Research Product 2018-01

Instructional Methods Tool

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# Instructional Methods Tool

This research was a follow-on project to two U.S. Training and Doctrine Command (TRADOC)-sponsored research projects on the implementation of the Army Learning Concept. Based on the prior research findings and TP 350-70-1, a tool was developed to support curriculum developers in selecting the most effective instructional methods for Army courses. The objective was to develop a framework of learner-centric pedagogies that would be useful in training developers and/or instructors and facilitators when they are designing/executing a course using the Army Learning Concept principles. The purpose of the framework was to aid decision makers in the selection of the most appropriate and effective instructional methodologies, pedagogies, and techniques for particular learning environments, instructional content, and differences in experience levels of the students and instructors. The framework was developed into a web-based digital application, the *Instructional Methods Tool* (http://www.benning.army.mil/mcoe/ARIFB/recent.htm) with specific attention paid to the practicality and utility of the tool for TRADOC training developers, instructors, and staff and faculty personnel. The tool was developed to supplement, not replace, current training developer tools or training management software, and should not be construed as a tool for an entire course, but for blocks of training or lessons within a course.
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The authors express their gratitude to Mr. H. Michael Starry, Chief Learning Enterprise Division, Training Integration Directorate (TID) TRADOC G-3/5/7 for supporting this follow-on research to two TRADOC-sponsored research projects on the implementation of the Army Learning Model (ALM) with the goal of supporting curriculum developers in selecting the most effective instructional methods for Army courses.

We also would like to thank all of the training developers and staff and faculty members at the Centers of Excellence who provided us with valuable input and feedback on the development of this tool. This feedback allowed us to create a better product for potential users of this tool such as training developers, instructors, and staff and faculty members.
APPENDIX H. MILITARY TASK EXAMPLES P2+P3-MANIPULATION AND PRECISION/LARGE GROUP/FAMILIAR WITH TASK ........................................................ H-1

APPENDIX I. MILITARY TASK EXAMPLES P2+P3-MANIPULATION AND PRECISION/SMALL GROUP/PROFICIENT WITH TASK .................................. I-1

APPENDIX J. MILITARY TASK EXAMPLES P2+P3-MANIPULATION AND PRECISION/LARGE GROUP/PROFICIENT WITH TASK ............................... J-1

APPENDIX K. MILITARY TASK EXAMPLES P4-ARTICULATION/SMALL GROUP/FAMILIAR WITH TASK ............................................................... K-1

APPENDIX L. MILITARY TASK EXAMPLES P4-ARTICULATION/LARGE GROUP/FAMILIAR WITH TASK .............................................................. L-1

APPENDIX M. MILITARY TASK EXAMPLES P4-ARTICULATION/SMALL GROUP/PROFICIENT WITH TASK .......................................................... M-1

APPENDIX N. MILITARY TASK EXAMPLES P4-ARTICULATION/LARGE GROUP/PROFICIENT WITH TASK ......................................................... N-1

APPENDIX O. MILITARY TASK EXAMPLES C1 - REMEMBERING/SMALL GROUP/NEW TO TASK AND FAMILIAR WITH TASK ............................. O-1

APPENDIX P. MILITARY TASK EXAMPLES C1 - REMEMBERING/LARGE GROUP/NEW TO TASK AND FAMILIAR WITH TASK ............................ P-1

APPENDIX Q. MILITARY TASK EXAMPLES C2+C3 – UNDERSTANDING AND APPLYING/SMALL GROUP/NEW TO TASK ........................................ Q-1

APPENDIX R. MILITARY TASK EXAMPLES C2+C3 – UNDERSTANDING AND APPLYING/LARGE GROUP/NEW AND FAMILIAR WITH TASK .......... R-1

APPENDIX S. MILITARY TASK EXAMPLES C2+C3 – UNDERSTANDING AND APPLYING/SMALL GROUP/FAMILIAR WITH TASK ................................ S-1

APPENDIX T. MILITARY TASK EXAMPLES C2+C3 – UNDERSTANDING AND APPLYING/LARGE GROUP/FAMILIAR WITH TASK ........................... T-1

APPENDIX U. MILITARY TASK EXAMPLES C2+C3 – UNDERSTANDING AND APPLYING/SMALL GROUP/PROFICIENT WITH TASK ......................... U-1
CONTENTS (continued)

APPENDIX V. MILITARY TASK EXAMPLES C2+C3 – UNDERSTANDING AND APPLYING/LARGE GROUP/PROFICIENT WITH TASK ........................................ V-1

APPENDIX W. MILITARY TASK EXAMPLES C4+C5+C6 – ANALYZING, EVALUATING, AND CREATING/SMALL GROUP/FAMILIAR WITH TASK .................................................................................................... W-1

APPENDIX X. MILITARY TASK EXAMPLES C4+C5+C6 – ANALYZING, EVALUATING, AND CREATING/LARGE GROUP/FAMILIAR WITH TASK ..................................................................................................... X-1

APPENDIX Y. MILITARY TASK EXAMPLES C4+C5+C6 – ANALYZING, EVALUATING, AND CREATING/SMALL GROUP/PROFICIENT WITH TASK ..................................................................................................... Y-1

APPENDIX Z. MILITARY TASK EXAMPLES C4+C5+C6 – ANALYZING, EVALUATING, AND CREATING/LARGE GROUP/PROFICIENT WITH TASK ...................................................................................................... Z-1

LIST OF TABLES

TABLE 1. EXAMPLE OF PSYCHOMOTOR AND COGNITIVE GROUP VERBS……….. 5

TABLE 2. PRELIMINARY COURSE, STUDENT, AND INSTRUCTOR VARIABLES……..7

LIST OF FIGURES

FIGURE 1. EXAMPLE OF U.S ARMY FORMAL SCHOOL COURSE CHARACTERISTICS ..................................................................................................2

FIGURE 2. EXAMPLE OF CHARACTERISTICS OF STUDENTS WHO ATTEND U.S. ARMY COURSES ..................................................................................................3

FIGURE 3. ATN ACTION VERB SERACH RESULTS FOR “CALCULATE”...............18

FIGURE 4. EXAMPLE OF INSTRUCTIONAL METHODS BASED ON TRAINING TIME AVAILABLE ..................................................................................................19

FIGURE 5. EXAMPLE OF MILITARY CONTEXT QUESTIONS BASED ON BLOOM’S COGNITIVE LEVEL KEY WORDS.................................................................20
FIGURE 6. EXAMPLE OF MILITARY CONTEXT QUESTIONS USED IN THE EXTENDING AND LIFTING QUESTION SEQUENCING TECHNIQUE ..........21

FIGURE 7. EXAMPLE OF INFORMATION PROVIDED TO THE FACILITATOR EXPLAINING THE BACKWARDS FADEING METHOD OF INSTRUCTION ....23

FIGURE 8. EXAMPLE OF BACKWARDS FADEING INSTRUCTIONAL METHOD FOR CALCULATING A TIMBER CUTTING CHARGE.................................................................24

FIGURE 9. EXAMPLE OF THE INSTRUCTIONAL METHODS TOOL WEB-BASED APPLICATION HOME PAGE..................................................................................28

FIGURE 10. EXAMPLE OF THE INSTRUCTIONAL METHODS SECTION .........................29

FIGURE 11. EXAMPLE OF THE PHYSICAL VERB TAB .......................................................30

FIGURE 12. EXAMPLE OF THE ADMINISTRATOR TAB .....................................................31
**Instructional Methods Tool**

**Background**

To better prepare Army Leaders and Soldiers to meet the future challenges across the spectrum of conflict, the US Army Training and Doctrine Command (TRADOC) developed a new Army Learning Model (ALM) in 2011 in its U.S. Army Learning Concept (ALC) for 2015 (TRADOC, 2011). This model called for a change in the way that training was typically conducted to one that was more “learner-centric”. These ideas are in line with requirements levied on academic institutions by accrediting bodies for the past 15-20 years (Huba & Freed, 2000). The ALM was integrated into the current U.S. Army Learning Concept for Training and Education doctrine by emphasizing learner-centric training and education to “develop agile, adaptable, and innovative Soldiers…with the competencies required to build cohesive teams and successfully lead them in complex and chaotic operating environments (TRADOC, 2017, p. 12).

Moving from a teacher-centric to a learner-centric approach requires a paradigm shift by instructors, students, course managers, and Leaders. The ALM called for classroom instruction to focus on problem-solving events, to tailor the individual learner’s training experience, and to reduce or eliminate the use of instructor-led presentations. To achieve these goals, instructional designers and developers need to possess a sound understanding of the types of instructional pedagogies that support these ideas. This is a challenging requirement because even academic professors who have had much training in this area struggle with determining the best approach for particular learners, content, proficiency levels, etc. Some training developers and instructors in the U.S. Army Centers of Excellence (CoEs) have had the opportunity to attend workshops with the goal of providing additional information regarding the ALC, especially in thinking how course outcomes may differ when the course is redesigned to be learner-centric. However, these workshops often discuss ideas at a general level or when discussed in the context of a course only a limited number of ideas are discussed in terms of learner-centered exercises. Although the ALC has provided a good start for the CoEs in thinking about this ‘paradigm shift’, many challenges still exist in determining the best instructional technique for a particular course.

**Research Objective**

The objective of this research was to determine and develop a framework of learner-centric pedagogies that would be useful to training developers and/or facilitators when they are designing/executing a course using ALC principles. The purpose of the framework was to aid decision makers in the selection of the most appropriate and effective instructional methodologies, pedagogies, and techniques for particular learning environments, instructional content, and differences in experience levels of the learners and instructors.

The framework was developed into a web-based digital application, the *Instructional Methods Tool*, to provide an output of learning methodologies (see http://www.benning.army.mil/mcoe/ARIFB/recent.htm) with specific attention paid to the practicality and utility of the tool for TRADOC training developers, instructors, and staff and faculty personnel. The final product was developed to supplement, not replace, current training...
developer tools or training management software, and should not be construed as a tool for an entire course, but for blocks of training or lessons within a course.

**Method**

The approach used to develop this research product followed a four-phase process. Phase one consisted of a comprehensive review of U.S. Army course characteristics. Phase two consisted of supporting efforts: a comprehensive literature review of empirically-based instructional pedagogies was conducted and then these instructional methods were aligned and grouped with the U.S. Army course characteristics. In phase three, sample Army tasks were identified for groups and military task content examples illustrating instructional methods were developed. In phase four, the materials of phase three were developed into a prototype digital application. The last phase involved an iterative review-revise process with the prototype application. Reviewers came from two different populations: TRADOC course training developers and TRADOC school staff and faculty managers.

**Phase I: U.S. Army Course Review**

The purpose of this review was to identify the scope of U.S. Army courses that the web-based tool would need to encompass. We focused our effort on two primary sources – Headquarters, Department of the Army (HQDA) Pamphlet (DA PAM) 351-4, *U.S. Army Formal Schools Catalog* (HQDA, 2016), and the web-based Army Training Requirements and Resources System (ATRRS).1 DA PAM 351-4 (2016) “is the official source of information on formal courses of instruction offered at active U.S. Army Schools and Training Centers” (p. 1). The catalog provides general course information (description, prerequisites, course length, etc.) that is used when selecting Soldiers to attend courses. We classified the general information as course characteristics and added another characteristic – learning environment – which relates to where the Soldiers learn, i.e. classroom, vehicle bay, or field site. Figure 1 depicts an example list of the course characteristics.

![Course Structure Diagram](image)

*Figure 1.* Example of U.S. Army formal school course characteristics.

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1 Both the DA PAM and ATRRS can be found at https://www.atrrs.army.mil/atrrscc/.
The course characteristics describe each course and differ for each course. For example, the type/purpose of the course can range from simple trade skill producing courses, such as Wheeled Vehicle Mechanic, to more esoteric courses, such as Cyber Operations Specialist. The prerequisites identify required knowledge, skills, and abilities, etc., and in the case of U.S. Army courses, can include medical clearance and rank. The length of the course can vary from 40 to 1400 academic hours or greater, while the course content can focus on leadership, doctrinal, or technical training. The learning environment was added as students attending Army courses can train in numerous environments; for example, leadership and doctrinal courses combine both classroom and field environments, while technical skill courses could include vehicle bays, demolition ranges, or in and under water. We posited that the learning environment could impact the instructional methodology and included it for consideration as a course characteristic. To add to the readers’ perspective on the scope of U.S. Army courses, ATRRS listed 20,960 courses for fiscal year 2016.

When considering which instructional method is appropriate for what Army course, you must consider student characteristics. U.S. Army course execution is impacted by the homogenous and heterogeneous nature of the student population, that is, Soldiers, Sailors, Airmen, and Marines. U.S. Army courses can include learners who are grouped by similar characteristics (homogeneity) – i.e., military occupational specialty (MOS) or rank – as well as learners grouped by differing characteristics (heterogeneity) – i.e., branch of service or level of education. Figure 2 depicts an example of what we identified as these student characteristics.

![Figure 2. Example of characteristics of students who attend U.S. Army courses.](image)

The number of learners could be considered as a course or student characteristic; for our purposes we decided to include it as a student characteristic. For example, the number of students in Army courses can range from less than 10 for highly specialized courses (Immunization/Allergy Specialty) up to 650 for leadership courses (U.S. Army Sergeants Major Course [SMC]). These two courses best typify the variation in characteristics of the student population. The Immunization/Allergy Specialty is designed for the Immunology-Allergy Technician only (homogeneity), while SMC students are from any Army MOS, can be from any branch of service (Army, Navy, Air Force, and Coast Guard), including foreign armed forces (heterogeneity). Similarly, student experience, in the individual and collective task context, can

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2 Certain U.S. Army courses are open to all branches of the Department of Defense, to include Department of the Army Civilians.
vary within courses the same way that each student’s level of education can differ. Continuing with the SMC example to highlight this variance, part of the SMC program of instruction (POI) requires small groups of students (15) to conduct training on the military decision making process (MDMP). The level of student experience with this task ranged from Infantry and Special Forces Soldiers, who had vast experience with this task, to Public Relations and Foreign Army Soldiers, who had no experience with this task. Moreover, the variance in level of post-high school education within this same group ranged from Soldiers with 1-year of college to Soldiers with multiple graduate degrees.

