may diminish.

Although the SST and the CTSSB process generally produce recommendations regarding the training site of critical tasks, these recommendations should be couched within the broader concerns of an Army proponent's needs and resources. Just as the CTSSB can and should overrule the SST if the SST's recommendation provides a faulty mismatch between the board's understanding of a task and the SST's internal logic, the final CTSSB recommendations (after utilizing the SST) can and should be considered within the scope of the Army's needs as training developers and commandants understand them. A CTSSB provides training site recommendations based upon its understanding of the tasks, utilization of the SST, and discussion. These determinations represent the best recommendation as a function of the board members' knowledge of task, operational experience, training experiences, etc., and are based upon an ideal match between the task and training environment. However, an ideal match must be filtered through real constraints so the prepared list of training site recommendations is then assessed by the course developers. These course developers then apply their knowledge of resource constraints and integration ability with others tasks in the POI to make a final recommendation to the commandant. The commandant then considers additional factors such as practical and resource considerations and higher-level Army guidance or other information to which board members and course developers are not privy. Although the commandant may generally rely upon the operational and front-line expertise of board members who have recently performed or supervised performance of the critical task, there may not always be a match between the board's recommendations and the proponent's understanding of the realities of training. The commandant's approval triggers any relevant changes to course curricula and POIs.

Limitations of the SST

Although every effort was made to maximize the quality, usefulness, and user-friendliness of the SST, some limitations remain, as is true for any tool. Some limitations are a function of human behavior and some are inherent to the technical constraints.

Gaming the system. Several measures were taken to decrease the likelihood that users would game the system in attempts to have the SST output a recommendation to match his or her personal opinion. To that end, the research team implemented new functionality to enable users

to disagree with the system and identify their personal recommendation. Nonetheless, users still attempted to game the system. It is not clear whether this has an impact on the final site selection recommendations submitted by the CTSSBs. Presumably, this effect would be mitigated by the group discussion that occurs when board members fail to reach consensus on a task. An attempt has been made to reduce this tendency to game the system by including a note to the users in the administrator's guide. This note reminds users that gaming the system effectively introduces random error noise into the tool's process and likely reduces the ability of the group, via the SST, to reach a consensus. Board chairs and administrators should likewise emphasize this caution. An advisory warning explains this concern in the implementation guide (Appendix H) in layman's terms.

Consensus level. CTSSBs vary in the number of voting members, with most boards consisting of six to ten individuals. With larger boards, a single dissenting vote represents a smaller percentage of the potential group consensus (e.g., 10% for groups of ten, and 17% for groups of six). Such variations in the impact of a single (or a couple of) dissenting votes means that at times, reaching the requisite level of consensus can be more difficult for smaller boards than for larger boards, so board administrators may wish to set a lower consensus level that is more easily attained with a smaller board. Likewise, variations exist across MOSs and by board chairpersons regarding what level of consensus is sufficient and appropriate. Some boards may prefer a simple majority, while others may prefer a higher level of agreement. During the development and assessment of the tool, we utilized a 65% level of agreement, meaning that if 65% of users agree, then the task was not flagged for discussion. Based on feedback from users during the assessment phase, we modified the SST to include the ability to select a consensus level that best matched the board's preferences. In the current iteration, the SST offers a selection of options for consensus level—50%, 60%, 70%, or 80%.

Technical Features. Every effort was made to ease the workload of the SST administrator in compiling data across board members. However, we ultimately sacrificed technical functionality for the ease of access and immediacy of use conferred by Microsoft Excel's standing Certificate of Networthiness (CON) with the Army's Office of Information Assurance and Compliance. Security requirements and limitations within the Microsoft Excel platform prevent the ability to automatically compile board member data without a basic level of manipulation by the administrator to enable macros within the SST file. Ideally, security restrictions would not require behind-the-scenes macro-enabling in order to compile data. However, this is unavoidable given the current restrictions in place at most Army installations. As the Army updates its computer security policies and as the Microsoft Excel platform is updated, the current iteration of the SST may require updates to keep pace with the other advancements and developing restrictions. Although this dependency on the CON is limiting in some regards, it is still seen as advantageous over obtaining a separate CON for the SST that requires separate, independent oversight.

Task Endurability

Originally, the research team expected that task endurability would be a prevailing distinguisher between tasks suited for institutional, unit, or self-development training. However, the concept of task endurability proved difficult to address, with SMEs exhibiting a great deal of

variability in their ideas about enduring and non-enduring tasks, as well as their specification as to what makes a task enduring versus non-enduring. Enduring tasks were most often associated with those that were doctrinal or general in nature, while non-enduring tasks were often conceptualized as those that were TTP-driven or theater specific, or subject to changes in technologies or equipment. In outlining and describing the characteristics of a task that make it best suited for an institutional environment versus a unit or self-development environment, durability (or close proxies) was generally not reported as a distinguishing characteristic. When pressed, SMEs did acknowledge that durability was theoretically an appropriate distinction, and could speculate as to tasks best suited to different training environments on the basis of durability. However, the data analysis revealed durability to be more appropriately defined as a family of related factors vice a single factor.

Generally, the constellation of factors associated with task durability was not viewed by SMEs to necessarily dictate site placement. In other words, arguments can be reasonably made for training a particular non-enduring task in the institution. One of the perceived benefits of institutional training is its ability to quickly reach a broad, captive audience and provide standardized instruction across the population. Although the typical course development cycle updates approximately every three years, the Army can rapidly produce mandatory training modules to be included in courses outside of the official POI. It follows that crucial threats to human life, such as improvised explosive devices (IEDs) or Soldier suicides, might be appropriate topics for institutional training. In these cases, human judgment as to the degree of the task's durability comes into the equation. One might argue that a task that endures for ten years vice two years is appropriate for institutional training. The onus then is on the institution to note when this training is no longer necessary and should be removed from course POIs.

However, many SMEs reported their frustration with training modules that are mandated for inclusion in their course, when identical training is also mandated at the unit and in other courses. The NCOs receive the same training content across multiple locations and stages of their career, with no adjustment for skill level. The SMEs perceive that after the first iteration of the training, there is little to no value in presenting the training again and again, and it comes at the expense of training other important tasks. Two prime examples are suicide prevention and sexual harassment training. In these instances, the frustration is not with the judgment that the topics are critically important. The SMEs perceive that training time could be better used by either introducing advanced concepts within the topic to maintain trainee attention and engagement, or foregoing the training entirely in service of training that addresses new knowledge or skills. Mandates for particular Army-wide programs of instruction reveal a perception of the institution as a primary and valuable vehicle for delivering required training to the Army at large in a quick and controlled manner, regardless of its relevance to the course subject matter.

One strategy for addressing the need to accommodate tasks with changing parameters and conditions by one of the NCO Academies we observed was an effort to re-write the MOS's tasks to weather the equipment and technology changes over the course of time. The wording of the task would focus on the desired outcome of the task vice utilization of a particular system in service of that outcome. In this way, the tasks' underlying purpose and general skill would not need to change but the specifics for institutional or unit instruction has leeway to adapt

appropriately. To use a fictitious example, the task “Employ the ABC system to identify trends” would be rewritten as “Conduct trend analysis to identify trends.” Such rewording also accommodates for differences in the equipment owned and used by units across the operating forces. The downside of this approach is that, while building in flexibility to allow for access to varied types of equipment, units lose the ability to safely assume that newly assigned NCOs have been trained on the same equipment.

Of particular interest in relation to endurability is the concept of *emerging* tasks, vice *enduring* tasks. Emerging tasks might be defined as those in support of new mission requirements that reflect evolutions to the ways in which wars are fought or other military operations are conducted. For example, sensitive site exploitation and forensic analysis are now being performed by infantry and other units in response to the tactics and practices of most all adversary networks encountered by Army forces, and given the ability of technological advances to support such activities. Similarly, tasks once reserved for a particular MOS have migrated to be more broadly applied by a range of MOSs. The biometrics collections once specific to Military Police MOSs are now conducted by infantry and other MOSs. Intelligence tasks including the collection of human intelligence through tactical questioning and engagements with local leaders is likewise conducted by individuals representing a broader range of MOSs. These types of tasks have emerged and will arguably be sustained for the foreseeable future, across operational and mission environments. They do not fit the mold of non-enduring tasks that are specific to a particular region or adversary. Since global dynamics are continuously changing, and along with them the role of the U.S. military, the concept of tasks that emerge and evolve may be more fitting than tasks that are either permanent or temporary. As such, the traditional distinction and appropriation of tasks into instruction versus unit versus self-study may evolve. If the military training landscape begins to face more turbulent turnover of critical tasks, the role of unit training will face an increasing burden as the trainer of new tasks and the rapid responder to the changing operational environment.

Future Development

Although we conducted several assessments and attempted to garner representation across a wide range of Army MOSs and experiences, we were unable to assess the SST under every possible MOS. The current version of the SST represents the combined lessons learned from the groups that were assessed, representing subject matter expertise with many years of experience and varied Army backgrounds. However, future iterations may include additional features that come to light as necessary. Through the course of this project, a few proposed changes and feature requests were not included as they were either considered to be outside the scope of the project, or consensus did not exist regarding the need for the modification to suit many MOSs.

One such modification is the ability to customize the institutional site recommendation to display the specific course under review, such as Warrior Leaders Course or Infantry ALC, as opposed to the generic “institution.” In observations of boards both before and after the implementation of the SST, the research team observed occasional line-blurring between NCOES/OES courses and the functional courses offered by the institution. For example, the Squad Designated Marksmanship Course is not within the scope of NCOES, but it is an

institutional course in the sense that is offered by Army Marksmanship Unit at Fort Benning, GA, and it is similar to NCOES structure in that it has a fairly formal structure. With the addition of a feature that specified and reminded SST users that the tool identified “institutional” as Armor ALC rather than Master Gunner Course, there would be less potential for confusion when discussing the ideal training site for related critical tasks. Currently, the board administrator has the ability to type the name of the course under evaluation into a field at the top of the SST. While this will help reduce confusion about which course is meant by “institution,” a reminder after every task’s site determination recommendation would be a clearer and more frequent reminder for the users.

For future iterations, it will also be fruitful to carefully consider low-density MOSs. Low density MOSs in highly specific technical skills may find themselves dispersed broadly, serving as a single individual attached to a broader unit. For example, an individual with a military intelligence MOS may be attached to an infantry company. In such a situation, his “unit” may be dispersed over many other companies, and he has limited contact with his parent unit. Therefore, “unit training” is not regularly available in any meaningful sense; SMEs may be assigned to the unit, but are not accessible within reasonable time and resources. In the current iteration, we believe that the current wording of the questions still adequately addresses the availability of unit resources and SMEs. However, with additional feedback and exposure to other MOSs, necessary adaptations may come to light.