Lastly we considered instructor characteristics. According to TRADOC Regulation (TR) 350-18 (2010) “AR 614-200, DA Pam 611-21, and TR 350-10, and appropriate CMP provide guidance for instructor grade and experience requirements” (p. 25). As Army instructor grade [rank] and experience are stipulated in regulatory guidance we elected to forego using instructor characteristics as variables in the web-based tool except for instructor-to-student ratio. Instructor-to-student ratios are addressed in TRADOC Pamphlet (TP) 350-70-14 Training and Education Development in Support of the Institutional Domain (TRADOC, 2015) which states that for “problem-based, learner-focused courses, as described by the ALM, ratios of 1:8 or 1:16 will be most common” (p. 81). It also lists such factors as safety (e.g. throwing a live grenade requires a 1:1 ratio), facility limitations, equipment availability, and manpower limitations that affect the instructor-to-student ratio. Reviews of a subset of TRADOC course POIs produced additional ratios of 1:20 to 1:50. Based on the variance of ratios identified, we elected to break instructor-to-student ratios into two categories – small group [<=1:16] and large group [>=1:17]. Given that the combinations of course, student, and instructor characteristics, the resulting number of variations was overwhelming (approximately 128 high level combinations) especially when considering programming logic for a web-based tool, and the alignment of instructional methodologies, we decided to reduce the combinations to a more manageable number. The reduction process is described in the next phase.

Phase II: Instructional Methods and U.S. Army Course Alignment

Phase II required two distinct steps. First, we needed to reduce the number of course characteristics to a more manageable number in order to facilitate alignment with instructional methodologies; and second, we needed to align instructional methods with course characteristics.

Reducing the combinations. To reduce the number of variables, we reevaluated our initial approach. Instead of focusing on all of the characteristics and variations among the courses and the learners, we looked for an overarching factor. Experience with U.S. Army courses led us to consider looking at both courses and learners from a task-based approach.

U.S. Army courses. Army courses, while differing in type/purpose, content, length, etc., are similar in one aspect – they teach tasks. Army tasks are either common tasks that apply to all Soldiers or job specific tasks identified for each MOS. Each task is assigned a title which “sums up the action to be performed” (TRADOC, 2012, p. 84) using a standard verb to define the action, i.e. Maintain an M119 Buffer Mechanism. We found that in order to standardize the
writing of task titles, TRADOC provided a list of 195 verbs for use in describing collective and common individual tasks. TRADOC further divided these verbs into psychomotor and cognitive groups based on the desired performance of the Soldiers. Verbs within those groups were further sub-divided into psychomotor and cognitive levels (TRADOC, 2012, p. 177), and Table 1 includes examples of verbs grouped by these levels (the full list of verbs and associated groups and levels can be found in TRADOC PAM 350-70-1, Appendix E, TRADOC, 2012).

Table 1

<table>
<thead>
<tr>
<th>Psychomotor Level</th>
<th>Verb</th>
<th>Cognitive Level</th>
<th>Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Imitation:</td>
<td>Disassemble</td>
<td>Remembering:</td>
<td>Identify</td>
</tr>
<tr>
<td>Copy action of another; observe and replicate</td>
<td>Recall or recognize information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Manipulation:</td>
<td>Align</td>
<td>Understanding:</td>
<td>Confirm</td>
</tr>
<tr>
<td>Reproduce activity from instruction or memory</td>
<td>Understand meaning, re-state data in one's own words, interpret, extrapolate, translate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Precision:</td>
<td>Adjust</td>
<td>Applying:</td>
<td>Calculate</td>
</tr>
<tr>
<td>Execute skill reliably, independent of help, activity is quick, smooth, and accurate</td>
<td>Use or apply knowledge, put theory into practice, use knowledge in response to real circumstances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapt and integrate expertise to satisfy a new context or task</td>
<td>Interpret elements, organizational principles, structure, construction, internal relationships; quality, reliability of individual components</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Naturalization:*</td>
<td></td>
<td>Evaluating:</td>
<td>Assess</td>
</tr>
<tr>
<td>Instinctive, effortless, unconscious mastery of activity and related skills at strategic level</td>
<td>Assess effectiveness of whole concepts, in relation to values, outputs, efficacy, viability; critical thinking, strategic comparison and review; judgment relating to external criteria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Creating</td>
<td></td>
<td>Creating</td>
<td>Revise</td>
</tr>
<tr>
<td>Develop new unique structures, systems, models, approaches, ideas; creative thinking, operations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* No verbs were categorized at this level of psychomotor performance.

We elected to use these task-based verb groupings as the course variables in lieu of the many differing course characteristics for two reasons. One, by using these verb groupings we would
provide the end user – the TRADOC Training Developer, Instructor, and Staff and Faculty member – a familiar reference point within the tool, and two, we would reduce the number of course characteristics to a more manageable number for alignment of instructional methods and software programming logic.

**U.S. Army Course Students.** We applied the same task-based approach to student characteristics. Our rationale was based on previous research observations and our personal experience with learners in Army courses.

Students arrive at Army courses with varying degrees of task experience. Consider two examples – the civilian who joins the Army and the senior noncommissioned officers (NCOs) at the pinnacle of their careers. The civilians who join the Army have varying experience with Army tasks at the basic level. Some of them come from backgrounds that are conducive to military tasks – boy/girl scouts, Junior Reserve Officer Training Corps (JROTC), shooting clubs, life-guards, etc. – while others have no relevant experience. Similarly, SMC students, as previously stated, have varying task experience with lessons conducted in the SMC POI. The senior NCOs’ MOS, prior assignments, deployments, and military schools affect their level of experience. For example, in the case of the MDMP training, Operations Division NCOs are more likely to have conducted or participated in this task more so than Force Sustainment Division NCOs.

The key to grouping students revolved around the experience with the task, for example, Combat Engineers who have the knowledge of basic demolitions – initiating devices, demolition characteristics, etc. – would be considered new to the advanced task of Calculate Timber-Cutting Charges which involves the application of prior knowledge under a new context. Therefore, we quantified students into three groups: New to Task, Familiar with Task, and Proficient with Task:

- **New to Task** – No task knowledge: No fundamentals (Crawl stage of training);
- **Familiar with Task** – Preliminary task knowledge: Understands fundamentals (Walk stage of training); and
- **Proficient with Task** – Definitive task knowledge: Executes the fundamentals (Run stage of training).

Grouping students into three task-based groups allowed us to further reduce the variables to a more manageable number. Moreover, we strove to define each group in terms that would be familiar to the TRADOC Training Developer.

When we combined the course and student variables with the two instructor variables (group sizes) we had a more manageable number of combinations. Table 2 lists the preliminary course, student, and instructor variables.

---

4 Crawl, Walk, Run is a progressive training regimen where training begins at the simple fundamental level and progresses to more complex levels.
Table 2

*Preliminary Course, Student, and Instructor variables.*

<table>
<thead>
<tr>
<th>Course</th>
<th>Student</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychomotor*</td>
<td>Cognitive</td>
<td>Soldier task experience</td>
</tr>
<tr>
<td>Imitation</td>
<td>Remembering</td>
<td>New to Task</td>
</tr>
<tr>
<td>Manipulation</td>
<td>Understanding</td>
<td>Familiar with Task</td>
</tr>
<tr>
<td>Precision</td>
<td>Applying</td>
<td>Proficient with Task</td>
</tr>
<tr>
<td>Articulation</td>
<td>Analyzing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creating</td>
<td></td>
</tr>
</tbody>
</table>

*The naturalization level was not included as no verbs were categorized at this level of psychomotor performance.*

However, when calculating the number of combinations from these variables we still arrived at 60 combinations – 24 psychomotor and 36 cognitive. When considering that each combination would have to align with an instructional methodology, we determined that 60 separate combinations were too many and proceeded to reduce the numbers further. This time we reviewed definitions of each psychomotor and cognitive level and determined we could combine similar levels. In combining levels, we referred to resources reflecting Bloom’s Taxonomy (e.g., Krathwohl, 2002) and Dave’s psychomotor levels (e.g., Huitt, 2003) as indicated by TRADOC PAM 350-70-1, Appendix E (TRADOC, 2012). The results are depicted in Table 3.

Table 3

*Final Course, Student, and Instructor variables.*

<table>
<thead>
<tr>
<th>Course</th>
<th>Student</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychomotor</td>
<td>Cognitive</td>
<td>Soldier task experience</td>
</tr>
<tr>
<td>Imitation</td>
<td>Remembering</td>
<td>New to Task</td>
</tr>
<tr>
<td>Manipulation and Precision</td>
<td>Understanding and Applying</td>
<td>Familiar with Task</td>
</tr>
<tr>
<td>Articulation</td>
<td>Analyzing, Evaluating, and Creating</td>
<td>Proficient with Task</td>
</tr>
</tbody>
</table>

By combining some levels we reduced the number of combinations from 60 to 36 – 18 psychomotor and 18 cognitive. The resulting combinations became the foundation on which to align instructional methods.

**Instructional methods literature review.** An extensive literature review was conducted to identify empirically-based, validated instructional methods for developing the psychomotor and cognitive skills levels described above. With this purpose in mind, the review was limited to meta-analytic research and research reviews investigating the effects of different instructional...
methods on course outcomes across multiple samples (see Alfieri, Brooks, Aldrich, & Tenenbaum, 2011; Dochy, Segers, den Bossche, & Gijbels, 2003; Hoffman & Feltoch, 2010; Kozlowski & DeShon, 2005; Merrill, 2002, 2006; Montague & Knirk, 1993; Ning & Downing, 2012; Resnick, 2010; Schwartz & Arena, 2013; Walker & Leary, 2009). For example, a rigorous meta-analysis demonstrated the powerful effects of teaching practices, which provide structure and guidance during the learning experiences, on the development of a range of psychomotor, social/verbal, and cognitive skills as well as on course outcomes (Alfieri et al., 2011, p. 12). The findings suggest that to maximize learning and increase performance, instructional methods should include worked examples and other guided exercises that require learners to explain their ideas and provide feedback on their performance. However, as the amount of needed guidance likely depends upon one’s background experiences with the tasks/content (e.g., Dyer, Singh, & Clark, 2005), the framework suggests differing methods for learners who are novice, familiar, and expert with the task/content.

Psychomotor learning levels. Further, in conducting the literature review, the specific results of relevant articles were reflected in the framework according to the content combinations as described in Table 3 (e.g., Alfieri et al., 2011; Anderson, Fincham, & Douglass, 1997; Hemlo-Silver, Duncan, & Chinn, 2007; Hockey, Sauer, & Wastell, 2007; Kirschner, Sweller, & Clark, 2006; Klahr & Nigam, 2004; Magliaro, Lockee, & Burton, 2005; Matlen & Klahr, 2013; Montague & Knirk, 1993; Proctor & Dutta, 1995; Rosen et al., 2010; Schaefer & Dyer, 2013; Schaefer, Irvin, Blankenbeckler, & Brogdon, 2013; Strand-Cary & Klahr, 2008; Sweller, van Merriënboer, & Paas, 1998; Merrill, 2002, 2005; van Merriënboer, Kirschner, & Kester, 2003).

Overall, to achieve the Psychomotor learning levels, instructional methods for novice learners reflected direct instruction methods followed by experiential methods. For example, for the Psychomotor, Imitation, Small Group, New to Task combination, the following empirically-validated direct-instruction methods were included in the framework:

- Demonstration of procedures in steps (students observe each step then practice);
- Facilitator could then provide a completion practical exercise (PE) where the students first complete missing steps and then complete the entire task on their own;
- A backwards chaining PE where the last component of the task is practiced first so that students are provided with knowledge of the results prior to learning the beginning components (e.g., bombing a target);
- A backwards fading PE where students are first shown the complete worked example and certain components are then removed until finally the students complete the entire task on their own;
- A forward chaining PE in which the order of the task performance is practiced from first to last; as time allows multiple rehearsals with instructor feedback should be performed; key is feedback by facilitators;
- Instructors/facilitators/teachers should direct the pupil's attention to important cues and rules (Cues can be seen, heard or felt), give clear verbal descriptions, and inform the learner of the cues that he will respond to and rules he will follow when using the skill;
- Break the task into subtasks if possible and sequence in the order that they are performed;
• Simplify the task at the start of practice but do not violate the pattern of the task as a whole;
• Demonstration or verbal explanation tells the students what responses under their control and to what cues they should react;
• Instructor/facilitator/teacher should watch students intently to provide prompt and accurate feedback about his performance;
• Research shows that focus on the performers movements (fingers, hands, and head) are relatively ineffective. Rather, directing attention to the effects of the individual movements on the environment results in more effective performance and learning. Instructors/facilitators/teachers need to monitor to help students avoid establishing a faulty habit. Judge progress in terms of technique vice output;
• Devices to record what the learner did are valuable (tape records for speech teachers, coaches take motion pictures, etc.); and
• If learning how to conduct tasks on a larger system, the instructors/facilitators/teachers may isolate the features and functions of the system that are required to perform the steps of specific tasks. For example, only those menu choices needed to perform certain tasks are made available to the students. The students are directed only to those functions that are needed at that time in the course. Instructors could employ software that "takes over the input device (e.g., mouse)" of the student to show the student which parts of the user interface to select (e.g., menu choices, buttons, graphics, or indexes). Advantages of this method is that users spend less time practicing the steps and components of the task and less time recovering from errors. Learning by discovery on the complete system is inefficient.

If the students possessed some familiarity with the content and to achieve the Imitation level, the instructional methods reflected direct instruction methods to review the content and as a check on learning followed by experiential methods. Thus, the following direct and experiential methods were included in the framework based on the literature review results for learning in small group settings:

• Students should receive the demonstration first as a refresher then could practice and demonstrate to the class as a check on learning;
• They should receive feedback from the facilitators, and if they show proficiency they could then assist students who are rehearsing the procedures as indicated above and who are performing completion tasks; and
• They should assist in providing feedback and on-the-spot corrections and could make their own decisions regarding which trial they would want feedback. Feedback frequency may be less important than the individuals' ability to choose or not choose feedback. May lead to more active involvement by the learner, and learners increasing their effort during practice.

To achieve the next level of psychomotor learning, Manipulation + Precision, it was determined that students would already possess a level of familiarity with the content. It is recommended that instructors first assess the students to ensure they possess the requisite knowledge and skills for advancing to this level. Then, a combination of direct and experiential instructional methods can be employed in small group learning settings, such as:
• In addition to continued rehearsals of each step of the procedural/psychomotor task, exercises should focus on having students explain why they think they are performing certain errors;
• Exercises should present students with faults in the procedures/steps and have the students troubleshoot these faults in order to successfully address the problems;
• Facilitators should ask students to explain their thought processes while troubleshooting;
• Facilitators could provide additional procedural information as required (just-in-time procedural information) in order for the students to successfully complete the exercises;
• Resources should be made available to reduce cognitive load such as memory joggers, mathematical formulas, specs, etc.;
• The key is for students to receive additional practice while explaining their steps, errors, and demonstrating the ability to troubleshoot;
• Assessments could determine if students can perform the tasks without errors across multiple situations;
• Instructors can provide multiple varied examples and determine if students can perform these tasks in novel varied contexts. This allows students to learn the deep structural aspects of the procedures even if the surface level conditions change;
• Students could first be assessed with completion tasks in novel contexts and then on their own;
• Feedback is key for the students to know where they are making errors, and then the facilitators should ask the students why they think they are making these errors in a new context;
• Learning scaffolds should be reduced until students are operating, creating, navigating on their own without errors; and
• Simulators, desktop trainers, etc. are valuable technologies to provide students with varied performance examples and to test their performance of the procedural tasks;
• If students practice before knowing the correct general pattern of the task – they are likely to practice wrong actions;
• If given a large amount of explanation before practicing the task, then the students will understand little of the explanation;
• Need a balance between explanation, practice, and further explanation;
• Practicing in context, using realistic, significant cues, varying practice materials and conditions, and assessing skills before new scenario is given;
• Students should practice in the greatest variety of situations they can handle;
• Instructor/facilitator/teacher should watch students intently to provide prompt and accurate feedback about their performance;
• Instructors need to monitor to help students avoid establishing a faulty habit;
• Instructors should judge progress in terms of technique vice output;
• Devices to record the students’ performance are valuable (tape records for speech teachers, coaches take motion pictures, etc.); and
• Feedback frequency may be less important than the individuals’ ability to choose or not choose feedback. This may lead to more active involvement by the students, thereby increasing their effort during practice. Instructors could allow the students to decide after which trial they want feedback.
To achieve this level of psychomotor learning, P2 (Manipulation + Precision) for students who were already proficient with the content, it is recommended to first assess the students to ensure their proficiency and then employ the following direct and experiential instructional methods for learning in small groups:

- Students need to demonstrate proficiency either by demonstrating at the beginning of the class or taking a pre-test and 'testing' out;
- These students also should demonstrate proficiency by performing the tasks on their own in varied contexts (if they perform the tasks with errors then they should be given completion tasks with feedback from the facilitators until they demonstrate proficiency);
- They should be able to provide full explanations of why they are performing certain steps, how to troubleshoot faults, etc.;
- They should be tested across in varied contexts until a high level of proficiency is demonstrated;
- Once this is achieved they can perform as peer coaches to the less experienced students as these students are troubleshooting, explaining troubleshooting strategies, testing skills in novel contexts, etc.;
- Simulators, desktop trainers, etc. are valuable technologies to provide students with varied performance examples and to test their performance of the procedural tasks. The skill of adapting to different situational requirements is developed through variability in practice conditions; and
- Test under high-workload conditions.

To achieve the Articulation (P3) level, it was determined that students would already possess a level of familiarity with the content. Thus, the following combination of direct and experiential instructional methods were included in the framework for this combination in small group settings:

- Examples of how two or more tasks are combined as part of a system should be demonstrated to the students;
- Completion tasks or backwards fading of complete examples of how two or more tasks are performed together could be provided to the students;
- Once students practice performing two or more tasks together and receive feedback from the instructors then they can receive examples and exercises across multiple contexts for varied practice. This allows students to learn the deep structural aspects of the procedures even if the surface level conditions change;
- Students should be tested on the full integration of the two or more tasks and be provided with feedback by the facilitators;
- Facilitators should ask the students to explain why they are performing certain errors, why they are performing certain steps, how they might troubleshoot faults, etc.;
- Facilitators could increase the complexity of their questions, the rate at which they ask questions, etc. to induce realism of performing these tasks in high stakes dynamic situations;
- Facilitators should continue to assess students at all of the psychomotor levels to ensure that students perform the individual tasks (including sub-tasks and sub-goals) at an
autonomous level and continue to provide feedback on how the students are performing multiple tasks together;

- Assessments could include asking students to perform multiple tasks in varied and novel conditions (e.g., performing tasks in novel terrain, weather);
- Facilitators can provide demonstrations of how individual tasks are integrated into larger systems and performed as part of collective tasks. As such, exercises could require students to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance;
- Assessments could focus on how students visualize or perform individual tasks within larger systems, teams, etc.;
- Rehearsals, practice, assessments, and feedback could focus on the integration of these skills in a larger context; and
- Simulators could be employed to rehearse and practice crew/team collective performance prior to live exercises.

For the *Articulation psychomotor level*, students who were proficient with the content, the following direct and experiential instructional methods were included for learning in small groups:

- Exercises require students to integrate individual tasks into a larger system, collective performance, etc.;
- Facilitators could ask students to explain how their tasks are integrated with crew-based performance, larger systems etc.;
- Exercises could focus on how they troubleshoot integration issues and perform two or more integrated tasks;
- Students could coach and mentor less experienced students;
- With longer class times, highly proficient students could design products, repair live equipment, perform on-the-job training, shadow instructors, demonstrate tasks to different audiences, prepare explanations, briefings, papers to unit leaders, stakeholders, etc.; and
- With sensori motor tasks "choking" may arise from specific task characteristics embedded in tasks that are susceptible to performance pressure (complexity and/or proceduralization).

To achieve the initial psychomotor learning level, *Imitation*, in larger learning group contexts, the following recommendations were made to maximize the effectiveness of the recommended instructional methods indicated above:

- In large groups, facilitators first demonstrate procedures in steps. Students observe each step then practice in small groups;
- The large group can be broken up into smaller groups in each corner of the classroom or outside areas. Facilitators could then provide an entire worked example to the larger group, and the PE could be for students in smaller groups to first complete missing steps and then complete the entire task on their own - backwards fading);
- As time allows multiple rehearsals with instructor feedback should be performed in small groups; the key is feedback to individuals by facilitators;
• A culminating event could be for one individual from each group to demonstrate the procedures to the large group;
• Instructors/facilitators/teachers should direct the students’ attention to important cues and rules (cues can be seen, heard or felt); giving clear verbal descriptions; informing the students of the cues that they will respond to and rules they will follow when using the skills;
• Break the task into sub-tasks if possible and sequence in the order that they are performed. Simplify the task at the start of practice but do not violate the pattern of the task as a whole;
• Demonstration or verbal explanation tells the students what responses are under their control and to what cues they should react. Instructor/facilitator/teacher should watch students intently to provide prompt and accurate feedback about their performance;
• Research shows that a focus on the performers’ movements (fingers, hands, and head) are relatively ineffective. Rather directing attention to the effects of the individual movements on the environment results in more effective performance and learning. Instructors/facilitators/teachers need to monitor to help students avoid establishing a faulty habit; and
• Judge progress in terms of technique vice output. Devices that record what the students’ performance are valuable (tape records for speech teachers, coaches take motion pictures, etc.)

To achieve the psychomotor learning level *Manipulation + Precision*, the recommended instructional methods reflected the need to assess students to ensure that they possessed the skills required at that level, to assist the instructors in providing feedback and on-the-spot corrections, and assigning hands-on work to smaller groups. As the P3 Psychomotor learning level involves performing two or more tasks together, if the class has approximately 30 desktop trainers then the approach would be similar to that of the small group description. If it is a 200-person class without technology then P3 might not be possible with a large group.

**Cognitive learning levels.** To achieve the cognitive learning levels, recommended instructional methods reflected empirically-based approaches for each level (e.g., Alfieri et al., 2011; Haydon, Mancil, Kroeger, McLeskey, & Lin, 2011; Kalaian & Kasim, 2014; Kyndt et al., 2013; Montague & Knirk, 1993; Schwartz, Chase, Oppezzo, & Chin, 2011; Volger, 2008; Tomcho & Foels, 2012; Zbylut, Brunner, Vowels, & Kim, 2007). For the cognitive level *Remembering* for both novice students and students who had some familiarity with the content, the following direct instructional methods were recommended for classes taught in small groups:

- Presentation of the information with guided notes (students are given partially completed notes and are required to fill in the information as the presentation is conducted);
- Facilitator asks inquiry questions and could then provide a completion task(s) (first complete missing steps and then complete the entire task on their own - backwards fading) as PE(s) and time allows;
- Multiple practice sessions with instructor feedback is key to being able to recall learned information; and
- With a longer timeframe, a cycle of presentations with examples, probing questions that ask students to explain their responses, and feedback regarding these explanations could be conducted to provide additional opportunities for the students to learn the information.
For students who are more familiar with the content, they should receive the presented information as a refresher, but instructors may want to connect the information with knowledge that the students already know (advanced organizers). Then, the students could demonstrate that they can recall the information as a check on learning. They should receive feedback from the facilitators, and if they show proficiency they could then assist students who are conducting the PEs as indicated above. They should assist in providing feedback and on-the-spot corrections.

To achieve the C2, *Understanding and Applying*, level for novice learners, the following experiential methods were recommended:

- If no pre-class work can be assigned, then start the class with a PE designed to have students work on solving a particular problem, review elements of a case study, research possible reasons for particular mission outcomes, etc. After the students have engaged with the PE, facilitators could then provide more detailed information regarding the specific material and information to be learned. Following this presentation of information, a PE should be conducted which requires the students to apply this information to a novel context. The context of the second PE should have the same objectives as the first PE, however, the conditions and surface elements should differ;
- If the class has a short timeframe, then the facilitator needs to provide feedback to the students on their attempted solutions, explain the intended outcomes, discuss that although the contexts differed the knowledge and skills to perform successfully in those situations were the same; and
- With a longer timeframe, multiple PEs could be conducted with varied contexts so that the students can practice applying their knowledge and skills across a range of possible plausible situations. Facilitators should ask probing questions that ask students to explain their responses and provide feedback regarding these explanations. If pre-class work can be assigned (read-aheads, interactive multimedia instruction, presentation slides, Army doctrinal manuals and pamphlets), then face-to-face class time can be used by the facilitator to ask the students questions about the reading, such as how they would apply the information across a range of contexts. Homework also could consist of having the students apply the information to their own experiences, and then the students could discuss these experiences in class. More complex examples could be provided by the instructors as the students show proficiency in applying the learned information. The facilitators should provide feedback to the students regarding whether their understanding and application of the material are accurate, realistic, practical, meets the standard, etc. By providing additional cues, prompts, procedural information, memory joggers, etc. as just-in-time information, facilitators can determine whether the students can reach a higher level of understanding of the material. As additional procedural information is provided, backwards fading exercises may be used to assess students' proficiency with the new material.

To achieve the cognitive level *Understanding and Applying* for students who are familiar with the content, the following experiential methods were recommended:

- Video-taped lectures, PowerPoint presentations, and read-aheads could all be assigned as refresher or new information to be learned as assigned pre-class work or homework.
Then, in class, facilitators could maximize the synchronous/face-to-face time with activities that require the students to participate in group work, case study discussions, explanations of applications of the content to novel contexts, etc.;

- Homework also could consist of having the students apply the information to their own experiences, and then the students could discuss these experiences in class;
- More complex examples could be provided by the instructors as the students show proficiency in applying the learned information;
- PEs could be assigned in which the conditions and surface elements differ;
- If the class has a short timeframe, then the facilitator needs to provide feedback to the students on their attempted solutions, explain the intended outcomes, and discuss that, although the contexts differed, the knowledge and skills to perform successfully in those situations were the same;
- With a longer timeframe, multiple PEs could be conducted with varied contexts so that the students can practice applying their knowledge and skills across a range of possible plausible situations;
- The facilitators should provide feedback to the students regarding whether their understanding and application of the material is accurate, realistic, practical, meets the standard, etc.;
- By providing additional cues, prompts, procedural information, memory joggers, etc. as just-in-time information, facilitators can determine whether the students can reach a higher level of understanding of the material;
- One way to sequence the class is to have students first use specific examples from their prior experience or through case studies to further learn the specific knowledge and information of the concepts, then the students could practice this knowledge by applying the specific declarative knowledge structures, rules, and procedures to novel contexts;
- Facilitators should ask probing, rapid questions that ask students to explain their responses and provide feedback regarding these explanations;
- PEs also could consist of troubleshooting faults, problem solving errors, conducting analog procedures in case equipment fails (e.g., navigate plane without instruments), testing the students’ expertise level by determining whether the declarative knowledge and procedures can be applied in ambiguous, dynamic, and challenging contexts;
- If appropriate, test whether the application of procedural skills have become automatic allowing the Soldier to advance to higher levels of understanding and complexity (e.g., whole systems thinking, strategic planning);
- By providing additional cues, prompts, procedural information, memory joggers, etc. as just-in-time information, facilitators can determine whether the students can reach a higher level of understanding of the material; and
- As additional procedural information is provided, backwards fading exercises may be used to assess students' proficiency with the new material.

To achieve the cognitive level Understanding and Applying for students who are proficient with the content the following experiential instructional methods were recommended:

- Proficient students could provide the class with additional examples and/or applications of the information that is presented by the facilitators;
• These students could provide peer-to-peer coaching while the less experienced students are conducting the PEs as described above;
• Proficient students should assist in providing feedback and on-the-spot corrections;
• Proficient students could assist the instructors in preparing lessons and researching ideas for class discussion;
• With longer class time, highly proficient students could shadow facilitators, present material to different audiences, prepare explanations, briefings, and papers to unit leaders, stakeholders, etc.; and
• Facilitators should test the students' knowledge of the material by having them apply the concepts to novel contexts and assign more complex practical exercises for the students to complete. These exercises could reflect the types of tasks that the students would perform on the job (e.g., translating authentic materials, preparing operations orders, researching complex problems, synchronizing intelligence information, performing knowledge management activities, preparing strategic level briefings) so that the students can practice accomplishing the tasks and receive feedback, cues, and just-in-time information from the facilitators to enhance their learning and maximize their performance.