Another potential point of departure for future SST iterations will be the manner in which self-development is encouraged and/or delivered in the Army. Strictly speaking, self-development includes any training that is not conducted by a formal instructor at the institution or delivered by a face-to-face interaction with a unit trainer. Currently, self-development is construed to mean Army-developed dL. However, this is not necessarily the case, as self-development should also include non-structured self-learning by motivated individuals who seek out expert sources (e.g., individuals or formal training manuals and documents) without the guidance of an online course. The current iteration of the SST relied on the current conceptualization of self-development as formal web-based training. As the Army continues to evolve its interpretation and expectations for self-development, the logic guiding the SST’s placement of tasks into self-development will need to be revisited. Technology advances and accessibility will also influence the amount and type of self-development possible.

As technology continues to play an increasingly important role in Army training, a greater number of tasks can be expected to be trained using simulations. Depending upon the complexity and expense of the technology required to conduct simulated training, the ubiquity of access to the necessary training equipment will vary. The underlying logic and process for assigning tasks to self-development, unit, or institutional training environments partially relies upon accessibility of the necessary equipment. The current version of the SST distinguishes between actual equipment and an “equipment substitute;” if access to the actual equipment is required, then the task should not be trained in self-development. However, as simulation technology continues to develop and offer higher fidelity simulations at lower cost, likely increasing availability of and access to simulation technology, this factor’s value to site determination may be impacted. Likewise, some MOSs, such as those that rely heavily on

computers, may place less value in distinguishing between *actual* technology and *simulated* technology in that there may be little difference from the perspective of the Soldier training.

During the criticality vote of the boards we observed, board members frequently raised questions about the content, conditions, and standards of particular tasks. Administrators and their personnel generally had reference resources available to answer these questions from official Army documentation. Along these same lines, some users indicated that they would find a similar capability within the SST to be helpful, such as hyperlinks from the tool to a website with appropriate task definitions and descriptions. Future iterations of this tool may explore the inclusion of this functionality. However, in its current version, the SST could easily accommodate administrators' manual creation of hyperlinks from task titles listed in the task fields to the task reference, using Microsoft Excel hyperlink functionality. Moreover, the Army may wish to develop a suite of web-accessible CTSSB tools, to include not only the SST and links to task definitions and descriptions, but also the task selection models and the CTSSB tools used to vote on critical tasks. Additionally, access to CTSSB results are of interest to many training community members. As the SST outputs are Excel format spreadsheets, these results can be easily shared not only informally via email, CDs, etc., but may also be more widely and easily available by storing the outcomes in the newly developed Training Development Capability (TDC). TDC is an Army-wide database for storing training information associated with various tasks such as training manuals, POIs, tutorials, trainer resources, etc. Each task in TDC is maintained by the appropriate task proponent to ensure currency of content, and the SST outcomes could be easily added to the repository of information available in TDC.

Toward the goal of improving site selection NCOES, the SST will be made available as widely as possible. The sponsor for this research effort, the INCOPD, will retain copies of the SST files and user guides. Although the tool was developed primarily for use in NCOES training decision-making, the tool can also be used for OES and functional course training decisions. The tool will also be available for download on the Army Training Network and through the U.S. Army Research Institute. Included in the Appendices are user guides to support technical implementation and tips and suggestions for incorporating the SST into CTSSB process.

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Acronyms

ABOLC	Armor Basic Officer Leadership Course
ADDIE	Analysis, Design, Development, Implementation, and Evaluation
AIT	Advanced Individual Training
ALC	Advanced Leaders Course
ALM	Army Learning Model
AKO	Army Knowledge Online
ARI	Army Research Institute
CIED	Counter Improvised Explosive Device
CON	Certificate of Networthiness
CPT	Captain
CTSSB	Critical Task and Site Selection Board
dL	Distributed Learning
DoD	Department of Defense
FEA	Front End Analysis
IED	Improvised Explosive Device
INCOPE	Institute for Noncommissioned Officers Professional Development
ITE	Integrated Training Environment
KSAs	Knowledge, Skills, and Abilities
LT	Lieutenant
LTC	Lieutenant Colonel
MAJ	Major
MOS	Military Occupational Specialty
MSG	Master Sergeant
NCO	Noncommissioned Officer
NCOA	Noncommissioned Officer Academy
NCOES	Noncommissioned Officer Educational System
OES	Officer Education System
POI	Program of Instruction
SFC	Sergeant First Class
SLC	Senior Leaders Course
SMC	Sergeant Majors Course

SME	Subject Matter Expert
SOPs	Standard Operating Procedures
SSG	Staff Sergeant
SST	Site Selection Tool
TDC	Training Development Capability
TRADOC	Training and Doctrine Command
TTPs	Tactics, Techniques and Procedures
USASMA	United States Army Sergeant Majors Academy
WLC	Warrior Leaders Course

Appendix A. Informed Consent Form

INFORMED CONSENT (SME Interviews)

Title: Front-End Analysis Methods for Noncommissioned Officer Education System (NCOES)

Purpose of the research study: The objective of this effort is to identify the optimal placement of task training. The research team will be developing a front-end analysis methodology to differentiate enduring tasks needed to develop leaders and Soldiers at the different levels of the NCOES from non-enduring tasks needed to conduct current and upcoming operations.

What you will be asked to do in this study: An interviewer will ask you a series of questions, based on your personal experiences, about the factors and characteristics you consider when distinguishing between enduring and non-enduring tasks. Your responses will be recorded via a digital audio recording device, if you consent to it. The purpose of the recording is to ensure we do not miss or misrepresent any of the information you provide. We will use the audio recordings only to verify what we have written in our interview notes. Your personal identifying information will not be maintained with the recording, and the recording will not be available to anyone outside the project team.

Location: This study will be conducted at Fort Benning, GA; Fort Bliss, TX; and Fort Huachuca, AZ. Telephonic interviews with individuals within the contiguous United States will also contribute to the study.

Time required: May last up to 60-90 minutes, but no longer than that.

Classified Information: This interview will be conducted at an UNCLASSIFIED level. For Official Use Only (FOUO) information may be discussed. If during the course of the interview or after the conclusion of the interview, you feel you have revealed classified information, please inform the interviewer so that any capture of that information can be destroyed immediately.

Anonymity: All personal information gathered during this study will be kept strictly confidential in accordance with the DoD Privacy Program described in DoD Directive 5400.11. Your name will not be directly associated with any data. Further, the information provided throughout participation in this study will be stored in such a way that the data cannot be connected to any individual, thus ensuring privacy. The published results will not include your name or any other information that would personally identify you in any way.

Voluntary participation: The interviewers agree to answer any questions that you may have at this time or at any time during the duration of the study. You do not have to answer any question that you do not wish to answer. Participation is voluntary and you may terminate participation in the study at any time with no penalties. *If at anytime during the study you feel uncomfortable in any way, you can and should inform the interviewer and the study will be*

terminated immediately. If we feel that participation is emotionally stressful for you, we will ask you if you wish to stop the interview.

Risks. There are no foreseeable risks for participating in this research.

Benefits. There are no direct benefits to you for participating in this research. Indirectly, you will be contributing to an improved Army process for better distinguishing between enduring and non-enduring tasks. This will aid Army training decisions.

Compensation. There will be no compensation for your participation.

Questions regarding your rights as a research volunteer may be sent to ARI_RES@conus.army.mil . (type: “Front-End Analysis Methods for NCOES, 2011” in the subject line).

Questions about anything having to do with this study can be sent to ARI_RES@conus.army.mil . (type: “Front-End Analysis Methods for NCOES, 2011” in the subject line).

If responding to any of the questions becomes unpleasant for you, you can withdraw from the conversation at any time. Please note the numbers on the card we handed out. If you feel you’d like to confer with someone confidentially after this discussion, please go to the Military OneSource web site (<https://www.militaryonesource.com>) or call the 1-800-342-9647 number.

Title: Front-End Analysis Methods for Noncommissioned Officer Education System (NCOES)

If you agree to participate in this study, please sign and date below.

Agreement: I have read the procedures described above.

_____ I am at least 18 years of age (check)

_____ I voluntarily agree to participate in the study (check)

_____ I consent to an audio recording of my interview (check)

Signature: _____ **Date:** _____

INFORMED CONSENT
(Site Selection Tool Assessment)

Title: Front-End Analysis Methods for Noncommissioned Officer Education System (NCOES)

Purpose of the research study: The objective of this effort is to identify the optimal placement of task training. The research team will be developing a front-end analysis methodology that will augment the current task analysis and site selection procedures, and support the development of recommendations about enduring tasks to be considered for institutional training vice non-enduring tasks that should be trained at home station

What you will be asked to do in this study: During the Critical Task and Site Selection Board (CTSSB), a FEA methodology in the form of a Site Selection Tool will be implemented to assist you with site selection as part of the critical task review. Once the analysis is completed, you will be asked to complete a survey to provide your feedback on the Site Selection Tool. Following your voluntary completion of the survey, an interviewer will ask you a series of questions concerning the tools functionality. Your responses may be recorded via a digital audio recording device, if you consent to it. The purpose of the recording is to ensure we do not miss or misrepresent any of the information you provide. We will use the audio recordings only to verify what we have written in our interview notes. Your personal identifying information will not be maintained with the recording, and the recording will not be available to anyone outside the project team.

Location: This study will be conducted at <insert site here>. Telephonic interviews with individuals within the contiguous United States will also contribute to the study.

Time required: May last up to 45 minutes, but no longer than that.

Classified Information: This interview will be conducted at an UNCLASSIFIED level. For Official Use Only (FOUO) information may be discussed. If during the course of the interview or after the conclusion of the interview, you feel you have revealed classified information, please inform the interviewer so that any capture of that information can be destroyed immediately.

Anonymity: All personal information gathered during this study will be kept strictly confidential in accordance with the DoD Privacy Program described in DoD Directive 5400.11. Your name will not be directly associated with any data. Further, the information provided throughout participation in this study will be stored in such a way that the data cannot be connected to any individual, thus ensuring privacy. The published results will not include your name or any other information that would personally identify you in any way.

Voluntary participation: The interviewers agree to answer any questions that you may have at this time or at any time during the duration of the study. You do not have to answer any question that you do not wish to answer. Participation is voluntary and you may terminate participation in the study at any time with no penalties. *If at anytime during the study you feel*

uncomfortable in any way, you can and should inform the interviewer and the study will be terminated immediately. If we feel that participation is emotionally stressful for you, we will ask you if you wish to stop the interview.