To achieve the third cognitive level (*Analyzing, Evaluating, and Creating*), it was determined that students would already possess a level of familiarity with the content. Thus, the following experiential instructional methods were included in the framework for this combination in small group settings:

• The sequencing of classroom instruction for this level should first require the students to complete an assignment on their own (either ahead of time as homework or during the first portion of the class) and then receive feedback on their work by their peers and facilitators;
• PEs at this level should include debates, research assignments that require students to discern between facts and inferences, testing hypotheses and providing supporting evidence for their results, analyze concepts with contrasting cases such that the surface features of the scenarios change but the underlying knowledge and skill requirements remain the same (i.e., analysis of deep structures);
• Facilitators could assign individuals to different roles in a case and discuss different viewpoints and perspectives, especially cross-cultural ones. Students could analyze policy decisions and the second- and third-order effects and possible unintended consequences of strategic or operational decisions;
• Following each PE, students should receive practice accomplishing the tasks and receive feedback, cues, and just-in-time information from the facilitators to enhance their learning and maximize their performance; and
• At this level, facilitators could assess student learning by requiring the students to create a new approach for their specific domain area, propose how to integrate information from two different systems to increase performance effectiveness in a particular domain, and defend the logic of their decision making processes, solutions, and outcomes.
To achieve or sustain the third cognitive level, *Analyzing, Evaluating, and Creating*, for students who are proficient with the content, the following experiential learning instructional methods were proposed:

- The PEs for proficient students could reflect the PEs for those above in the familiar with the content such as debates, contrasting cases, analysis of case studies, policy decisions, and the effects of the second- and third-order effects and unintended consequences of strategic decisions;
- Proficient students should be able to formulate their own hypotheses, judgements, solutions for complex problems and be able to defend their logic, rationale, and processes/procedures of their decisions and outcomes;
- Proficient students also should be able to critique and evaluate the assertions of others, thus, facilitators could assess students by requiring them to analyze existing decisions, premises, and outcomes of others and write an OpEd or other critique of this work and be able to defend their own rationale;
- Students should be able to think at a high strategic or operational level, integrate disparate pieces of information, and distinguish between facts and inferences;
- The assessment of proficient students could include requiring students to create models or otherwise demonstrate the logic of their decision making processes, perform at a very high level with authentic job materials, analyze and use information and outputs from complex systems, work on a team of experts to solve complex problems, and create their own solutions to complex problems with ambiguous or missing information; and
- Demonstration of such capabilities could include briefing stakeholders on their solutions, shadowing facilitators and other experts, performing work on-the-job with real equipment and personnel and receiving feedback from the facilitators or other mentors (e.g., diagnosing and performing medical treatment, analyzing complex data and technical information, producing high level intelligence reports), and creating models of the effects of organizational processes on personnel, resources, mission outcomes, etc.

To achieve the cognitive learning levels in larger learning group contexts, facilitators could present material to the large group, then break the group into smaller groups to conduct the PEs as described above. If the size of the group is about 30 students, then the approach would be similar to that of the small group description.

To achieve the C2, *Understanding and Applying*, level with novice learners with a larger class size, in contrast to the recommended sequence of instruction for smaller groups at the C2 level, a PE as the first learning event is not recommended as this is too difficult to manage as the first activity with a large group. Information should be presented with guided notes and break into groups for PEs (application of knowledge across different contexts, discussion of case studies, relating to personal experiences). After the PEs, small groups can share outcomes of discussions with the larger group. Facilitators and peers should ask probing questions that require students to explain their logic and rationale for their application of the knowledge and information. With a longer timeframe, a cycle of presentations with more complex examples, PEs conducted with small groups, and group presentations with probing questions that ask students to explain their responses, and feedback regarding these explanations could be executed to provide additional opportunities for the students to understand and apply the information.
Achieving the second and third cognitive levels with students who are familiar or proficient with the content may not be possible with large groups given the nature of the instructional methods described above.

**Phase III: U.S. Army Task Examples**

The purpose of Phase III was to provide the TRADOC Training Developers with Army task exemplars that illustrated aligned instructional methods. This phase followed a two-step process. Step one involved a review-revise iterative process to identify appropriate Army task examples for each of the 36 combinations, and step two involved developing task content that illustrated the instructional methods (see Appendices C – Z).

**Identifying U.S. Army tasks.** The Army’s repository of individual and collective tasks and drills is accessible on the Army Training Network (ATN) at https://atn.army.mil/. Tasks are searchable by either title or number. We used the verb list from TRADOC PAM 350-70-1 (TRADOC, 2012) to identify appropriate tasks for each combination. As stated previously, each verb in the list was designated to either the psychomotor or cognitive group and was matched to a level within each group, i.e. “Calculate” was assigned as a cognitive verb at the third level of Applying. To find an appropriate doctrinal Army task for the combination “Understanding and Applying/New to Task/Small Group,” we selected “Search Task by Title” and entered “Calculate”. The results of the search are depicted in Figure 3.

![ATN action verb search results](image)

*Figure 3. ATN action verb search results for “Calculate”.*

We reviewed each task to determine which would best illustrate the aligned instructional methods. We followed this process for each combination and provided a list of tasks to the research team for consideration. Once all combinations had been assigned an Army task we shifted focus to developing content that would illustrate the instructional methods.
Developing U.S. Army task content. Content was developed for each selected Army task based on the aligned instructional method. The purpose of the content was to illustrate to the TRADOC Training Developers a way of incorporating specific instructional methods within Army task training.

Task content was developed using task summaries and training and evaluation outlines (T&EOs) found under the task link on the ATN website. The task summaries and T&EOs for the selected tasks were combined with the aligned instructional methods for each combination to illustrate a way of incorporating instructional methods into task training. The information for each combination was presented in a standard format to provide training developers with a common picture, that is, what the developers would see on one page was in the same location on another page with the content specific to instructional method. The information was presented in the following sequence (see Appendix C):

- Recommended Methods and Sequence of Instruction;
- Key Points for Success;
- Facilitator Considerations;
- Practical Exercise Considerations; and
- Examples of instructional methods specific to physical or cognitive desired performance (Task summary or T&EO specific).

Recommended methods and sequence of instruction. This information was based on one additional factor that was initially considered as a course characteristic but rejected based on the variance between courses – the length of time available for training. We reconsidered this characteristic after reviewing course POIs and determining that as the POI is constructed the training developer breaks task training into hour or multi-hour/day lessons. To address this variable, we attempted to provide instructional methods based on training time available as a recommended sequence of instruction. To this end each combination began by describing instructional methods by time. Figure 4 illustrates an example of this information.

![Recommended Methods and Sequence of Instruction](image)

*Figure 4. Example of instructional methods based on training time available.*
**Key points for success.** Key points for success were identified for each type of instructional method. One such key point concerns how facilitators could develop questions and use question sequencing techniques to increase student learning. To illustrate this key point, information was provided on question development in a military context for each cognitive level. Figure 5 illustrates an example of this information.

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Question Key Words</th>
<th>Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks</th>
</tr>
</thead>
</table>
| **C2 - Understanding** | Relate, Infer, Compare, Contrast, Summarize, Interpret, Restate, Explain, etc. | • Compare and Contrast the similarities and differences between plans and orders.  
• Explain the purpose of the running estimate.  
• Summarize higher headquarters concept of the operation.  
• Restate the commander’s intent in your own words. |
| **C3 - Applying** | Develop, Identify, Construct, Organize, Plan, Utilize, etc. | • Identify the specified, implied, and essential tasks.  
• Develop 2 COAs based on commander’s guidance.  
• Construct tentative task organizations for each COA.  
• Identify resource shortfalls. |

*Figure 5.* Example of military context questions based on Bloom’s cognitive level key words as designated in TRADOC PAM 350-70-1 (TRADOC, 2012).

Similarly, information was provided on question sequencing. Multiple questioning sequences, as found in Volger (2008), were provided with question examples written for a military context. Figure 6 illustrates one example of sequencing where the facilitator would ask questions at a lower level (extending) before asking a question at the next higher level (lifting) that builds on the previous answers.
Facilitator considerations. Information was provided to illustrate the facilitator’s role when applying the aligned instructional method. This information was captured as guidelines and was not all encompassing. For example, a facilitator who is teaching a task that requires the student to apply prior knowledge in a novel context could take the following steps:

- Maximize the face-to-face time with activities that require the students to participate in group work, case study discussions, explanations of applications of the content to novel contexts, etc.;
- Provide more complex examples as the students show proficiency in applying the learned information;
- Provide feedback to the students regarding whether their understanding and application of the material is accurate, realistic, practical, meets the standard, etc.;
- Provide additional cues, prompts, procedural information, memory joggers, etc. as just-in-time information to determine whether the students can reach a higher level of understanding of the material; and
- Ask probing, rapid questions that ask students to explain their responses and provide feedback regarding these explanations.

Similar guidelines were provided for each combination. Guidelines were linked to the instructional method and adjusted based on the combination variables of class size (small or large group), student experience (New, Familiar, or Proficient), and level of performance required (psychomotor or cognitive).

Practical exercise considerations. Information was provided for facilitators to consider when selecting and implementing a PE as a check on learning, again, this information was
captured as guidelines and not considered all encompassing. PE considerations, while they might be applicable to most situations, are linked to the aligned instructional method. Examples of PE considerations are:

- PEs could be assigned in which the conditions and surface elements differ;
- PEs could consist of troubleshooting faults, problem solving errors, conducting analog procedures in case equipment fails (e.g., navigate aircraft without instruments), testing the students' expertise level by determining whether the declarative knowledge and procedures can be applied in ambiguous, dynamic, and challenging contexts; and
- Backwards fading exercises may be used to assess students' proficiency with the new material as additional procedural information is provided.

As with the facilitator considerations, similar guidelines for PE considerations were provided for each combination. Guidelines were linked to the instructional method and varied based on the combination of variables.

**Examples of instructional methods specific to psychomotor or cognitive desired performance.** The information for each combination and associated Army task was provided as an example of how to incorporate the instructional methods into Army task training. For example, the aligned instructional methods for the combination “Understanding and Applying/New to Task/Small Group”, of which Calculate Timber-Cutting Charges is a sample task, were identified as:

- Implementing a backwards fading model to train sequential task steps;
- Providing just-in-time information as students conduct PEs;
- Increasing student understanding of concepts by providing PEs with novel contexts; and
- Providing memory joggers to reduce cognitive load.

Each example of an instructional method began by providing the training developers with explanatory information followed by a graphic example using task based performance steps. As an example, the information provided to training developers for the task Calculate Timber-Cutting Charges is depicted in Figures 7 and 8.
The explanatory information was provided as a means of informing the training developers and facilitators of an instructional method they might not be familiar with. In some instances, the instructional method identified in academic literature as the most appropriate for the task to be trained might not be included in U.S. Army doctrinal publications. Therefore, the intent behind the information was to provide a standardized definition and an indication of when and how to implement the instructional method.

The graphic example provided a means of informing the training developers and facilitators how to incorporate the instructional method into task training utilizing a format that was familiar to them. In the example in Figure 8, the training developers would have developed the task title and performance steps for “Calculate Timber-Cutting Charges” as part of their responsibilities. By incorporating the instructional method of backwards fading into a familiar format, we hoped to illustrate a way of connecting the dots between task content and instructional method.
Figure 8. Example of backwards fading instructional method for “Calculate Timber-Cutting Charges”.

Army tasks were selected and task content was developed for all 36 combinations identified in the previous phase (see Appendices C – Z). An iterative review/revise process was incorporated into task content development to insure the appropriate instructional methods were clearly described.

**Phase IV: Digital Application Development**

The purpose of Phase IV was to develop the results of the previous phases into a digital application for U.S. Army course training developers and facilitators. The discussion that follows will focus on challenges we encountered in developing an application for this target audience, rather than the technical aspects. The output of this phase, a deployable digital application, will be discussed in the results section.

**Development challenges.** Based on target audience characteristics we identified two challenges – distribution and accessibility – that dictated the type of application – standalone or web-based –that could be developed. The characteristics of the target audience that most impacted our decisions were: 1) a large number of users; 2) who are geographically dispersed; and, 3) who work on Government encrypted computers and networks. The solution to these challenges lay in the development of a web-based application deployed on an Army .mil website.
**Distribution.** The first two characteristics of our target audience indicated a challenge in distributing the application. Our target audience consisted of U.S. Army training developers at each school and facilitators for each course located throughout the continental United States (CONUS) and worldwide. Research conducted on the ATRRS website revealed that at the time of development there were potential users of the application at 834 schools, and in 20,960 courses being conducted in all states, two territories (Guam and Puerto Rico), and three countries (Germany, Japan, and Korea). The question of “how to distribute the application” to this large number of geographically dispersed users impacted decisions on the type of application we could develop. We identified a similar challenge with the third target audience characteristic.

**Accessibility.** The third characteristic of our target audience indicated a similar challenge, but this time in accessibility to the application. U.S. Army training developers and facilitators access training management tools and systems, such as the ATN and the Digital Training Management System (DTMS), from encrypted computers on a government network. Access to, or from, these computers and systems is regulated by cybersecurity protocols outlined in AR 25-1 *Army Information Technology* (HQDA, 2013), AR 25-2 *Information Assurance* (HQDA, 2009), and DA PAM 25-1-1 *Army Information Technology Implementation Instructions* (HQDA, 2014)\(^5\). For example, from an application accessibility standpoint, information in these documents identified that:

- Access to the Army network is restricted to authorized users (HQDA, 2013, p.25);
- Access from the Army network to public sites can be restricted (HQDA, 2009, p. 41);
- Mobile code - executable software - is restricted across the Army network (HQDA, 2009, p. 26);
- Prior approval of any media, e.g. USBs, CD-ROM, floppy disk, is required (HQDA, 2009, p.16);
- Hardware and software changes to the Army’s approved network baseline require a certificate of networthiness (HQDA, 2013, p. 41); and
- Information that is for Army personnel only should be located within an enterprise portal, e.g. AKO, on the Army network (HQDA, 2014, p.24).

The cybersecurity protocols found within the information management policies also impacted our decision on the type of application we could develop.

**Solution.** Initially, we considered developing an application using Microsoft Office ™ (Excel or Access) products as this software is government approved and prevalent on government computers. However, when considering how to distribute such an application using approved methods (i.e. e-mail, file transfer protocol site, or compact disk) we realized that we could not ensure that all users received and correctly implemented the application. We next considered a desktop executable application, which while more easily distributable and more easily implemented (i.e. go to this website and download and install the application), did not afford accessibility due to the previously listed government computer restrictions.

Finally, we decided on a web-based application that would be designed to hang on an approved Army .mil website. This solution would address both challenges. First, distribution

\(^5\) These documents can be downloaded from [http://www.apd.army.mil/](http://www.apd.army.mil/).
would only involve notifying the training developers and facilitators as to the location of the application, that is, rather than sending one application to thousands of users, thousands of users would come to one application. Second, by hanging the application on an Army .mil restricted website only authorized users – training developers and facilitators with common access cards (CAC)\(^6\) – would have access to the application.

However, developing an application to reside on an approved Army .mil website required more technical information from government information technology (IT) specialists. We approached IT personnel at the Fort Benning Network Enterprise Center (NEC)\(^7\) to determine the programming language and software support requirements for an application to reside on the Army network. NEC personnel and the application development team established an open line of communication resulting in close coordination as technical questions arose. The NEC personnel provided guidance related to:

- Web framework support;
- Web server versions;
- Internet information services (IIS) versions, and
- Backwards compatibility (web-browser and operating system).

The application development team combined information received from the NEC with task selection and content files to develop a beta version of the application. The beta version was deployed on an external server to facilitate feedback from research team members. Multiple iterative changes were made prior to presenting the application to training developers and facilitators for their feedback.

**TRADOC Course Training Developers and School Staff and Faculty Personnel Review**

The instructional methods tool was developed for use by institutional training developers and facilitators. Validation of the tool required reaching out to these personnel for their feedback and a small subset of available supervisors, training developers, staff and faculty personnel, and facilitators was identified as the primary reviewers. A content and functionality questionnaire (Appendix A) was developed and included the uniform resource locator (URL) address as a means for obtaining the feedback. Feedback provided by the reviewers was compiled, adjudicated, and provided to the development team for inclusion in the application.

**Content feedback.** For the most part, content feedback focused on changing how information was displayed rather than changing the information. As a result of the feedback, graphical information within each Recommended Sequence of Instruction section was modified to text base information to enhance understanding. However, in three instances reviewers asked for more information to be included in the tool. The first instance required the addition of information that cross-walked TRADOC PAM 350-70-14 (HQDA, 2015) instructional methods to the academic instructional methods to aid training developers in making the link between the instruction.

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\(^6\) Common access cards (CAC) are identification cards issued to authorized personnel by the Defense Manpower Data Center and enable access to Army and DOD enterprise services from any Army system (HQDA, 2013).

\(^7\) NECs are designated as “the information management and information technology manager on Army posts, camps, and stations, and is the single authority for providing common-user IT services” (HQDA, 2013, p.19)
two. The second instance pertained to the inclusion of information on Bloom’s affective domain (e.g., Krathwohl, 2002). The third instance related to the inclusion of question development and sequencing strategies for the facilitators.

**Functionality feedback.** The majority of the feedback pertained to functionality and ease of use. As a result of the feedback more information, i.e. Select Action Verb (Type-in or select from dropdown list), was added to the home page to guide users on how to use the tool; action verb associated performance levels, i.e. C3 – Applying, and verb definitions were added to link instructional methods to verbs; a Clear function was added to enable users to quickly reset the homepage and a Print function was added to each section enabling users to print content.

**Results**

**Content of the Tool**

As stated previously, the instructional methods tool was designed to supplement, not replace, existing training developer tools. To that end, careful consideration was taken to develop the tool using accepted doctrinal terms and verbiage, and where differences occurred, crosswalks were developed or explanatory information was provided. The tool provides the training developers and facilitators with a framework that enables them to select an appropriate instructional method given student experience, class size, and expected level of performance.

The tool consists of three major sections – the instructional methods content, the reference tabs, and the Admin Log In tab. Each section is illustrated below.

**Instructional methods section.** The instructional methods section is the main functionality and capability of the tool. The content information provided in this section contains the aligned instructional methods based on the level of performance required for a group of Soldiers with an identified level of experience. Military exemplars are provided to illustrate how to incorporate the aligned instructional method(s) into a military context. Figures 9 and 10 and Appendix B illustrates the homepage of the instructional methods tool and an example of the instructional methods section content.
Figure 9. Example of the Instructional Methods Tool web-based application home page.
Reference tabs. The reference tabs were included to provide information to the user on how to use the tool as well as doctrinal reference materials used throughout the tool (see Appendix B). The About Tool tab provides information on how to use the tool; the Physical and Cognitive Verb tabs provide information on action verbs and how they are categorized based on Army doctrine (TRADOC, 2012); the Affective Domain tab provides a hyperlink to the Training and Education Developer Toolbox\(^8\) where more information can be found about the domain; and the Methods of Instruction Crosswalk Tab provides a table that crosswalks instructional methods used within the tool to the instructional methods listed in TRADOC PAM 350-70-14 (TRADOC, 2015). Figure 11 illustrates the information found on the Physical Verbs tab.

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\(^8\) The Training and Education Developer Toolbox (TED-T) is designed and developed for training and education developers to promote efficient and effective learning product development. TED-T can be found at [https://atn.army.mil/TreeViewCStab.aspx?loadTierID=2904&docID=35](https://atn.army.mil/TreeViewCStab.aspx?loadTierID=2904&docID=35).
Figure 11. Example of the Physical Verb Tab.
**Admin Log In tab.** The administrator log in tab provides the flexibility required to ensure relevance over time. Functionality provides an administrator with the capability to add verbs, and delete or edit existing verbs. Programming logic provides the link between changes made and instructional methods displayed. Figure 12 illustrates the Admin Log In/Editor homepage.

![Instructional Methods Tool](image_url)

*Figure 12. Example of the Admin Log In/Editor Tab.*

**Accessibility of the Instructional Methods Tool**

The instructional methods tool was developed to be deployed on an Army .mil website (http://www.benning.army.mil/mcoe/ARIFB/recent.htm) and be accessible to training developers, staff and faculty personnel, and facilitators using government computers with CACs. Care was taken to ensure backwards compatibility with older web browsers.
Conclusions

The purpose of the Instructional Methods Tool was to provide training developers, staff and faculty personnel, and facilitators/instructors with effective instructional methods depending on the unique characteristics of the particular courses with which they are working. The aim of the tool was to supplement the Army Learning Model by demonstrating that a range of methods are both appropriate and effective to achieve different learning levels – both psychomotor and cognitive. The tool branches users to these different methods based on their inputs regarding the student characteristics, training content, and class sizes.

One limitation of the tool is that the methods are linked to the list of verbs provided in Army doctrine TRADOC PAM 350-70-14 (TRADOC, 2015). The objective of using this list of verbs was to ensure a tighter linkage between the instructional methods and learning levels. However, the list may too narrowly define the types of tasks and content that training developers, staff and faculty personnel, and facilitators/instructors are working with in their lesson plans. That is, to achieve the purpose of a lesson plan, a developer or facilitator likely needs to employ a range of verbs, actions, tasks, and events. By narrowing the user’s selection to only one verb, the user may have difficulty in generalizing the tool’s outputs to the entire lesson.

One way to offset this limitation is to view the tool’s findings by learning level. That is, instead of thinking of the results as linked to only one verb, consider the results as pertaining to the particular psychomotor or cognitive learning level that is desired. All of the verbs and their associated levels are found in the tabs at the top of the tool, and all verbs associated with a particular level branch the user to the same information. So, although the user inputs a single verb, the content of the tool is based on the learning level for either psychomotor or cognitive skills. Because of the web-based nature of the tool, future work could modify the structure of the inputs to the tool so that the user would be required to only insert the learning level for the type of skill (psychomotor or cognitive) and avoid having to select individual verbs.

By including examples of Army courseware linked to the appropriate learning level and type of skill, users have a better understanding of how to employ the recommended instructional methods in their lessons. Also, by viewing the cross-walk of the methods indicated in the tool with the broader categories of methods specified in Army doctrine (Appendix B), the users will have a better understanding of the variety of effective ways in which the doctrinal methods can be employed to meet the specific requirements of their lessons and classes.
References


# Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALM</td>
<td>Army Learning Model</td>
</tr>
<tr>
<td>ATN</td>
<td>Army Training Network</td>
</tr>
<tr>
<td>ATRRS</td>
<td>Army Training Requirements and Resources System</td>
</tr>
<tr>
<td>CAC</td>
<td>Common Access Card</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>Compact Disk Read-Only Memory</td>
</tr>
<tr>
<td>CoEs</td>
<td>Centers of Excellence</td>
</tr>
<tr>
<td>CONUS</td>
<td>Continental United States</td>
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<tr>
<td>CMP</td>
<td>Course Management Plan</td>
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<tr>
<td>DA PAM</td>
<td>Department of the Army Pamphlet</td>
</tr>
<tr>
<td>DTMS</td>
<td>Digital Training Management System</td>
</tr>
<tr>
<td>HQDA</td>
<td>Headquarters Department of the Army</td>
</tr>
<tr>
<td>IIS</td>
<td>Internet Information Services</td>
</tr>
<tr>
<td>JROTC</td>
<td>Junior Reserve Officer Training Corps</td>
</tr>
<tr>
<td>MDMP</td>
<td>Military Decision Making Process</td>
</tr>
<tr>
<td>MOS</td>
<td>Military Occupational Specialty</td>
</tr>
<tr>
<td>NEC</td>
<td>Network Enterprise Center</td>
</tr>
<tr>
<td>NCO</td>
<td>Noncommissioned Officer</td>
</tr>
<tr>
<td>PE</td>
<td>Practical Exercise</td>
</tr>
<tr>
<td>POI</td>
<td>Program of Instruction</td>
</tr>
<tr>
<td>SMC</td>
<td>Sergeants Major Course</td>
</tr>
<tr>
<td>T&amp;EO</td>
<td>Training and Evaluation Outline</td>
</tr>
<tr>
<td>TRADOC</td>
<td>Training and Doctrine Command</td>
</tr>
<tr>
<td>URL</td>
<td>Uniform Resource Locator</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
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</tbody>
</table>
Appendix A

Instructional Methods Tool Feedback Questionnaire
Instructional Methods Tool Feedback Questionnaire

Please provide your current duty position ___________________________________

The tool you are about to review was designed to provide facilitators and/or training
developers with examples of different instructional methodologies for conducting task
training – common individual tasks or collective tasks. The instructional methodologies
are linked to the desired physical and cognitive outcome levels for the task as
prescribed by the standard verbs contained in TRADOC Pamphlet 350-70-1 Appendix E
(2012).

Please review the Tool for functionality and content then complete the questionnaire.

**General Questions**

1. Is the explanation of the Instructional Methods Tool purpose clear?
   a. _____ Yes – No substantial changes needed
   b. _____ Satisfactory – but need improvement
   c. _____ No, inadequate and should be revised

   If you marked “b” or “c”, what changes would you recommend?

2. In general is there sufficient information in the “Homepage” and “About Tool” tabs
to enable a user to determine how to use the tool?
   a. _____ Sufficient information
   b. _____ Incomplete information
   c. _____ Confusing information

   If you marked “b” or “c”, what changes would you recommend?
Functionality

1. Did you encounter any functionality issues, i.e., No drop-down arrows, broken navigation, etc.?
   a. _____ Yes
   b. _____ No
   If yes, what were the issues?

   If Yes, what web browser and operating system are you using?
   Web browser (e.g. IE 11) __________
   To find the browser version, left click on the gear icon [upper right corner of webpage] and left click on “About Internet Explorer”.

   Operating System (e.g. Windows 7) __________
   To find the operating system version, right click on the computer icon [on your desktop] and left click on “Properties”.

2. Is there sufficient information provided to enable easy navigation?
   a. _____ Sufficient information
   b. _____ Incomplete information
   c. _____ Confusing information

   If you marked “b” or “c”, what changes would you recommend?
To answer the questions below, left-click in the appropriate box and type an “X”

Learning to operate THE INSTRUCTIONAL METHODS TOOL is easy for me.

LIKELY | extremely | quite | slightly | neither | slightly | quite | extremely | UNLIKELY

I find it easy to get THE INSTRUCTIONAL METHODS TOOL to do what I want it to do.

LIKELY | extremely | quite | slightly | neither | slightly | quite | extremely | UNLIKELY

My interaction with THE INSTRUCTIONAL METHODS TOOL is clear and understandable.

LIKELY | extremely | quite | slightly | neither | slightly | quite | extremely | UNLIKELY

I find THE INSTRUCTIONAL METHODS TOOL to be flexible to interact with.

LIKELY | extremely | quite | slightly | neither | slightly | quite | extremely | UNLIKELY

It is easy for me to become skillful at using THE INSTRUCTIONAL METHODS TOOL.

LIKELY | extremely | quite | slightly | neither | slightly | quite | extremely | UNLIKELY

I find THE INSTRUCTIONAL METHODS TOOL easy to use.

LIKELY | extremely | quite | slightly | neither | slightly | quite | extremely | UNLIKELY
Content

1. Overall, does the Instructional Methods Tool provide useful information for the facilitators and/or training developers?
   a. _____ Yes – No substantial changes needed
   b. _____ Satisfactory – but need improvement
   c. _____ No, inadequate and should be revised

   If you marked “b” or “c”, what changes would you recommend?

2. Overall, does the Instructional Methods Tool provide meaningful information for the facilitators and/or training developers?
   a. _____ Yes – No substantial changes needed
   b. _____ Satisfactory – but need improvement
   c. _____ No, inadequate and should be revised

   If you marked “b” or “c”, what changes would you recommend?

3. Do the sample military examples provide sufficient information on how to incorporate an instructional method into a subject area?
   a. _____ Sufficient information
   b. _____ Incomplete information
   c. _____ Confusing information

   If you marked “b” or “c”, what changes would you recommend?
If you are a facilitator or a training developer please complete the questions below. If you are not a facilitator or training developer, please complete the questions on the next page.

To answer the questions below, click in the appropriate box and type an “X”

Using the INSTRUCTIONAL METHODS TOOL in my job would enable me to accomplish tasks more quickly.

<table>
<thead>
<tr>
<th>LIKELY</th>
<th>UNLIKELY</th>
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<tr>
<td>extremely</td>
<td>quite</td>
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</table>

Using THE INSTRUCTIONAL METHODS TOOL would improve my job performance.

<table>
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<tr>
<th>LIKELY</th>
<th>UNLIKELY</th>
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<tbody>
<tr>
<td>extremely</td>
<td>quite</td>
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</table>

Using THE INSTRUCTIONAL METHODS TOOL in my job would increase my productivity.

<table>
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<tr>
<th>LIKELY</th>
<th>UNLIKELY</th>
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<tbody>
<tr>
<td>extremely</td>
<td>quite</td>
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Using THE INSTRUCTIONAL METHODS TOOL would enhance my effectiveness on the job.