Risks. There are no foreseeable risks for participating in this research.

Benefits. There are no direct benefits to you for participating in this research. Indirectly, you will be contributing to an improved Army process for better distinguishing between enduring and non-enduring tasks. This will aid Army training decisions.

Compensation. There will be no compensation for your participation.

Questions regarding your rights as a research volunteer may be sent to ARI_RES@conus.army.mil . (type: “Front-End Analysis Methods for NCOES, 2011” in the subject line).

Questions about anything having to do with this study can be sent to ARI_RES@conus.army.mil . (type: “Front-End Analysis Methods for NCOES, 2011” in the subject line).

If responding to any of the questions becomes unpleasant for you, you can withdraw from the conversation at any time. Please note the numbers on the card we handed out. If you feel you’d like to confer with someone confidentially after this discussion, please go to the Military OneSource web site (<https://www.militaryonesource.com>) or call the 1-800-342-9647 number.

Title: Front-End Analysis Methods for Noncommissioned Officer Education System (NCOES)

If you agree to participate in this study, please sign and date below.

Agreement: I have read the procedures described above.

_____ I am at least 18 years of age (check)

_____ I voluntarily agree to participate in the study (check)

_____ I consent to an audio recording of my interview (check)

Signature: _____ **Date:** _____

Appendix B. Privacy Act Statement

PRIVACY ACT STATEMENT

Project Title: Front-End Analysis Methods for Noncommissioned Officer Education System (NCOES)

Authority: The Department of the Army may collect the information requested in this session under the authority of 10 United States Code, Section 2358, "Research and Development Projects." In accordance with the Privacy Act of 1974 (Public Law 93-579), this notice informs you of the purpose, use, and confidentiality of this session.

Purpose: This research will develop a front-end analysis methodology for identifying those enduring tasks and procedures suitable for NCOES instruction and those changing tasks and procedures suitable for unit and pre-deployment training.

Routine Uses: Information from this project will be used to inform a design of future research materials and potential training methods/products/tools will be developed to determine which types of tasks are less enduring for multiple mission sets, and thus better suited to be trained at the unit level or via individual self-development. Improvements may result directly from experiences and responses you and your fellow Soldiers provide.

Disclosure: Participating in this project is voluntary and you may choose at any time not to participate. There is no penalty for choosing not to participate and you may leave at any time. You also have the right to have any information we collect from you to be withheld from further analysis.

Confidentiality: We will not identify you, or attribute comments made during the project to any particular participant, and we will not include your name or other personally identifiable information in our interview notes or potential reports. Likewise, we ask that each of you respect the confidential nature of this project, by not identifying individual participants with comments made or heard during this session.

We cannot provide "confidentiality" or "non-attribution," to a participant regarding comments involving criminal activity/behavior, or statements that pose a threat to yourself or others. Do not discuss or comment on classified or operationally sensitive information during this session.

Contact: For further information about this project or your rights as a participant, send e-mail to: ARI_RES@conus.army.mil (type "Front-End Analysis Methods for NCOES, 2011" in the subject line).

RETAIN FOR YOUR RECORDS

Appendix C. Data Collection Protocol

INTERVIEW PROTOCOL

Front-End Analysis for the NCOES SME Interview Protocol

Objectives

1. Identify all factors, including those related to task durability, currently used to determine site placement.
2. Identify the doctrinal processes and experiential knowledge currently used to think of a task as enduring or non-enduring.
3. Identify additional variables, factors, and/or characteristics of enduring versus non-enduring tasks that could be considered to improve the efficiency of training.
4. Identify one or more entry point opportunity for the Site Determination Tool.

Begin by requesting the interviewee to complete the Informed Consent and Privacy Act forms.

I. Purpose of Interview (2 minutes)

Provide the interviewee with a background on why we're conducting interviews and what we want to ask about:

We are interviewing you today to understand what you consider when you think about whether a task should be trained in an institutional setting, at home station, or via individual study. The Army has asked us to define the variables that make a task enduring, and thus well suited to institutional training, vice non-enduring, and hence more appropriate for unit training. By "enduring," we mean not specific to and lasting longer than the current war or theater, or not subject to change across AOs within a particular theater. Once we have identified what makes a task enduring or not, we will work with the Institute for NCO Professional Development to create a tool that helps training developers, task analysts, CTSSB members, or others better identify where training should be placed, OR more easily justify their task placement recommendations to leadership.

Do you have any questions about why we're talking to you today?

We would like your permission to record this interview. We will ensure that the recording will only be used within our project team, and that none of your comments will ever be attributed to you. Do we have your permission? [If so, begin recording now.]

II. SME Background and Experience (5 minutes)

Collect demographic information from the interviewee. Complete the Demographics Form to record his or her responses.

Before we start asking you about enduring and non-enduring tasks, please tell us a little bit about your background and experience.

[for Active Duty personnel]

- How long have you been in the Army?
- Do you have prior experience in any other military service?
- What is your current rank?
- What is your current duty position, and how long have you been in it?
- What past positions have you held as an instructor?
- What past positions have you held as a training developer or task analyst?
- Have you had any other training-related job experience?
- How many deployments have you had? For each, please tell me the year(s) you were deployed, the theater (e.g., Iraq or Afghanistan), the length of the deployment, and your duty position in theater.

[for GS/contractor personnel]

- Were you formerly on active duty? If so, how long were you in the Army?
- Do you have prior experience in any other military service?
- What was your rank when you retired/got out?
- What is your current job, and how long have you been in it?
- What past positions have you held as an instructor?
- What past positions have you held as a training developer or task analyst?
- Have you had any other training-related job experience?
- Do you have experience as a participant or outside observer of a CTSSB?
- Have you been deployed? If so, how many deployments have you had? For each, please tell me the year(s) you were deployed, the theater (e.g., Iraq or Afghanistan), the length of the deployment, and your duty position in theater.

III. Site Selection (20 minutes)

Collect information about what factors or characteristics should be considered when selecting the training site for a task.

What kinds of tasks should be trained in an institutional setting?

- What makes a task appropriate for the NCOAs?
- How do you know that a task is best suited for the NCOAs?
- What are some examples of tasks taught in the NCOA here?
- Why are those tasks taught here?
- Which of those tasks should not be taught here, and why?
- Which of these tasks would you consider to be “enduring”?
- When a task is enduring, what other characteristics does it have?
- How would you predict whether a new task is likely to be enduring?

- For the ones that are not enduring but taught here in the NCOA, what about the task makes it fit here?
- For the characteristics you've talked about for tasks to be trained in the institution [name the characteristics], which are the highest drivers?

What kinds of tasks should be trained at home station?

- What makes a task appropriate for home station?
- How do you know that a task is best suited for home station?
- What are some examples of tasks taught at home station?
- Why are those tasks taught there?
- Which of those tasks should not be taught there, and why?
- Which of these tasks would you consider to be "enduring"?
- Which would you consider to be "non-enduring"?
- When a task is non-enduring or dynamic, what other characteristics does it have?
- How would you predict whether a new task is likely to be non-enduring/dynamic?
- For the ones that are enduring but taught at home station, what about the task makes it fit there?
- For the characteristics you've talked about for tasks to be trained at home station [name the characteristics], which are the highest drivers?

What kinds of tasks should be trained through self-study?

- What makes a task appropriate for self-study?
- How do you know that a task is best suited for self-study?
- What are some examples of tasks taught via self-study?
- Why are those tasks taught as such?
- Which of those tasks should not be taught that way, and why?
- Which of these tasks would you consider to be "enduring"?
- For the ones that are enduring but taught via self-study, what about the task makes it fit there?
- For the characteristics you've talked about for tasks to be trained via self-study [name the characteristics], which are the highest drivers?

What is challenging about figuring out where a task should be trained?

- What mistakes have you seen made, where tasks are inappropriately placed for training?
- Can you give some examples of tasks that were slotted in the wrong place?
- When tasks are slotted inappropriately, what are some of the main reasons for failure?
- How often do you believe that tasks are slotted for training in the right place?
- When tasks are slotted appropriately, what are the reasons for success?
- What elements of the process, if any, interfere with properly placing tasks?
- Who are the players and decision makers in the process?

- How are tasks considered differently now, during wartime, than they were prior to the wars in Afghanistan and Iraq?
- What factors should be considered, but are not, when selecting training sites?
- How do you, personally, think through task placement now that's different from how you used to think about it? What have you gotten smarter about?
- If the task selection board were comprised of E3s and E4s, what mistakes would you expect them to make in recommending training sites for certain tasks? What would they fail to consider in selecting sites?

What is the impact of the ALC 2015 on the way CTSSBs and proponents select sites for training?

IV. Enduring vs. Non-Enduring Tasks (20 minutes)

Collect information regarding how the interviewee thinks about enduring and non-enduring tasks.

Are you familiar with the terms “enduring” and “non-enduring”?

- What other terms have you heard in common usage that mean something similar?
- What about a task makes it enduring [or use SME's term] or not?
- How do you, personally, judge whether or not a task is enduring?
- What information would help you do a better job of judging a task as enduring or non-enduring?
- Do you currently consider task durability as a factor when you place/recommend sites for task training?
- What kind of knowledge or experience does a person need to do a good job of identifying whether or not a task is enduring?
- What does doctrine stipulate about what makes a task enduring or non-enduring?

Please look at this list of tasks in answering the following questions [provide task list from current CTSSB].

- Of all the tasks on the list, which three are the best suited for institutional training? Why?
- Which three are worst suited for institutional training? Why?
- Which three are the most likely to be enduring? Why?
- Which three are the least likely to be enduring? Why?
- Which three are the most difficult to judge as enduring or non-enduring? In other words, which do you see as the most prone to be misjudged? Why?
- What information would help you determine if it is an enduring or non-enduring task?

You have identified the following factors or characteristics as ones that make a task enduring/non-enduring. [Say back the factors/characteristics from interviewer notes.]

- Which of these factors are easy to identify for a member of a CTSSB?
- Which of these factors are difficult to identify?
- Which of these factors are difficult to measure?
- What are some other means by which someone could determine whether or not a factor/characteristic is present in a task? Are there other indicators he/she could use?
- Does operational experience impact a person's ability to identify these factors and characteristics in a task? How so?
- Does training/instructor experience impact a person's ability to identify these factors and characteristics in a task? How so?
- Is there any other type of experience that would improve a person's ability to identify these factors? How so?

V. Site Selection Process – Entry Points to Support (10 minutes)

Collect information about who are the appropriate users of a Site Determination Tool, and where in the process it would be optimally implemented.