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<tr>
<th>LIKELY</th>
<th>UNLIKELY</th>
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<tbody>
<tr>
<td>extremely</td>
<td>quite</td>
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</table>

Using THE INSTRUCTIONAL METHODS TOOL would make it easier to do my job.

<table>
<thead>
<tr>
<th>LIKELY</th>
<th>UNLIKELY</th>
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<tbody>
<tr>
<td>extremely</td>
<td>quite</td>
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</table>

I would find THE INSTRUCTIONAL METHODS TOOL useful in my job.

<table>
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<tr>
<th>LIKELY</th>
<th>UNLIKELY</th>
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<tr>
<td>extremely</td>
<td>quite</td>
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</tbody>
</table>
4. Please provide any other comments not addressed in the general, functionality, or content questions above.

Administrator Functions

If you were provided with the administrator User ID and password, please complete the questions below.

1. Does the administrator page provide sufficient information to determine how to modify the verb list?
   a. ____ Sufficient information
   b. ____ Incomplete information
   c. ____ Confusing information

   If you marked "b" or "c", what changes would you recommend?

2. What other administrator functions should be provided?
Appendix B

Instructional Methods Tool
Home Pages
Task Variables

Select Action Verb

Select Group Size
- 1:16 or less
- 1:17 or greater

Select Soldier Experience Level
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Submit

Tool Description

This tool is to support curriculum developers in selecting effective instructional methods and techniques. Based on the course content and expected level of learning, the tool provides examples of implementing these methods in Army courses.

Output
- Recommended Sequence of Instruction
- Key Points for Success
- Facilitator Considerations
- Practical Exercise Considerations
- Examples Specific to Physical or Cognitive Desired Performance
About

The tool is designed to provide facilitators and/or curriculum developers examples of instructional methodologies for conducting task training – common individual tasks or collective tasks. The action verbs, definitions, and assigned physical and cognitive levels are based on TRADOC Pamphlet 550-70-1 Appendix E (2012).

The examples describe how to incorporate an instructional method(a) into the context of a sample of Army subjects. Facilitators and/or curriculum developers will have to adapt the methods to differing course subjects.

For example, the current method of instruction for teaching: “Perform Jumpmaster Personnel Inspection (JMPI)” is for the facilitator to induce common errors in the harness and equipment of a Parachutist before the Student Jumpmaster begins his/her inspection. This same method can be used if the task is to “Maintain an M119 Buffer Recoil Mechanism”, the facilitator induces errors within the buffer mechanism in order to determine if the student can correctly inspect the piece of equipment, identify deficiencies, and perform corrective actions.

The examples are based on the input of an action verb, training group size, and Soldier level of experience. The action verbs and corresponding physical and cognitive levels are from TRADOC Pamphlet 550-70-1. The action verbs are further grouped within the Physical and Cognitive categories. There are three Physical groups:

1. P1 – Imitation.
2. P2 and P3 – Manipulation and Precision, and
3. P4 – Articulation

and three Cognitive groups:

1. C1 – Remembering,
2. C2 and C3 – Understanding and Applying, and
3. C4, C5, and C6 – Analyzing, Evaluating, and Creating

The instructional methods in the examples are associated with the level of physical (P) and cognitive (C) performance desired, i.e. Understanding and Applying, or Manipulation and Precision. Instructional methods examples will change when a verb from a different group, the group size, or the Soldier experience level is changed. For more information on the physical and cognitive levels click on the Physical or Cognitive tab at the top of the page.

The levels are sequential, that is, you should train at the lower levels before progressing to higher levels (e.g., Physical – Imitation, before Manipulation and Precision). The tool is programmed using these levels, therefore, if you select New to Task and a verb that is above a P1 or C1 level, a message will be displayed advising you to ensure that the Soldiers have the requisite knowledge/skills before starting the training. One example is that if you want to teach the Soldier how to Zero (P2), you must first teach him how to Fire (P1). Similarly, if you select Proficient with Task and a low level verb, the message will advise you to test-out the Soldiers.

Submit recommended changes for standard verb list for task titles along with justification using DA Form 2028 to: OAO-T, ATTN: ATTL-CTD, 613 Grant Avenue, Bldg 275, Fort Leavenworth, KS 66027. Recommendations must include sample task title(s) that use the proposed verb with an associated object.
### Physical Verbs

**Dave's Psychomotor (Physical) Domain**

<table>
<thead>
<tr>
<th>Category or Level</th>
<th>Behavior Description</th>
<th>Examples of activity or demonstration and evidence to be measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1: Imitation</td>
<td>Copy action of another, observe and replicate</td>
<td>Watch teacher or trainer and repeat action, process or activity</td>
</tr>
<tr>
<td>P2: Manipulation</td>
<td>Reproduce activity from instruction or memory</td>
<td>Carry out task from written or verbal instruction</td>
</tr>
<tr>
<td>P3: Precision</td>
<td>Execute skill reliably, independent of help, activity is quick, smooth, and accurate</td>
<td>Perform a task or activity with expertise and to high quality without assistance or instruction, able to demonstrate an activity to other learners</td>
</tr>
<tr>
<td>P4: Articulation</td>
<td>Adapt and integrate expertise to satisfy a new context or task, instinctive, effortless, unconscious mastery of activity and related skills at strategic level</td>
<td>Relate and combine associated activities to develop methods to meet varying, novel requirements Define aim, approach and strategy for use of activities to meet strategic need</td>
</tr>
<tr>
<td>P5: Naturalization</td>
<td></td>
<td></td>
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</tbody>
</table>

The tool provides information and examples for three psychomotor levels: Imitation (P1), Manipulation and Precision (P2/P3), and Articulation (P4). The TRADOC Pamphlet did not assign any verbs at the Naturalization (P5) level.

<table>
<thead>
<tr>
<th>Verb</th>
<th>Level</th>
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<tbody>
<tr>
<td>Adjust</td>
<td>P3</td>
<td>Deliver</td>
<td>P2</td>
<td>Evade</td>
<td>P2</td>
<td>Load</td>
<td>P1</td>
<td>Patrol</td>
<td>P3</td>
<td>Replace</td>
<td>P3</td>
<td>P1</td>
<td></td>
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<tr>
<td>Align</td>
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<td>Demonstrate</td>
<td>P3</td>
<td>Evaluate</td>
<td>P3</td>
<td>Lubricate</td>
<td>P1</td>
<td>Perform</td>
<td>P3</td>
<td>Restore</td>
<td>P2</td>
<td></td>
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<tr>
<td>Assault</td>
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<td>Deploy</td>
<td>P1</td>
<td>Exchange</td>
<td>P3</td>
<td>Maintain</td>
<td>P3</td>
<td>Place</td>
<td>P1</td>
<td>Retrieve</td>
<td>P2</td>
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<td>Assemble</td>
<td>P2</td>
<td>Destroy</td>
<td>P4</td>
<td>Extend</td>
<td>P2</td>
<td>Mark</td>
<td>P1</td>
<td>Plot</td>
<td>P3</td>
<td>Rig</td>
<td>P2</td>
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<tr>
<td>Attack</td>
<td>P4</td>
<td>Develop</td>
<td>P4</td>
<td>Extract</td>
<td>P3</td>
<td>Measure</td>
<td>P2</td>
<td>Position</td>
<td>P3</td>
<td>Secure</td>
<td>P2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>P4</td>
<td>Direct</td>
<td>P3</td>
<td>Fire</td>
<td>P1</td>
<td>Modify</td>
<td>P4</td>
<td>Post</td>
<td>P3</td>
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Cognitive Verbs

**Bloom’s Taxonomy – Cognitive Domain**

- **C.1. Remembering:** Recall or recognize information.
  - Examples of activity or demonstration and evidence to be measured.
  - Multiple-choice test; recast facts or statistics; recall a process, rules, definitions; quote law or procedure.

- **C.2. Understanding:** Understand meaning; re-state data in one’s own words, interpret, extrapolate, translate.
  - Explain or interpret meaning from a given scenario or statement; suggest treatment, reaction or solution to given problem; create examples or metaphors.

- **C.3. Applying:** Use or apply knowledge; put theory into practice; use knowledge in response to real circumstances.
  - Put a theory into practical effect; demonstrate; solve a problem; manage an activity.

- **C.4. Analyzing:** Interpret elements, organizational principles, structure, construction, internal relationships; quality, reliability of individual components.
  - Identify constituent parts and functions of a process or concept; deconstruct a methodology or process.

- **C.5. Evaluating:** Assess effectiveness of whole concepts, in relation to values; outputs, efficacy, viability, critical thinking, strategic comparison and review; judgment relating to external criteria.
  - Review strategic options or plans in terms of efficacy, return on investment or cost-effectiveness, practicality, assess sustainability; perform a SWOT analysis in relation to alternatives; produce a financial justification for a proposition or venture, calculate the effects of a plan or strategy; perform a detailed risk analysis with recommendations and justifications.

- **C.6. Creating:** Develop new unique structures, systems, models, approaches, ideas, creative thinking, operations.
  - Develop plans or procedures, design solutions, integrate methods, resources, ideas, parts; create teams or new approaches, write protocols and contingencies.

The tool provides information and examples for three cognitive levels: Remembering (C1), a combined Understanding and Applying (C2/C3) level, and a combined Analyzing, Evaluating, and Creating (C4/C5/C6) level.

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Affective Domain

The affective domain of learning describes how we respond to emotional phenomena such as feelings, attitudes, motivations, values, appreciation, and enthusiasms. Training and education developers and instructor/facilitators should be aware of how they are impacting the affective domain of the participants, particularly regarding instilling Army values.

More information on the affective domain and associated methods of instruction can be found in the Training and Education Developer Toolbox at: https://atr.army.mil/TeebViewCStg.aspx?loadTierID=5777&docID=28
### Methods of Instruction Crosswalk

The table below crosswalks the methods of instruction included in this tool (vertical list) to the methods of instruction contained in TRACQD: Pamphlet 350-70-14 (horizontal list).

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Appendix C

Military Task Examples
P1-Imitation / Small Group / New to Task
### Task Variables

**Action Verb**

- Enter

**Performance Level**

- P1 - Imitation

**Definition**

To go into or upon.

**Group Size**

- 1:16 or less
- 1:17 or greater

**Experience**

- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

### Recommended Methods and Sequence of Instruction

Choose the method of instruction based on the “Time of Instruction” for the ELO.

<table>
<thead>
<tr>
<th>Time of Instruction</th>
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<tr>
<td>1 hour</td>
<td>Demonstration</td>
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<tr>
<td>2 hours</td>
<td>Demonstration; then PE</td>
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<tr>
<td>4-8 hours</td>
<td>Multiple practice sessions and rehearsals with Facilitator feedback</td>
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### Key Points for Success

- Facilitator Considerations
- Practical Exercise Considerations
- Demonstration Considerations
- Other Considerations
- Forward Chaining Example
- Backwards Chaining Example
- Backwards Fading Example
### Instructional Methods Tool

**Task Variables**

**Action Verb**
- Enter

**Performance Level**
- P1 - Imitation

**Definition**
- To go into or upon.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Physical Level**
- Disassemble
- Disconnect
- Dismantle
- Distribute
- Initialize
- Issue
- Load
- Lubricate
- Pack
- Receive
- Send
- Submit

**Recommended Methods and Sequence of Instruction**
- Soldiers must be given multiple opportunities to practice.
- Facilitator feedback is essential.
- Facilitators need to monitor performance to help Soldiers avoid establishing faulty habits.

**Key Points for Success**
- 

**Facilitator Considerations**
- Practical Exercise Considerations
- Demonstration Considerations
- Other Considerations
- Forward Chaining Example
- Backwards Chaining Example
- Backwards Facing Example
**Task Variables**

**Action Verb**
- Enter

**Performance Level**
- P1 - Imitation

**Definition**
- To go into or upon.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Physical Level**
- Disassemble
- Disconnect
- Dismantle
- Distribute
- Don
- Enter
- Fire
- Initialize
- Issue
- Load
- Lubricate
- Mark
- Mount
- Observe
- Pack
- Receive
- Send
- Submit
- Transmit
- Unload
- Wear

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

**Practical Exercise Considerations**

**Demonstration Considerations**

The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.

Used to:
- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

Key points for success:
- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
- The demonstration must be rehearsed with AIs (the demonstrator and Facilitator must stay in sync or the Soldiers will have a tendency to become lost or lose interest).
- The Facilitator must ensure that Soldiers have mastered the prior knowledge needed for the demonstration.
- Soldiers must be able to clearly observe the demonstration and hear what the Facilitator is saying.
- The result of skipped steps and steps performed incorrectly must be explained.
- Soldiers must be shown the responses they control and the cues to which they should react.

Techniques include:
- Soldiers watch but do not participate.
- Soldiers observe the demonstration and then execute each step after it being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next one.
  - Provide sufficient AIs to roam the classroom; assist Soldiers having difficulty.
Instructional Methods Tool

Task Variables

Action Verb
Enter

Performance Level
P1 - Imitation

Definition
To go into or upon.

Group Size
1:16 or less
1:17 or greater

Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
Disassemble Initialize Pack
Disconnect Issue Receive
Dismantle Load Send
Distribute Lubricate Submit

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Demonstration Considerations

Other Considerations

Other Considerations
- Focus feedback to learners on the effects of their movements rather than on the movements themselves (fingers, hands, and head).
- Record movements when possible (tape recorders for speech teachers, coaches take motion pictures, etc.)
- Isolate system features and functions required to perform the steps of specific tasks.
  - Limit menu choices to only those needed to perform certain tasks. Direct Soldiers to only those functions needed at that time in the course.
  - Employ software that "takes over the input device (e.g., mouse)" of the Soldier to show the Soldier which parts of the user interface to select (e.g., menu choices, buttons, graphics, and indexes). Users spend less time practicing the steps and components of the task and less time recovering from errors.
- Learning by discovery on the complete system is inefficient.

Forward Chaining Example

Backwards Chaining Example

Backwards Facing Example
Forward Chaining Example

Task Number: 07-4-C9509
Task Title: Enter and Cleer a Room

The Facilitator and cadre demonstrate the entire task to the Soldiers after depicting the desired end state.

The Facilitator should use a method that allows the Soldier to view the entire task and the movements of each individual (tape house, glass house, short boards, etc.).

The Facilitator should then use the crawl, walk, run process during training:

- Crawl – The Facilitator moves each Soldier into position at a slow pace.
- Walk – The Soldiers move themselves into position at a slow pace.
- Run – The Soldiers move into position at a faster pace.

Step One

- The Soldiers form a 4-man stack outside of the room.
- The 2-man is the team leader and controls execution.

Example Facilitator Feedback:

- The distance between Soldiers should allow:
  - Communication by
    - Hand and arm signals
    - Low voice
  - Movement through the door
    - Speed
    - Violence of action
- Communication indicating team member readiness should flow from the 4-man to the 2-man.
- The 2-man signals the 1-man to enter.

Step two
Violence of action

- Communication indicating team member readiness should flow from the 4-man to the 2-man.
- The 2-man signals the 1-man to enter.

Step two

- The first Soldier enters the room and moves left or right along the path of least resistance to one of two corners. He assumes a position of domination facing into the room. During movement, he scans his sector and eliminates all immediate threats.
- The second Soldier enters the room and moves in the opposite direction of the first Soldier to his point of domination.

Example Facilitator feedback

- Room entry
  - Body movement
    - Heel to toe
    - Stable upper body
  - Legs used as shock absorbers
  - Speed — “Slow is Smooth; Smooth is Fast”
  - Sectors of fire
  - Points of domination
- Actions on contact
  - Focus on the hands of anyone in the room
    - Threat — Can clearly see hands containing weapon that can inflict harm on team member or non-combatant
    - Non-combatant — Can clearly see empty hands
    - Unknown — Cannot clearly see empty hands
- Immediate action for a malfunction
- Communication

Step three

The third Soldier moves in the opposite direction of the second Soldier while scanning and...
Step three

The third Soldier moves in the opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.

Example Facilitator feedback
- Muzzle awareness
- Communication

Step four

The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.

Example Facilitator feedback
- Muzzle awareness
- Communication

Step five

All Soldiers engage enemy combatants with precision armed fire and identify non-combatants to avoid collateral damage.
Example Facilitator feedback
- Muzzle awareness
- Communication

Conclusion
- All soldiers engage enemy combatants with precision armed fire and identify non-combatants to avoid collateral damage.

If time and resources permit, the training should culminate in a Shoot-House with the use of simulations or live-fire.
### Task Variables

**Action Verb**

Enter

**Performance Level**

P1 - Imitation

**Definition**

To go into or upon

**Group Size**

- 1:16 or less
- 1:17 or greater

**Experience**

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Physical Level**

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<td>Unload</td>
</tr>
<tr>
<td>Fire</td>
<td>Observe</td>
<td>Wear</td>
</tr>
</tbody>
</table>

### Recommended Methods and Sequence of Instruction

- Key Points for Success
- Facilitator Considerations
- Practical Exercise Considerations
- Demonstration Considerations
- Other Considerations
- Forward Chaining Example
- Backwards Chaining Example

**Soldiers are shown/practice/complete the last step/component of the task before learning the beginning step/component.**

1. **STEP 1**
2. **STEP 2**
3. **STEP 3**
4. **STEP 4**
5. **STEP 5**

**Forward Chaining**

**STEP 5**

**STEP 4**

**STEP 3**

**STEP 2**

**STEP 1**
Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Disassemble
- Disconnect
- Dismantle
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- Enter
- Fire
- Initialize
- Load
- Lubricate
- Mount
- Observe
- Pack
- Receive
- Send
- Submit
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- Unload
- Wear

Backwards Chaining Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

Key points for success:
- Ongoing evaluation of the Soldier's performance is required.
- The Facilitator determines when to remove instructional support based on Soldier performance.

Techniques include:
- Together, the Facilitator and Soldier perform a series of trials (attempts).
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

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<td>1</td>
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First the Facilitator demonstrates the task from beginning to end while the Soldiers watch.

**Trial 1:** Begins as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the Facilitator. There are no Soldier-only steps in this trial.

**Trial 2:** The Facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last task step alone.

**Trial 3:** The Facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last two task steps alone.

**Trial 4:** The Facilitator and the Soldiers perform the first two task steps and the Soldiers perform the last three task steps.
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**FACILITATOR**
- First, the facilitator demonstrates the task from beginning to end while the Soldiers watch.

**SOLDIERS**
- Trial 1: Begins as a guided demonstration. In other words, each Soldier watches and names the task steps performed by the facilitator. There are no 'Soldier only' steps in this trial.
- Trial 2: The facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last task step alone.
- Trial 3: The facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last two task steps alone.
- Trial 4: The facilitator and the Soldiers perform the first two task steps and the Soldiers perform the last three task steps alone.
- Trial 5: The facilitator and the Soldiers perform the first task step and the Soldiers perform the last four task steps alone.
- Trial 6: The Soldiers complete the whole task by themselves.
Appendix D

Military Task Examples
P1-Imitation / Large Group / New to Task
**Task Variables**

**Action Verb**
- Enter

**Performance Level**
- P1 - Imitation

**Definition**
To go into or upon.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task
- Familiar with task
- Proficient with task

**Other Verbs at the same Physical Level**
- Disassemble
- Disconnect
- Dismantle
- Distribute
- Enter
- Finish
- Initialize
- Issue
- Load
- Lubricate
- Mark
- Mount
- Pack
- Receive
- Send
- Submit
- Transmit
- Unload
- Unload

**Recommended Methods and Sequence of Instruction**

**Direct Instruction in a Large Group**
- Facilitators should demonstrate the task to the large group first.
- The large group should be broken down into small groups for the practical exercise.

Choose the method of instruction based on the "Time of Instruction" for the ELO.

**Time of Instruction** | **Method of Instruction**
--- | ---
1 hours | Demonstration
2 hours | Demonstration followed by PEs
4-8 hours | Multiple practice sessions and rehearsals with Facilitator feedback

**Key Points for Success**

**Facilitator Considerations**

**Practical Exercise Considerations**

**Demonstration Considerations**

**Other Considerations**

**Demonstration Example**

**Backwards Fading Example**
### Task Variables

#### Action Verb

| Enter |

#### Performance Level

**P1 - Imitation**

#### Definition

To go into or upon.

#### Group Size

- ○ 1:16 or less
- ○ 1:17 or greater

#### Experience

- ○ New to task
  - No task knowledge, no fundamentals.
- ○ Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- ○ Proficient with task
  - Definitive task knowledge, executes the fundamentals.

#### Other Verbs at the same Physical Level

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### Recommended Methods and Sequence of Instruction

#### Key Points for Success

#### Facilitator Considerations

#### Practical Exercise Considerations

#### Demonstration Considerations

The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.

**Used to:**

- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

**Key points for success:**

- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
- The demonstration must be rehearsed with AIs (the demonstrator and Facilitator must stay in sync or Soldiers will have a tendency to become lost or lose interest).
- The Facilitator must ensure that Soldiers have mastered the prior knowledge needed for the demonstration.
- Soldiers must be able to clearly observe the demonstration and hear what the Facilitator is saying.
- The result of skipped steps or steps performed incorrectly must be explained.
- Soldiers must be shown the responses they control and the cues to which they should react.

**Techniques include:**

- Soldiers watch but do not participate.
- Soldiers observe the demonstration and then execute each step after being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next step.
  - Provide sufficient AIs to roam the classroom, assist Soldiers having difficulty, and ensure all Soldiers are performing each step properly.
**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Physical Level**
- Disassemble
- Disconnect
- Dismantle
- Distribute
- Don
- Enter
- Fire
- Initialize
- Issue
- Load
- Lubricate
- Mark
- Mount
- Observe
- Pack
- Receive
- Send
- Submit
- Transmit
- Unload
- Wear

**Demonstration Example**

**Task Number:** 07-4-0509

**Task Title:** Enter and Clear a Room

The Facilitator and cadre demonstrate the entire task to the Soldiers after depicting the desired end state.

The Facilitator should use a method that allows the Soldier to view the entire task and the movements of each individual (tape house, glass house, short boards, etc.).

The Facilitator should then use the crawl, walk, run process during training:
- Crawl – The Facilitator moves each Soldier into position at a slow pace.
- Walk – The Soldiers move themselves into position at a slow pace.
- Run – The Soldiers move into position at a faster pace.

**Step One**
- The Soldiers form a 4-man stack outside of the room.
- The 2-man is the team leader and controls execution.

**Example Facilitator Feedback**
- The distance between Soldiers should allow:
  - Communication by
    - Hand and arm signals
    - Low voice
    - Movement through the door
    - Speed
    - Violence of action
  - Communication indicating team member readiness should flow from the 4-man to the 2-man
  - The 2-man signals the 1-man to enter.

**Step Two**
- The first Soldier enters the room and moves left or right along the path of least resistance to one of two
Step two

- The first Soldier enters the room and moves left or right along the path of least resistance to one of two corners. He assumes a position of domination facing into the room. During movement, he scans his sector and eliminates all immediate threats.
- The second Soldier enters the room and moves in the opposite direction of the first Soldier to his point of domination.

Example Facilitator feedback

- Room entry
  - Body movement
    - Heel to toe
    - Stable upper body
  - Legs used as shock absorbers
- Speed – “Slow is Smooth, Smooth is Fast”
- Sectors of fire
- Points of domination
- Actions on contact
- Focus on the hands of anyone in the room
  - Threat – Can clearly see hands containing weapon that can inflict harm on team member or non-combatant
  - Non-combatant – Can clearly see empty hands
  - Unknown – Cannot clearly see empty hands
- Immediate action for a malfunction
- Communication

Step three

The third Soldier moves in the opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.

Example Facilitator feedback

- Muzzle awareness
The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.

Example Facilitator feedback:
- Muzzle awareness
- Communication

Step Five

Example Facilitator feedback:
- Muzzle awareness
- Communication
- Marking SDPs

As proficiency increases, the facilitator should discuss factors that increase the complexity of the task:
- Rules of engagement
- Grenade use – Fragmentation, concussion, stun
- Wall construction
- Door openings
- Door breaching
- Multi-rooms
- Rifle to pistol transitions

If time and resources permit, the training should culminate in a Shoot-House with the use of simunitions or live-fire.

D-10
Backwards Chaining Example

Backwards Fading Example

Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

Key points for success:
- Ongoing evaluation of the Soldier’s performance is required.
- The Facilitator determines when to remove instructional support based on Soldier performance.

Techniques include:
- Together, the Facilitator and Soldier perform a series of trials (attempts).
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

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First the facilitator demonstrates the task from beginning to end while the Soldiers watch.

Trial 1: Begin as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the Facilitator. There are no Soldier only steps in this trial.

Trial 2: The facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last task step alone.

Trial 3: The facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last two task steps alone.

Trial 4: The facilitator and the Soldiers perform the first two task steps, and the Soldiers perform the last three task steps.
First, the facilitator demonstrates the task from beginning to end while the Soldiers watch:

**Trial 1:** Begins as a guided demonstration. In other words, each Soldier watches and learns the task steps performed by the facilitator. There are no 'Soldier only' steps in this trial.

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**Trial 4:** The facilitator and the Soldiers perform the first two task steps and the Soldiers perform the last three task steps alone.

**Trial 5:** The facilitator and the Soldiers perform the first task step and the Soldiers perform the last four task steps alone.

**Trial 6:** The Soldiers complete the whole task by themselves.
Appendix E

Military Task Examples
P1-Imitation / Small Group / Familiar with Task
### P1 - Imitation

**Definition**
To go into or upon.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

### Other Verbs at the same Physical Level

| Disassemble  | Initialize | Pack | Receive | Send |
|--------------|------------|------|---------|------|   |
| Disconnect   | Issue      | Send |         |      |   |
| Dismantle    | Load       | Send | Receive | Unload  |   |
| Distribute   | Lubricate  | Send |         |      |   |
| Don          | Mark       | Send | Submit  |      |   |
| Enter        | Mount      | Send | Transmit |      |   |
| Fire         | Observe    | Send | Unload  |      |   |

### Practical Exercise Considerations

The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.

**Used to:**
- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

**Key points for success:**
- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
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- The result of skipped steps or steps performed incorrectly must be explained.
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- Soldiers observe the demonstration and then execute each step after being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next step.
  - Provide sufficient AIs to roam the classroom, assist Soldiers having difficulty, and assure all Soldiers are performing each step properly.

### Peer-to-Peer Learning Considerations

### Other Considerations

### Peer-to-Peer Example

### Forward Chaining Example
### Task Variables

#### Action Verb
- **Enter**

#### Performance Level
- **P1 - Imitation**

#### Definition
- To go into or upon.

#### Group Size
- 1:16 or less
- 1:17 or greater

#### Experience
- **New to task**
  - No task knowledge, no fundamentals.
- **Familiar with task**
  - Preliminary task knowledge, understands fundamentals.
- **Proficient with task**
  - Definitive task knowledge, executes the fundamentals.

#### Other Verbs at the same Physical Level
- Disassemble, Initialize, Pack
- Disconnect, Issue, Receive
- Dismantle, Load, Send
- Distribute, Lubricate, Submit
- Don, Mark, Transmit
- Enter, Mount, Unload
- Fix, Change, Utilize

### Recommended Methods and Sequence of Instruction
- **Key Points for Success**
- **Facilitator Considerations**
- **Practical Exercise Considerations**
- **Demonstration Considerations**
- **Peer-to-Peer Learning Considerations**

### Other Considerations
- Learners can decide when (after which trial) to receive feedback.
  - Feedback frequency may be less important than the individual’s ability to choose or not choose feedback.
  - Feedback may lead to more active involvement by the learner, and the learner increasing his effort during practice.

#### Peer-to-Peer Example

#### Forward Chaining Example

#### Backwards Chaining Example
Step two

- The first Soldier enters the room and moves left or right along the path of least resistance to one of two corners. He assumes a position of domination facing into the room. During movement, he scans his sector and eliminates all immediate threats.
- The second Soldier enters the room and moves in the opposite direction of the first Soldier to his point of domination.

Example P2P Learning Feedback

- #1 man chooses path of least resistance moves under windows.
- #1 man clears all dead space enroute to his point of dominance.
- #2 man moves in the opposite direction of #1 man also clears all dead space enroute to his point of dominance; moves under windows.
- Weapons remain on safe and fingers off trigger unless firing.
- When firing use controlled pairs technique.
- If dark #1 man is the only team member with IR light on to illuminate the room.

Step three

- The third Soldier moves opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.

Example P2P Learning Feedback

- #3 man enters and follows #1 man’s route moving under windows to his point of domination.
- #0 man should not flag #1 man.

Step four

- The fourth Soldier moves opposite of the third Soldier to a position that
Step four

- The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.