We've been talking about what makes a task enduring or non-enduring, and what are the other factors that determine where a task should ideally be trained. We discussed at the beginning that our goal is to develop a tool that helps people determine the most appropriate site for task training.

- Who is most in need of assistance to identify where a task is best trained?
- Should this tool focus on helping people make recommendations, or helping them explain or justify their recommendations to leadership, or something else?
- Where and when in the process would you see this tool being used?
- Should the tool be web-based? Should it tie into other technologies?
- What are the most important functions the tool should support or perform?

VI. Wrap Up

What questions should we have asked that we didn't ask?

What questions do you have for us?

Appendix D. Site Selection Tool Question Definitions

Site Selection Tool Questions		Purpose	Definition
Safety concern?	DURING TRAINING, what is the risk of injury to personnel or damage to equipment when training this task?	When there is a safety concern associated with the task, it requires face-to-face training and is not appropriate for self-development.	The danger associated with training or performing the task. Significant risk (life, limb, eyesight) may be linked with incorrect performance, either in training or operational contexts. This question is about the degree of risk associated with conducting the task.
Equipment and hands-on training required?	Is actual equipment – a weapon, vehicle, or system – and hands-on training, instead of an equipment substitute, required to train this task?	When a task requires that equipment be present during training so that a trainee can physically manipulate it, self-development is generally inappropriate.	The extent to which task performance and training requires motor or hands-on performance, or physical manipulation of tools, equipment, or items. This question is about whether the training <u>must</u> employ the actual equipment that would be used operationally, or whether computer based training, a simulation, or a classroom-based substitute can be used instead.
Difficult to learn?	How complex or difficult to learn is this task?	Tasks that are higher in complexity or difficultly are less suited for self-development and more suited for training by an instructor or SME.	The effort required to learn the task, usually based on the degree of difficulty of the concepts or procedures involved. Tasks that are more complex require a human trainer for instruction, to provide examples, and to answer questions. This question is about the degree of task complexity.
Assess performance by watching face-to-face?	Does a trainer need to watch performance face-to-face to assess it?	Tasks that require a trainer to observe the trainee's performance in order to assess it are not appropriate for self-development.	The extent to which a Soldier's performance must be observed in order to evaluate it against the standard. This question refers to whether a trainer is required to watch NCOs perform the task, in person, in order to conduct an accurate assessment.
Updates needed more than yearly?	Will the training change more than once a year?	When the training is subject to frequent change, self-development may be inappropriate due to the expense of modifying computer-based or distributed learning (dL) training content.	The likelihood that task standards will change and instruction will require modification to keep the pace with the evolving conditions. If the training content will change more than once a year, the task is probably not a good fit for self-development.
SMEs available or accessible at unit?	Are SMEs readily available or accessible to train this task at the unit?	If task expertise is not accessible at the unit, the task is more likely to require institutional training.	The extent to which trainers, small unit leaders, or subject matter experts are training the task at the unit. This question refers to whether subject matter expertise typically exists at the unit, and also whether those SMEs are readily available to NCOs for training.
Annual qual./cert. at unit?	Is recurring qualification or certification conducted at unit?	When units require annual qualification or certification, a program of training likely already resides at the unit.	Whether or not there is an annual training or qualification requirement that is satisfied at the unit. The rationale behind this question is that when annual testing occurs at the unit, there is a strong likelihood that NCOs receive the required training at the unit.

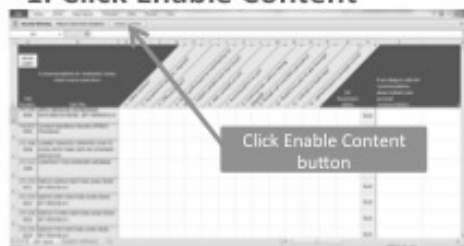
Site Selection Tool Questions		Purpose	Definition
Universal task, uniform training required?	Is the task universal and requiring uniformity of training across the MOS?	When the task is relevant to all individuals in the MOS and also requires that all Soldiers be instructed on it in a standardized manner, then it is appropriate to be trained at the institution.	This question has two parts. Universality is about the extent to which the task is relevant to NCOs across the Force or across the MOS, regardless of job assignment. Standardization refers to how important it is that all Soldiers learn to conduct the task using the same procedure. This question asks whether most NCOs will employ the task on the job, and whether they must know or use the book standard to be effective.
Reliable and controlled assessment?	Is a reliable and controlled assessment highly important?	Tasks that require extra assurance that Soldiers have grasped the important concepts and performance steps are better suited for institutional training, where a reliable assessment is more likely to always take place.	The importance associated with ensuring task training has been delivered and performance has been assessed for each and every NCO. Some tasks require an extra degree of assurance that every Soldier who has gone through the training actually grasps the task and can perform it effectively. This question refers to the criticality that an instructor be present to ensure each and every NCO is trained to standard.
Peer-to-peer learning critical and required?	Is sharing experiences with peers from other units critical and required to maximize learning?	When trainees gain a significant benefit from hearing about peers' experiences in a range of other mission or garrison contexts, institutional training is often more appropriate.	The degree to which there is a learning advantage associated with exposure to the experiences of Soldiers from other units or backgrounds. When a task, such as a combat tactic, must be adjusted for execution in different mission types or operational environments, there is great learning value in hearing examples of the many ways to conduct the task. This question refers to whether there is a particular benefit from exposure to peers from different units who can speak to how mission or environmental factors impact task execution.
Criticality to leadership?	How critical is the task to the leadership role?	Tasks with a heavy leadership component may be most amenable to an institutional course.	The importance or centrality of the task for being an effective leader. This question is about whether or not the task is one of the core functions of a leader.
Safety/equipment available at unit?	Do most units have the safety measures and equipment readily available to perform training?	When the other factors indicate unit training is more appropriate AND the unit has the required equipment and safety measures to conduct the training, then unit training is probably optimal.	Whether the necessary equipment or safety measures for training the task are <u>present</u> and <u>available</u> at most units. This question provides a check to ensure that if a task is recommended for training exclusively at the unit, most units across the Army will have the means to conduct that training.

Appendix E. Site Selection Tool Instructions

SITE SELECTION TOOL *User Quick Reference Guide*

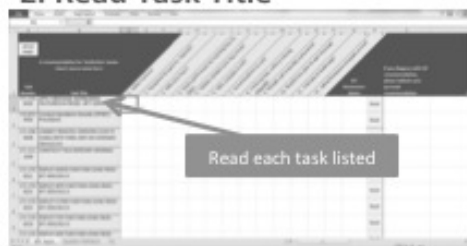
This guide provides basic instructions for using the Site Selection Tool (SST).

1. Click Enable Content



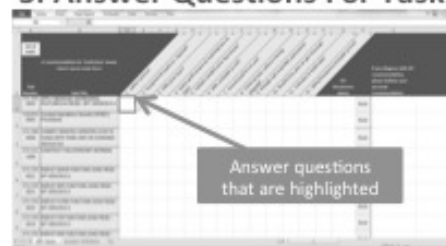
Once the excel file is opened, a yellow **Message Bar** appears with a shield icon and the **Enable Content** or **Enable Editing** button. On the **Message Bar**, click **Enable Content** or **Enable Editing**.

2. Read Task Title



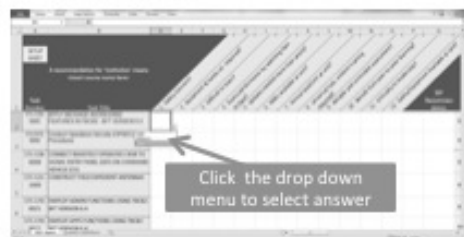
You will be reviewing the tasks listed to make a site recommendation. Read each task in the column labeled **Task Title**. If you would like to include the criticality rating for each task, (1) select columns B and D, (2) using your mouse, right-click over the two highlighted columns, and (3) select **Unhide** to reveal the hidden task criticality column.

3. Answer Questions For Task



For each task, answer questions beginning with #1. Your **cursor will move to the next relevant question**, with some questions greyed out. Please answer the questions **in the order directed by the tool**. To see the complete question, hold your mouse pointer over the **red triangle** at the top of the column.

4. Use Drop Down Menu or Keystrokes



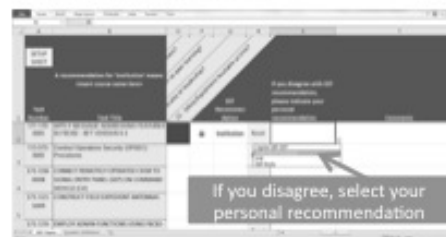
Use the **drop down menu** on the side of the highlighted box to select your answer to the question. Some questions require a Yes or No. Others require a High, Medium, or Low. You may also key in Yes, No, High, Medium, or Low to respond to each question, paying attention to capitalization.

5. Reset Responses if Necessary



To edit earlier responses, please use the **Reset** button to the right of the questions. You may reset at any time during your review. Once the questions are answered, a site recommendation will automatically appear under the SST recommendation column. Do not change the system's recommendations and do not answer questions to get a specific recommendation. Your personal recommendations may be entered in the next step.

6. Indicate Recommendation and Make Comments

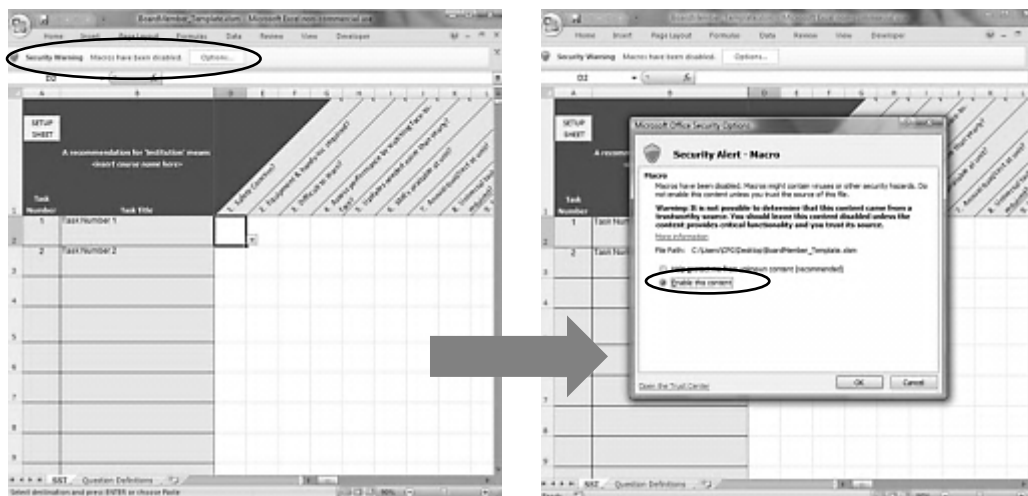


If you disagree with the SST recommendation, please use the drop down menu to select your personal site recommendation. If you have additional comments, enter them in the Comments column. When you have completed the row, move to the first question for the next task on the list. Save frequently to avoid data loss.

Site Selection Tool Instructions for Administrators

PART ONE: SET UP THE FILE

1. Create a new folder for your set of tasks on your desktop.
2. Copy over the *Admin* and *Board Member* files to the new folder you created or use the Save As command to locate and place the *Admin* and *Board Member* files in the new folder.
 - a. **Note** Do not rename the file. Please keep the same file name when placing the files in the new folder.
3. Open the file that contains your task list.
 - a. In preparation for importing the task list, use two columns: one for the task number and one for the task title.
 - i. **Note** To simplify board member inputs, organize the task list in a logical manner before importing it into the SST.
 - b. If desired, you may also import the task criticality rating for each task.
4. Open the *Admin* and *Board Member* files.
 - a. When you open an SST file, a bar at the top of the window will appear. Click Options and select **Enable this Content** to proceed.

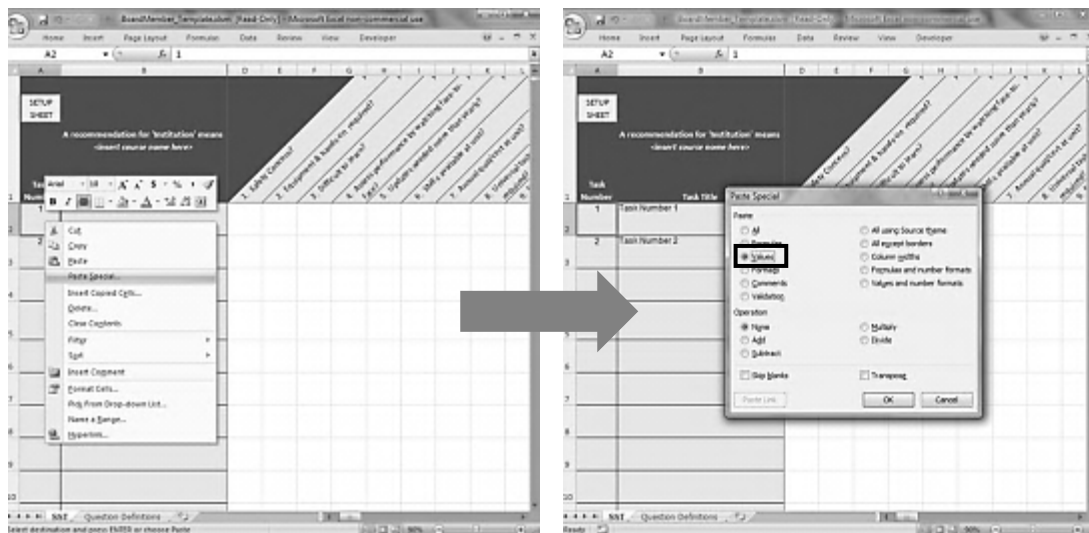


- b. If you would like to include task criticality ratings, in the *Board Member* file (1) select columns B and D, (2) using your mouse, right-click over the two highlighted columns, and (3) select **Unhide** to reveal the hidden task criticality column. The task criticality column in the *Admin* file is not hidden but it is still optional to include task criticality ratings.
- c. Go to the task list you wish to paste into the SST. Highlight all the task numbers and task titles (and criticality ratings, if applicable) by left-clicking the first task number and dragging down diagonally to the last task title (or the last criticality rating; this assumes there are no other columns between the task number, task title, and criticality rating columns). Right-click the highlighted columns and select Copy.

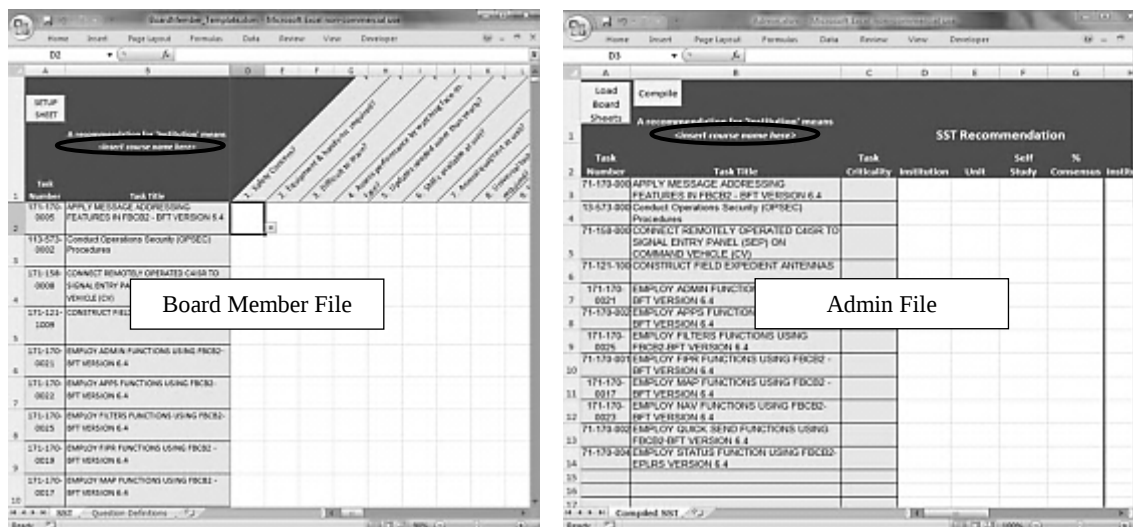


- d. Once you copy the task list, right-click cell A2 of the *Board Member* file and select the following:
 - i. Paste Special - Values

Site Selection Tool Instructions for Administrators

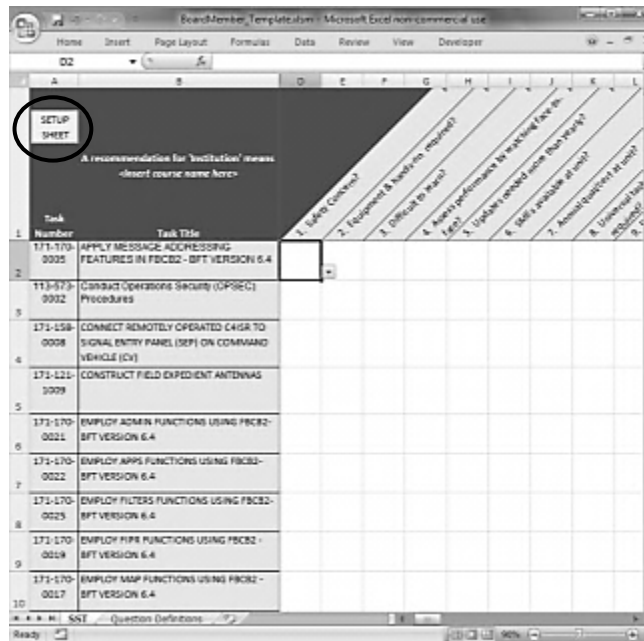


5. Once you paste the tasks in the *Board Member* file, follow steps 4b, 4c, and 4d to paste the same task numbers and titles to the *Admin* file.
6. When the task numbers and titles have been pasted into both the *Admin* and the *Board Member* files, replace '<insert course name here>' in cell B1 of both files with the name of the course for which the CTSSB is being conducted.



Site Selection Tool Instructions for Administrators

7. Once the course name has been entered into both the *Admin* and the *Board Member* files, save and close the *Admin* file.
 - a. **Note** You will get a Privacy Warning window. This is normal. Click OK to continue.
8. In the *Board Member* file, click the *Setup Sheet* button in the top left. Depending on the number of tasks you have entered, the program may take a few seconds to populate the *Reset* buttons and prepare the file for distribution.



Site Selection Tool Instructions for Administrators

PART TWO: DISTRIBUTE THE FILES

Please Note:

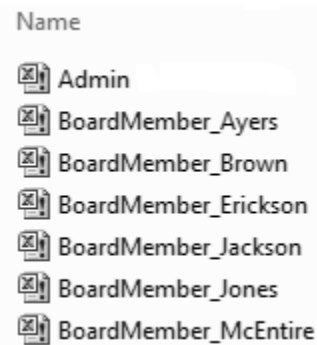
- You can either distribute the files individually via email or by placing them in an accessible folder for the board members to access on their own.
- The administrator has two options for duplicating the *Board Member* file:
 1. Send out or upload a general *Board Member* file and require each member to enter his or her name behind **both** the file name (e.g. BoardMember_Brown) **and** the workbook name, making sure to keep 'SST' in the workbook name (e.g. SST Brown).
 - **Note** We recommend using only spaces and underscores to separate words. Avoid special characters (! ? @ etc.).
 2. Create multiple files, making individual *Board Member* files following the naming conventions above, and send them out or upload them individually.
- While this naming convention is optional, it enables the administrator to have complete traceability and a better overview of the responses by his or her board members.

Task Number	Task Title	1. Safety Content?	2. Equipment & tools on required?	3. Difficult to train?	4. Aspects performance by watching (see to-look?)	5. Update needed more than years?	6. GMLs available at unit?	7. Annual training at unit?	8. Universal Task required?
171-170-0005	APPLY MESSAGE ADDRESSING FEATURES IN FBCB2 - BFT VERSION 6.4								
113-573-0002	Conduct Operations Security (OPSEC) Procedures								
171-158-0008	CONNECT REMOTELY OPERATED C4ISR TO SIGNAL ENTRY PANEL (SEP) ON COMMAND VEHICLE (CV)								
171-121-1009	CONSTRUCT FIELD EXPEDIENT ANTENNAS								
171-170-0021	EMPLOY ADMIN FUNCTIONS USING FBCB2 - BFT VERSION 6.4								
171-170-0022	EMPLOY APPS FUNCTIONS USING FBCB2 - BFT VERSION 6.4								
171-170-0025	EMPLOY FILTERS FUNCTIONS USING FBCB2 - BFT VERSION 6.4								
171-170-0019	EMPLOY FIPR FUNCTIONS USING FBCB2 - BFT VERSION 6.4								
171-170-0017	EMPLOY MAP FUNCTIONS USING FBCB2 - BFT VERSION 6.4								

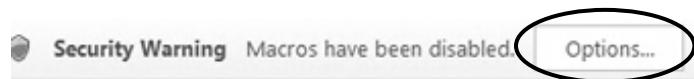
Site Selection Tool Instructions for Administrators

PART THREE: COMPILE THE FILES

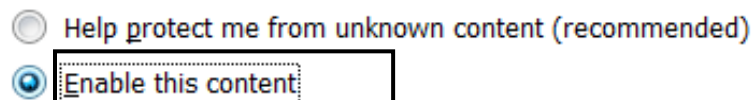
1. Once you receive all *Board Member* files, place them in the same folder you created. Make sure that just the one *Admin* file and all completed *Board Member* files are the only existing files in that folder. If there are other files in the folder, please remove them.
 - a. **Note** Do not rename the *Admin* file until all files have been compiled.



2. Open each *Board Member* file and click the *Setup Sheet* button to link it to the *Admin* file. Save it and close.
3. Open the *Admin* file.
4. Click '**Options**' button to open the security warning.

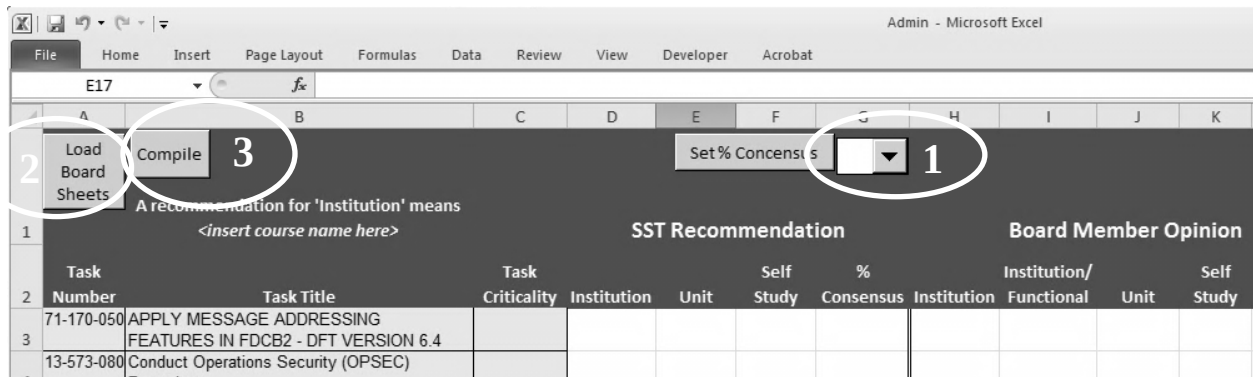


5. Select '**Enable this Content**' to enable macro.



Site Selection Tool Instructions for Administrators

- To calculate, first, use the drop down menu next to *Set % Consensus* to choose if the program should calculate agreement at 50%, 60%, 70%, or 80%
- Next, click the *Load Board Sheets* button at the top left of the window. The program will open and import each board member sheet in the folder.



- Finally, return to the 'Compiled SST' worksheet and click the *Compile* button at the top left of the window.
- The program has now compiled all the *Board Member* files into the *Admin* file and calculated the concurrence.

Appendix F. Site Selection Tool Assessment Survey

SITE SELECTION TOOL ASSESSMENT SURVEY

Please indicate on the scale from 1-5 your level of agreement or disagreement with the following statements. If the question is not applicable to you, please leave it blank.

	Strongly Disagree				Strongly Agree
1. The Site Selection Tool was valuable to me.	1	2	3	4	5
2. The questions in the Site Selection Tool were easy to understand.	1	2	3	4	5
3. The questions in the Site Selection Tool were easy to answer.	1	2	3	4	5
4. The Site Selection Tool was simple to use	1	2	3	4	5
5. I was able to be more objective with my site recommendations using the Site Selection Tool.	1	2	3	4	5
6. I was able to produce better site recommendations using the Site Selection Tool.	1	2	3	4	5
7. The Site Selection Tool helped me to consider factors I would not have otherwise thought about when recommending a training site.	1	2	3	4	5
8. The training site recommendation generated by the Site Selection Tool typically met my expectations.	1	2	3	4	5
9. The Site Selection Tool is reliable.	1	2	3	4	5
10. The Site Selection Tool was accurate in recommending the correct site for each task.	1	2	3	4	5
11. Using the Site Selection Tool was NOT time consuming.	1	2	3	4	5
12. I would recommend the Site Selection Tool for future CTSSBs.	1	2	3	4	5
13. All components of the Site Selection Tool functioned properly.	1	2	3	4	5

CONTINUED ON THE BACK

Please read and answer the following questions.

A. What features of the Site Selection Tool did you find to be the most valuable?

B. What elements of the Site Selection Tool did you find to be irrelevant or distracting?

C. What are the three most important changes that should be made to the Site Selection Tool?

D. What changes would you make to the way the Site Selection Tool was used as part of the CTSSB process?

Appendix G. Focus Group Protocol

INTERVIEW PROTOCOL

Front-End Analysis for the NCOES Site Selection Tool Assessment Protocol

Objectives

1. Gather user feedback regarding the relevance, ease of use, and value of the Site Selection Tool.
 2. Identify the face validity of the factors included in the tool.
 3. Identify revisions and improvements necessary for improved SST functionality.
 4. Determine whether the tool can be integrated with existing critical task review process.
-

Begin by requesting the interviewee to complete the Informed Consent and Privacy Act forms.

I. Purpose of Interview (2 minutes)

Provide the interviewee with a background on why we're conducting interviews and what we want to ask about:

We are interviewing you today to identify any information that would help us improve the FEA Site Selection Tool that you just finished using during the CTSSB process. We created this tool to assist CTSSB members, course directors, instructors, or others better identify where training should be placed, OR more easily justify their task placement recommendations to leadership.

Do you have any questions about why we're talking to you today?

We would like your permission to record this interview. We will ensure that the recording will only be used within our project team, and that none of your comments will ever be attributed to you. Do we have your permission? [If so, begin recording now.]

II. SME Background and Experience (3 minutes)

Collect demographic information from the interviewee. Demographic information will be used only to consider the participants experience with Critical Task and Site Selection Boards.

Before we start asking you about the tool, please tell us a little bit about your background.

- How long have you been in the Army?
- What is your current rank?
- How many CTSSBs have you participated in during your service?
- What is your current duty position, and how long have you been in it?
- How many deployments have you had? For each, please tell me the year(s) you were deployed, the theater (e.g., Iraq or Afghanistan), the length of the deployment, and your duty position in theater.

III. Site Selection Tool Impressions (20 minutes)

Collect information about his/her experience using the tool and the overall effectiveness for improving the current CTSSB site selection process.

What is the overall value of the Site Selection Tool?

- Did you like using the SST?
- Did the tool make your job easier?
- Do you think the tool helped lead to better training site recommendations than if the recommendation were made without the tool?

What were your impressions of the SST's interface and functionality?

- Were you able to understand how to interact with the SST? What did and did not make sense?
- Can you describe how the tool helped you? If it did not, why?
- To what extent did the SST make a difference in the way you recommend training sites?
- Did the graying out of the questions make sense to you? Why or why not?
- How often did you write a comment about the task?
- Were you happy with the requirement to agree or disagree?
- In what ways did you find the tool to be effective? Ineffective?

Did you find the questions asked in the SST to make sense and have relevance to your job of recommending training sites for tasks?

- How did you interpret and use each question?
- Did you have trouble answering with a yes or a no? Would you have rather rating each question on a scale? For which questions would you want to provide a rating rather than a yes/no?
- Did you usually agree with the system's site recommendation? Why or why not?
- What was your impression of the two questions regarding safety and risk? Were you able to discriminate tasks where safety is a major concern versus a minor concern?
- Were you surprised by any of the questions?
- Did you find any of the questions to be ones that you normally would not consider in making a site recommendation?
 - If so, were these good inclusions or bad inclusions?

How good were the recommendations of the Site Selection Tool?

- Can you give some examples of SST recommendations that you did not agree with? Why did you disagree? Were there other factors that should've been considered?
- How reasonable were the recommendations? What did not make sense?

In what ways can the SST be integrated with the existing CTSSB process?

- Did you agree with the way the tool supported the site selection process?
- Did the SST support group discussions of tasks that were not clear cut? Why or why not?
- Did the SST make the CTSSB process more efficient? Why or why not?
- Did the SST make the CTSSB outcomes stronger? More justifiable? Why or why not?

- Did the tool integrate smoothly with the CTSSB process?
- How should it be implemented or adapted to better meet the board member's needs?

IV. Site Selection Tool Improvements (10 minutes)

Collect information about any revisions that should be considered for the Site Selection Tool.

How would you improve the Site Selection Tool, and why?

- What are the important factors missing from the tool that may be necessary?
- What elements of the tool need to be rearranged?
- What questions within the tool need to be reworded?
- Describe the problems (if any) you encountered during the process?

What features would you change to better support your thought processes during the CTSSB?

- What did you like/did not like about the tool's interface?
- Were there too many questions to answer for each task or too few?
- Would you have preferred to answer the questions with a rating as opposed to yes/no selections?
- What do you recommend to change when considering the appearance of the tool?

V. Wrap Up

What questions should we have asked that we didn't ask?

What questions do you have for us?

USING THE SITE SELECTION TOOL IN THE CTSSB

OVERVIEW

The Site Selection Tool (SST) is a computer-based Excel spreadsheet designed to draw upon the wisdom of site-selection experts to aid the novice site selector—the Critical Task Site Selection Board (CTSSB) member—in understanding what makes a critical task best suited for institutional training, operational training, and self-study. It is intended to augment, but not replace, the judgment and experience of CTSSB members. Based on board member responses to questions about a task, it makes a recommendation for training site. When users disagree with the SST recommendation, they record their site placement opinion. The SST compiles the results across board members, capturing both SST recommendations and the board members' opinions. Tasks for which there is a high level of disagreement are flagged for discussion by the board. The SST thus improves the site recommendations of the CTSSB, and adds efficiency to the site selection process.

PURPOSE

The SST was developed to aid CTSSBs in the site-selection phase of the board process. Specifically, the SST has two functions.

Time Saving. The SST identifies tasks for which consensus regarding training site location is high, and thus discussion is unnecessary. Conversely, tasks for which consensus is low are highlighted to indicate the tasks most in need of discussion. In this way, the boards' time is allocated to discussing only those tasks upon which board members disagree.

Site-Selection Expert Insight. The SST aids Military Occupational Specialty (MOS) subject matter experts (SMEs)—the CTSSB members—in considering factors affecting training site decisions that they may not consider on their own. These factors have been identified by site-selection SMEs as key considerations for judging a task's suitability for training in the institution, at the unit, or via self-study. The SST does not purport to "know better" than the board members regarding their MOS expertise. Rather, it cues them about site selection factors, such as availability of resources at a unit, that may not be immediately recognized as points of consideration by these first-time CTSSB members.

DEVELOPMENT & LOGIC

The SST was developed through a research effort sponsored by the Institute for NCO Professional Development (TRADOC) and conducted by the U.S. Army Research Institute (ARI), Cognitive Performance Group (CPG), and Dynamics Research Corporation (DRC). Through this research, ARI, CPG and DRC consulted with site-selection SMEs across a range of MOSs and NCOES proponents to include course managers and instructors, course developers, and task analysis branch personnel. CTSSB members were also interviewed as the target user audience. The site-selection SMEs identified the key factors they consider, as well as their decision making process. These expert considerations were coalesced into the

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logic flow chart in Figure 1. For a more detailed description of each question and the rationale for its inclusion in the SST, see Attachment 1.

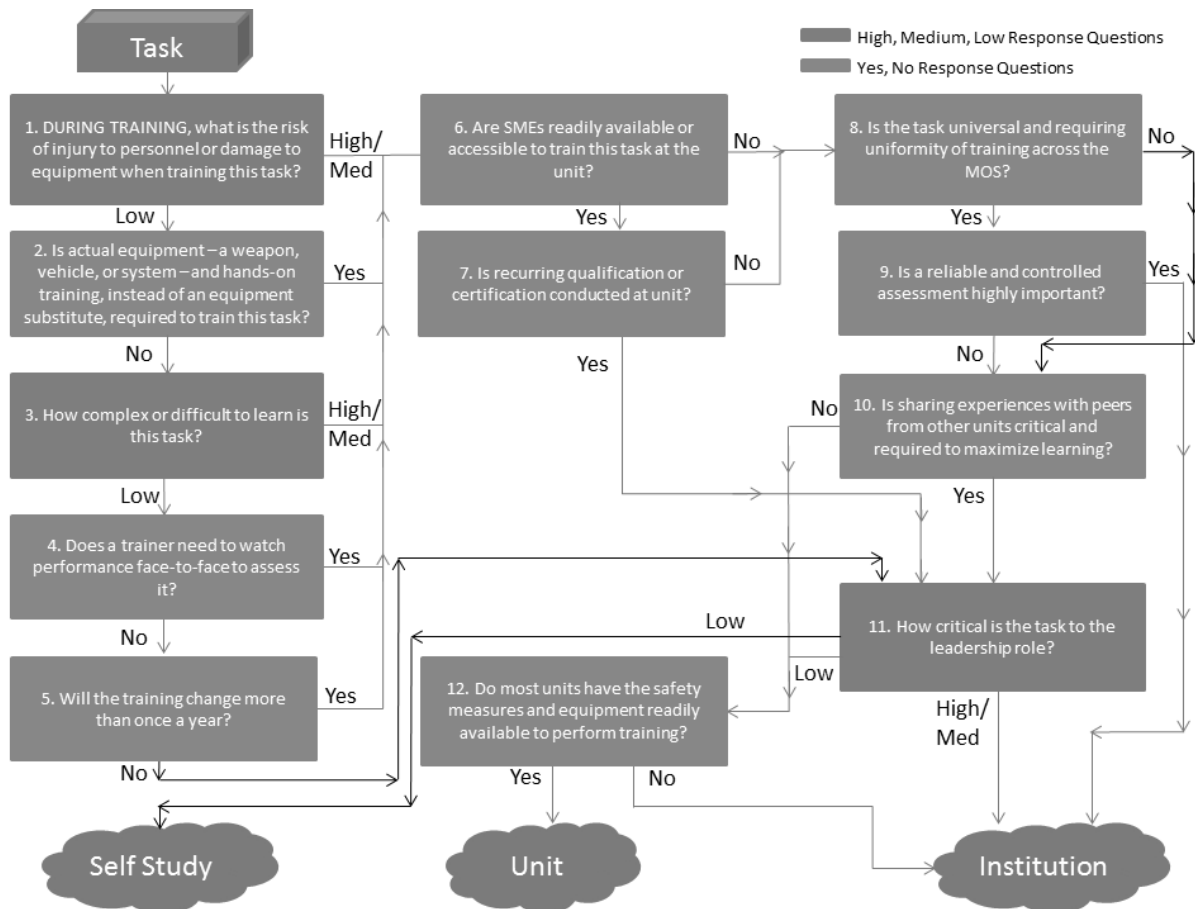


Figure 1. Site selection tool flow chart logic

The flow chart illustrates the internal process guiding the functionality in the SST. For each task considered, the first question set—Questions 1-5—works to identify whether self-study or distributed learning (dL) is feasible. Responding affirmatively to any of these questions, rules out self-study/dL. If self-study is ruled out, the next question set—Questions 6, 7, 11, and 12—considers whether unit training is preferable and feasible for the task. Affirmative answers to Questions 6 and 7, and a low criticality to leadership assessment for Question 11, prompt a potential suggestion of unit training. If the Question 12 response indicates most units have the required safety measures and equipment, then unit training is recommended. When the answer to Question 6 or 7 is a 'no,' then the factors in Questions 8-11 are considered to determine between institution and unit as the recommendation.

Important: It is usually not necessary to answer all questions to produce a site recommendation. This does not indicate that the skipped questions are not important. Instead, when the flow chart causes users to skip some questions, it is because (1) the logic flow indicates that the answer to that question will not produce additional information that would alter the recommendation, or (2) the earlier or remaining questions are more informative regarding the site recommendation than the skipped question(s). Users always have the

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option to disagree with the SST's recommendation, and user opinions are both noted and counted in the final SST compilation.

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PROCESS

General. The SST is intended to be used during the normal course of the CTSSB. Many CTSSBs are conducted with two distinct phases: (1) a critically vote to reduce the total task inventory to only tasks that are deemed critical, and (2) a site selection phase in which tasks appointed to the critical task list are recommended for institution, unit or self-study as the training site. The SST is particularly well suited to support this popular approach to conducting CTSSBs. In this approach, the individual board members use the SST via computers, and then the Administrator compiles all the board members' responses (see companion manual: *SST Instructions for Administrators* for step-by-step instructions on how to set up and run the SST files). In the compilation phase, the Administrator selects a desired consensus level, and tasks that do not reach that consensus level are flagged and highlighted in amber. These highlighted tasks are the tasks intended for discussion. Figure 2 below shows how the SST is recommended to fit into the CTSSB process.

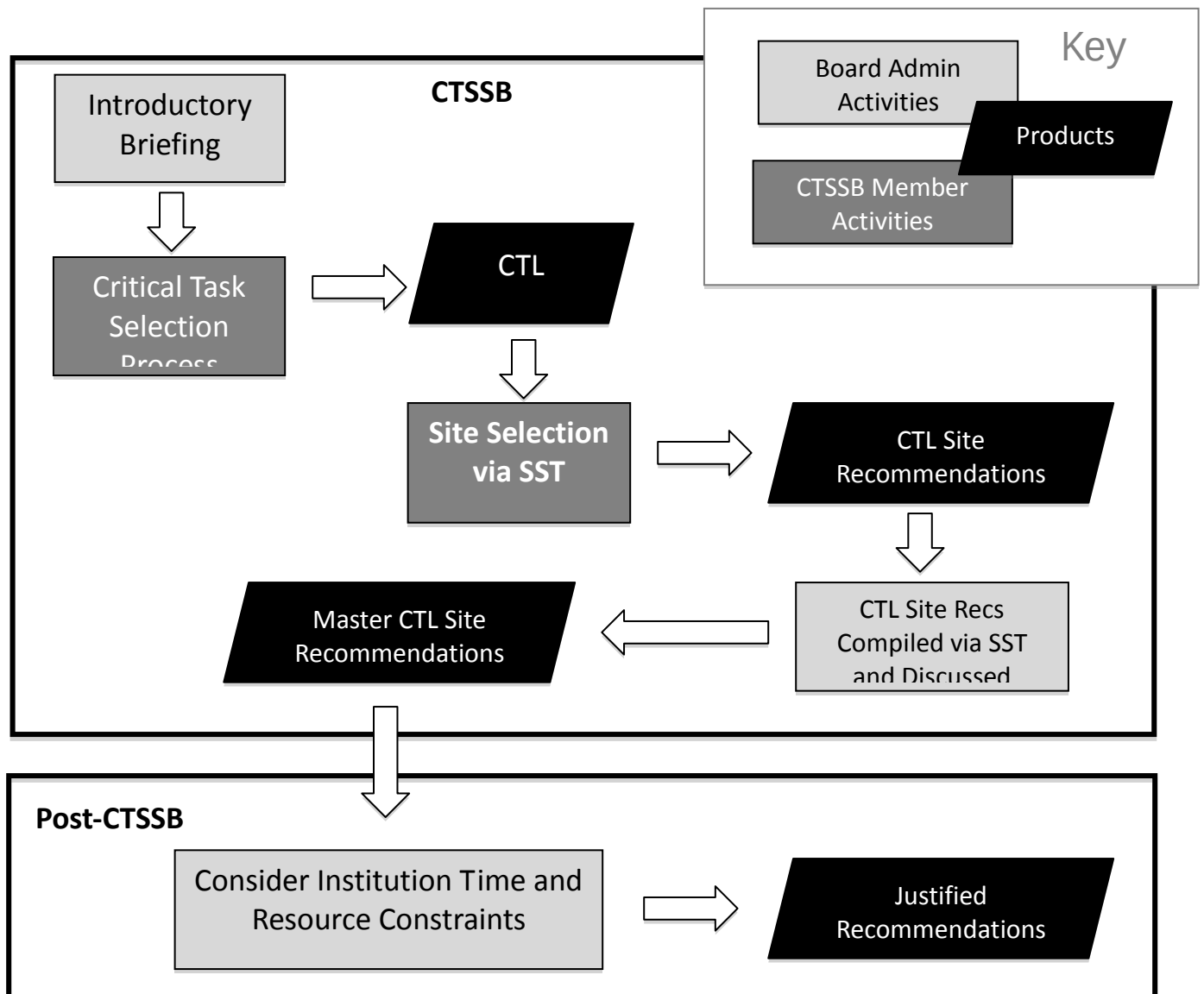


Figure 2. Recommended application of the SST in the CTSSB process

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Some boards will not be able to utilize the computer functionality of the SST due to security restrictions. In these cases, the SME guidance embedded in the SST can be applied using a paper-based version of the SST. For support, see the *Paper-Based Implementation Instructions*.

Prior to CTSSB. Before the CTSSB assembles, take the following steps:

1. Obtain and review the appropriate version of the *SST Instructions for Administrators*. If you are using Microsoft Excel 2007, use the corresponding instructions. If you are using Microsoft 2010, a separate set of instructions exists. If you find through repeated use of the SST that your computers continually prompt users to “enable content” and you would like to turn this feature off, apply the administrator instructions with the *Macros Enable* extension. You may also wish to use the *Macros Enable* instructions if, when loading board member files during the compilation phase, that not all board member files are loaded into the administrator file.
2. Identify your site information technology (IT) personnel and work with him or her to ensure every board member will be able to log into and access the SST files on the computers designated for use. Ask for his or her recommendation for distributing the SST files to board members, and then collecting the completed files (e.g., via email or other means).
3. Obtain and print out copies of the *SST Quick Reference Guide*, one for each board member. Plan to distribute these user instructions to each board member, or leave them at each SST computer terminal.
4. Once the critical task list is produced by the board, follow the appropriate *SST Instructions for Administrators* to set up for board member SST inputs.

Instructions to board member users. When using the SST, the board chair or the CTSSB administrator should prepare board members by informing them of the following:

- *The SST is designed to assist you in considering relevant factors for your site recommendations.*
- *Beginning with the first task on the list, and Question 1, work through the series of questions. Some responses may cause the tool to skip some of the questions. Please continue to the next highlighted box. When you answer a sufficient number of questions for each task, the SST will make a recommendation.*
- *If you make a mistake while completing a task, you can correct your response by clicking the “Reset” button for that particular task. “Reset” will erase all responses for the one task. If you attempt to change an answer without clicking “Reset”, the SST will not work correctly.*
- *When there are special circumstances surrounding a particular task, you may disagree with the recommendation of the SST. In these cases, please record your personal opinion of the most appropriate site, in addition to the site recommendation produced by the SST, in the personal recommendation column (Column S).*
- *When the SST produces a recommendation of “institution” but you believe the task is more appropriate for a functional course than for the course under review, select “institutional-functional” in the personal recommendation column.*
- *Answer the questions in order, skipping only any greyed-out cells the tool indicates you should skip.*

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- *If you are unfamiliar with a particular task and do not feel comfortable answering questions about it, you may skip that task and move on to the next task in the next row. However, you must skip the entire row and not just individual questions within the row.*
- *When all board members have completed their site recommendations for all tasks, the group will reconvene. When board members disagree about site placement, the board will discuss the task and resolve the differences of opinion to produce a final site recommendation.*
- *Work independently. The tool should represent your opinion.*
- *Do not try to trick the system. If you disagree with the SST, indicate that disagreement. However, if you try to game the system into producing your opinion as it's response, this will not only defeat the purpose of applying your expertise, but it will also introduce more variability in responses, produce low consensus on the task, and result in more tasks and more time required for group discussion.*
- *This tool relies on your knowledge and understanding of the tasks and should generally produce a recommendation that is in keeping with your expertise. However, if it does not, you should indicate that disagreement in Column S where you make your personal recommendation.*

OTHER USES

Pre-CTSSB. The SST is intended for use after the selection of critical tasks has occurred. However, if desired, the SST can be completed by board members prior to arriving at the CTSSB. If so desired, the tool with the total task inventory (all tasks that will be subject to a criticality vote) can be emailed to board members and completed at home-unit, assuming that the Soldier has access to Microsoft Excel 2007 or later. The board members will need to be reminded to enable macros. In addition, board members may have questions about the tasks' conditions, standards, and so forth. It is recommended that board members be provided with instructions on how to access this information on their own.

Sub-Divide Groups. Some MOSs experience greater diversity in experiences than others. In some cases, there may be large categories of tasks belonging to an MOS that are not practiced by many people in that MOS. In such a case (or for other reasons, as well), board administrators or users may feel that they should opt out of rating certain tasks. Although this is not the standard approach outlined in TRADOC Pamphlet 350-70-6, accommodating this preference while still utilizing the SST is feasible.

To allow only users with relevant experience to rate certain tasks, the normal SST procedures are used with one modification: instead of creating SST user files with all MOS tasks, divide the tasks and users into subgroups according to their relevant knowledge and experience. Create one folder and one set of SST files for each subset of critical tasks. Then, administer the files to the appropriate subgroup of board members. Compile the board member responses in the same way, but by subgroup rather than the board as a whole.

If only a few tasks are unfamiliar to a subset of the board members, it will not be necessary to generate task subsets and board member subgroups. Instead, encourage board members to opt out of recommending a site for tasks they do not feel qualified to

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assess, by skipping the entire row. The SST will calculate votes on a task and percentage agreement across only the board members who have produced a site recommendation.

COMPUTER USAGE

Army posts vary in their policies regarding access to computer labs, networks, share drives, and guest accounts. Therefore, it is not possible to advise regarding the optimal process for distribution of files to board members and return of files to the administrator for compilation. As most board members are likely not stationed at the location where the CTSSB is being conducted, it is common that they will need to secure guest accounts and log-ins for the computers. Depending on the specific guest account policies, users may be able to access share drives or the public folder on a specific computer's hard drive. During the development of the SST, email was used to distribute and return board member files. It is also possible to exchange files via writeable CDs (formatted to allow for rewriting). The board administrator must know how to access guest accounts and what access guest accounts will allow prior to proceeding with SST use. And, the distribution and return of files should be checked prior to the board's convening. Consultation with the site information technology (IT) personnel is recommended.

ATTACHMENT 1. QUESTION DEFINITIONS AND RATIONALE

Site Selection Tool Implementation Guidance

Question #	Site Selection Tool Questions		Purpose	Definition
1	Safety concern?	DURING TRAINING, what is the risk of injury to personnel or damage to equipment when training this task?	When there is a safety concern associated with the task, it requires face-to-face training and is not appropriate for self-study.	The danger associated with training or performing the task. Significant risk (life, limb, eyesight) may be linked with incorrect performance, either in training or operational contexts. This question is about the degree of risk associated with conducting the task.
2	Equipment and hands-on training required?	Is actual equipment – a weapon, vehicle, or system – and hands-on training, instead of an equipment substitute, required to train this task?	When a task requires that equipment be present during training so that a trainee can physically manipulate it, self-study is generally inappropriate.	The extent to which task performance and training requires motor or hands-on performance, or physical manipulation of tools, equipment, or items. This question is about whether the training <u>must</u> employ the actual equipment that would be used operationally, or whether computer based training, a simulation, or a classroom-based substitute can be used instead.
3	Difficult to learn?	How complex or difficult to learn is this task?	Tasks that are higher in complexity or difficulty are less suited for self-study and more suited for training by an instructor or SME.	The effort required to learn the task, usually based on the degree of difficulty of the concepts or procedures involved. Tasks that are more complex require a human trainer for instruction, to provide examples, and to answer questions. This question is about the degree of task complexity.
4	Assess performance by watching face-to-face?	Does a trainer need to watch performance face-to-face to assess it?	Tasks that require a trainer to observe the trainee's performance in order to assess it are not appropriate for self-study.	The extent to which a Soldier's performance must be observed in order to evaluate it against the standard. This question refers to whether a trainer is required to watch NCOs perform the task, in person, in order to conduct an accurate assessment.
5	Updates needed more than yearly?	Will the training change more than once a year?	When the training is subject to frequent change, self-study may be inappropriate due to the expense of modifying computer-based or distributed learning (dL) training content.	The likelihood that task standards will change and instruction will require modification to keep the pace with the evolving conditions. If the training content will change more than once a year, the task is probably not a good fit for self-study.

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Question #	Site Selection Tool Questions		Purpose	Definition
6	SMEs available or accessible at unit?	Are SMEs readily available or accessible to train this task at the unit?	If task expertise is not accessible at the operational unit, the task is more likely to require institutional training.	The extent to which trainers, small unit leaders, or subject matter experts are training the task at the unit. This question refers to whether subject matter expertise typically exists at the unit, and also whether those SMEs are readily available to NCOs for training.
7	Annual qual./cert. at unit?	Is recurring qualification or certification conducted at unit?	When operational units require annual qualification or certification, a program of training likely already resides at the unit.	Whether or not there is an annual training or qualification requirement that is satisfied at the operational unit. The rationale behind this question is that when annual testing occurs at the unit, there is a strong likelihood that NCOs receive the required training at the unit.
8	Universal task, uniform training required?	Is the task universal and requiring uniformity of training across the MOS?	When the task is relevant to all individuals in the MOS and also requires that all Soldiers be instructed on it in a standardized manner, then it is appropriate to be trained at the institution.	This question has two parts. Universality is about the extent to which the task is relevant to NCOs across the Force or across the MOS, regardless of job assignment. Standardization refers to how important it is that all Soldiers learn to conduct the task using the same procedure. This question asks whether most NCOs will employ the task on the job, and whether they must know or use the book standard to be effective.
9	Reliable and controlled assessment ?	Is a reliable and controlled assessment highly important?	Tasks that require extra assurance that Soldiers have grasped the important concepts and performance steps are better suited for institutional training, where a reliable assessment is more likely to always take place.	The importance associated with ensuring task training has been delivered and performance has been assessed for each and every NCO. Some tasks require an extra degree of assurance that every Soldier who has gone through the training actually grasps the task and can perform it effectively. This question refers to the criticality that an instructor be present to ensure each and every NCO is trained to standard.

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Question #	Site Selection Tool Questions		Purpose	Definition
10	Peer-to-peer learning critical and required?	Is sharing experiences with peers from other units critical and required to maximize learning?	When trainees gain a significant benefit from hearing about peers' experiences in a range of other mission or garrison contexts, institutional training is often more appropriate.	The degree to which there is a learning advantage associated with exposure to the experiences of Soldiers from other units or backgrounds. When a task, such as a combat tactic, must be adjusted for execution in different mission types or operational environments, there is great learning value in hearing examples of the many ways to conduct the task. This question refers to whether there is a particular benefit from exposure to peers from different units who can speak to how mission or environmental factors impact task execution.
11	Criticality to leadership?	How critical is the task to the leadership role?	Tasks with a heavy leadership component may be most amenable to an institutional course.	The importance or centrality of the task for being an effective leader. This question is about whether or not the task is one of the core functions of a leader.
12	Safety/equipment available at unit?	Do most units have the safety measures and equipment readily available to perform training?	When the other factors indicate unit training is more appropriate AND the unit has the required equipment and safety measures to conduct the training, then unit training is probably optimal.	Whether the necessary equipment or safety measures for training the task are <u>present</u> and <u>available</u> at most operational units. This question provides a check to ensure that if a task is recommended for training exclusively at the unit, most units across the Army will have the means to conduct that training.