Example P2P Learning Feedback

- #4 man follows #2 man’s route moving under windows to his point of domination.
- #4 man should not flag #2 man.

Step five

Example P2P Learning Feedback

- All Soldiers engage enemy combatants with precision aimed fire and identify non-combatants to avoid collateral damage.
- TL assigns Soldier to clear any dead space not already cleared (under bed, behind couch, etc.)
- TL calls for a count – team replies in sequence 1 up 2 up 3 up 4 up; TL declares room clear.
- If the room the team is entering is very small (closet, bathroom), the #1 man yells "Short room", clears it by himself, and reports all clear when finished. The rest of team does not follow the #1 man into a short room.
- The TL instructs Soldier to mark the room as cleared per unit SOP.

Forward Chaining Example

Backwards Chaining Example
Appendix F

Military Task Examples
P1-Imitation / Large Group / Familiar with Task
Task Variables

Action Verb
Enter

Performance Level
P1 - Imitation

Definition
To go into or upon.

Group Size
1:16 or less
1:17 or greater

Experience
New to task
Familiar with task
Proficient with task

Other Verbs at the same Physical Level
Disassemble
Disconnect
Dismantle
Distribute
Don
Enter
Extract

Recommended Methods and Sequence of Instruction

Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Peer-to-Peer Learning Considerations

The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier relationship. Soldiers learn from other Soldiers who have gained valuable insights through practical experience.

In this instance, the P2P method of instruction for hands-on tasks is generally used to:

Key points to consider:

- Facilitators should be knowledgeable about the subject matter.
- The P2P approach takes the Facilitator out of the “expert lecturer” role.
- Facilitators must monitor peer learning to ensure correct information is disseminated.
- Soldier task proficiency must be assessed:
  - Before – to determine the Soldier’s level of understanding/proficiency and identify peer-facilitators
  - During – to estimate understanding/proficiency and track progress in accomplishing the training objectives
  - After – to assess what the Soldier learned
- P2P training places responsibility on the Soldiers to share ideas and resolve differences.
Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

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Example P2P Learning Feedback

- 360 degree security is maintained by the 4-man stack, or the support by fire position.
- #1 man checks around the door for tripwires.
- All Soldiers have their weapons on safe — fingers off triggers.
- All weapons are carried at the high ready with Soldiers looking over weapon sights.
- Rules of Engagement (ROE) and building construction determine type of grenade use.
- #4 man taps /whispers to #3 man, #3 man taps /whispers to #2 man (TL) that they are ready, and TL tells #1 man to "GO."
- If dark, #1 man has infrared (IR) light on, entire team has Night Vision Devices (NVGs) on.

Step One

- The Soldiers form a 4-man stack outside of the room.
- The 2-man is the team leader and controls execution.

Step Two

- The first Soldier enters the room and moves left or right along the path of the 4-man stack.
- If dark #1 man has infrared (IR) light on, entire team has Night Vision Devices (NVGs) on.

**Step Two**

- The first Soldier enters the room and moves left or right along the path of least resistance to one of two corners. He assumes a position of domination facing into the room. During movement, he scans his sector and eliminates all immediate threats.
- The second Soldier enters the room and moves in the opposite direction of the first Soldier to his point of domination.

**Example P2P Learning Feedback**

- First man chooses path of least resistance moves under windows.
- #1 man clears all dead space enroute to his point of dominance.
- #2 man moves in the opposite direction of #1 man also clears all dead space enroute to his point of dominance. Moves under windows.
- Weapons remain on safe and fingers off trigger unless firing.
- When firing use controlled pairs technique.
- If dark #1 man is the only team member with IR light on to illuminate the room.

**Step Three**

- The third Soldier moves opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.

**Example P2P Learning Feedback**

- #3 man enters and follows #1 man's route moving under windows to his point of domination.
- #3 man should not flag #1 man.

**Step Four**
• #3 man enters and follows #1 man’s route moving under windows to his point of domination.
• #3 man should not flag #1 man.

Step four

• The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.

Example P2P Learning Feedback

• #4 man follows #2 man’s route moving under windows to his point of domination.
• #4 man should not flag #2 man.

Step five

• All Soldiers engage enemy combatants with precision armed fire and identify non-combatants to avoid collateral damage.

Example P2P Learning Feedback

• TL assigns Soldier to clear any dead space not already cleared (under bed, behind couch, etc.)
• TL calls for a count – team replies in sequence 1 up 2 up 3 up 4 up; TL declares room clear.
• If the room the team is entering is very small (closet, bathroom), the #1 man yells "Short room", clears it by himself, and reports all clear when finished. The rest of team does not follow the #1 man into a short room.
• The TL instructs Soldier to mark the room as cleared per unit SOP.

Forward Chaining Example

Backwards Chaining Example
Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Disassemble
- Disconnect
- Dismantle
- Distribute
- Don
- Enter
- Fire
- Initialize
- Issue
- Load
- Lubricate
- Mount
- Observe
- Pack
- Receive
- Send
- Submit
- Mark
- Transmit
- Unload
- Wear

Other Considerations

Peer-to-Peer Example

Forward Chaining Example

Task Number: 07-4-09509

Task Title: Enter and Clear a Room

The Facilitator and cadre demonstrate the entire task to the Soldiers after depicting the desired end state.

The Facilitator should use a method that allows the Soldier to view the entire task and the movements of each individual (tape house, glass house, short boards, etc.).

The Facilitator should then use the crawl, walk, run process during training:
- Crawl – The Facilitator moves each Soldier into position at a slow pace.
- Walk – The Soldiers move themselves into position at a slow pace.
- Run – The Soldiers move into position at a faster pace.

Step One

- The Soldiers form a 4-man stack outside of the room.
- The 2-man is the team leader and controls execution.

Example Facilitator Feedback:
- The distance between Soldiers should allow:
  - Communication by
    - Hand and arm signals
    - Low voice
  - Movement through the door
    - Speed
    - Violence of action
  - Communication indicating team member readiness should flow from the 4-man to the 2-man.
  - The 2-man signals the 1-man to enter.
Step two

- The first Soldier enters the room and moves left or right along the path of least resistance to one of two corners. He assumes a position of domination facing into the room. During movement, he scans his sector and eliminates all immediate threats.
- The second Soldier enters the room and moves in the opposite direction of the first Soldier to his point of domination.

Example Facilitator feedback

- Room entry
  - Body movement
    - Heel to toe
    - Stable upper body
  - Legs used as shock absorbers
- Speed - “Slow is Smooth, Smooth is Fast”
- Sectors of fire
- Points of domination
- Actions on contact
- Focus on the hands of anyone in the room
  - Threat – Can clearly see hands containing weapon that can inflict harm on team member or non-combatant
  - Non-combatant – Can clearly see empty hands
  - Unknown – Cannot clearly see empty hands
- Immediate action for a malfunction
- Communication

Step three

The third Soldier moves in the opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.
Step three

The third Soldier moves in the opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.

Example Facilitator feedback

- Muzzle awareness
- Communication

Step four

The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.

Example Facilitator feedback

- Muzzle awareness
- Communication

Step Five

All Soldiers engage enemy combatants with precision armed fire and identify non-combatants to avoid collateral damage.
The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.

Example Facilitator feedback:
- Muzzle awareness
- Communication

Step Five

Example Facilitator feedback:
- Muzzle awareness
- Communication
- Marking SDPs

As proficiency increases, the facilitator should discuss factors that increase the complexity of the task:
- Rules of engagement
- Grenade use – Fragmentation, concussion, stun
- Wall construction
- Door openings
- Door breaching
- Multi-rooms
- Rifle to pistol transitions

If time and resources permit, the training should culminate in a Shoot-House with the use of simulations or live-fire.

Backwards Chaining Example
Appendix G

Military Task Examples
P2+P3 – Manipulation and Precision / Small Group / Familiar with Task
### Task Variables

#### Action Verb

- **Perform**

#### Performance Level

- **P3 - Precision**

**Definition**

To carry out an action or pattern of behavior.

#### Group Size

- **1:16 or less**
- **1:17 or greater**

#### Experience

- **New to task**
  - No task knowledge, no fundamentals.
- **Familiar with task**
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  - Definitive task knowledge, executes the fundamentals.

### Other Verbs at the same Physical Level

- Adjust
- Align
- Assemble
- Camouflage
- Clear
- Collect
- Extend
- Extract
- Forward
- Fuel
- Guard
- Implement
- Post
- Prepare
- Prevent
- Produce
- Process
- Protect
- Provide

### Recommended Methods and Sequence of Instruction

**Key Points for Success**

- Provide Soldiers the correct general pattern of the task to ensure they practice the right actions.
- Ensure the Soldiers know the task first before providing a significant amount of explanation.
- Offer PEs across varied contexts enabling Soldiers to learn the deep structural aspects of the procedures even if the surface level conditions change.
- Soldiers should practice in the greatest variety of situations they can handle.
- Facilitators should watch Soldiers intently to provide prompt and accurate feedback and to help them avoid establishing faulty habits.

### Facilitator Considerations

### Practical Exercise Considerations

### Demonstration Considerations

### Facilitator Induced Errors Example

### Backwards Facing Example

### Memory Joggers
Instructional Methods Tool

Task Variables

Action Verb
Perform

Performance Level
P3 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size
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- Fuel
- Guard
- Implement
- Post
- Prepare
- Prevent
- Process
- Produce
- Protect
- Reduce

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Facilitators should:
- Demonstrate the task.
- Provide the Soldiers with multiple PEs.
- Induce errors/faults within the PEs.
- Ask Soldiers to explain their thought processes while troubleshooting the errors/faults.
- Provide feedback for letting the Soldiers know where they are making errors.
- Ask the Soldiers why they think they are making these errors in a new context.
- Provide additional procedural information as required in order for the Soldiers to successfully complete the exercises.
- Reduce scaffolds until Soldiers are operating, creating, and navigating on their own without errors.
- Provide multiple varied examples and determine if Soldiers can perform these tasks in novel varied contexts.
- Provide resources to reduce cognitive load such as memory joggers, mathematical formulas, specs, etc.

Practical Exercise Considerations

Demonstration Considerations

Facilitator Induced Errors Example

Backwards Fading Example

Memory Joggers
Task Variables

Action Verb

Perform

Performance Level
P9 - Precision

Definition
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Group Size
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- 1:17 or greater

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- Post
- Prepare
- Prevent
- Process
- Produce
- Protect
- Provide

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations
- Present Soldiers with faults in the procedures/steps, have the Soldiers troubleshoot these faults in order to successfully address the problems.
- Ask Soldiers to explain why they think they are performing certain errors.
- Provide additional practice opportunities while explaining their steps and errors, demonstrating their ability to troubleshoot.
- Assess whether Soldiers can complete the entire task on their own with minimal errors.

When possible:
- Use simulators, desktop trainers, etc. to provide Soldiers with varied performance examples and to test their performance of the procedural tasks.
- Record the learner’s performance using devices such as tape recorders for speech teachers and video cameras for coaches, etc.
- Strike a balance between explanation, practice, and further explanation.
- Provide “just-in-time information”, critical information at key points in performing the task (i.e., not all before performing the task).
- Judge progress in terms of technique, output.
- Allow individuals to choose if and when they will receive feedback, which may lead to more active learner involvement, and increase efforts during practice.

Demonstration Considerations

Facilitator Induced Errors Example

Backwards Fading Example

Memory Joggers
P3 - Precision

Definition
To carry out an action or pattern of behavior.

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Other Verbs at the same Physical Level

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Align | Extract | Prepare
Assemble | Forward | Prevent
Camouflage | Fuel | Process
Clear | Guard | Produce
Close | Implement | Protect
Collect | Input | Provide
Complete | Inspect | Publish
Comply | Install | Record
Configure | Inventory | Recover
Connect | Lay | Reduce
Construct | Lead | Refine
Control | Maintain | Release
Correct | Measure | Relocate
Counter | Monitor | Remove
Cross | Move | Repair
Decontaminate | Navigate | Replace
Deliver | Negotiate | Restore
Demonstrate | Neutralize | Retrieve
P3 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size
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- 1:17 or greater

Experience
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Task Number: 071-120-0200
Task Title: Perform Jumpmaster Duties during an Airborne Operation
Sub Task: Conduct Jumpmaster Personnel Inspection (JMPl) Sequence

1. The Facilitator demonstrates the correct method of inspecting a parachutist.
2. The Facilitator induces major and minor errors in the parachute assembly.
3. The remaining hours are spent conducting practical exercises using two-man buddy teams (jumpmaster and jumper), where the Soldier Jumpmaster (JM) is required to conduct a personnel inspection and find and report major and minor rigging deficiencies that have been placed in the parachute assembly by the Facilitator.
4. Soldiers are changed over often to ensure all receive the same amount of inspection time.

Jumpmaster Personnel Inspection (JMPl)

Facilitator-Induced Errors
- Error: Inverted chin strap
- Error: Canopy release not properly seated
- Error: Reserve upside-down
- Error: Leg strap not routed through aviators' kit bag

Facilitator Feedback
- Use correct nomenclature
- Why is the Canopy release not properly seated?
- What is the correction needed?
- How should the leg strap be routed through aviators' kit bag?
Backwards Fading Example

Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

Key points for success:
- Ongoing evaluation of the Soldier's performance is required.
- The Facilitator determines when to remove instructional support based on Soldier performance.

Techniques include:
- Together, the Facilitator and Soldier perform a series of trials (attempts).
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

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The facilitator determines when to remove instructional support based on Soldier performance. Techniques include:

- Together, the Facilitator and Soldier perform a series of trials (attempts).
- In early learning trials, both the Soldier and the facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

**TASK/Conduct Jumpmaster Preparatory Inspection (AIM)**

<table>
<thead>
<tr>
<th>STEPS</th>
<th>TRIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Advanced Combat Helmet (Front)</td>
</tr>
<tr>
<td>Step 2</td>
<td>Canopy Release Assembly</td>
</tr>
<tr>
<td>Step 3</td>
<td>Main Lift Web</td>
</tr>
<tr>
<td>Step 4</td>
<td>Ghost Strap</td>
</tr>
<tr>
<td>Step 5</td>
<td>Waist Band</td>
</tr>
<tr>
<td>Step 6</td>
<td>Leg Steps</td>
</tr>
<tr>
<td>Step 7</td>
<td>Ejection Seat Release</td>
</tr>
<tr>
<td>Step 8</td>
<td>Universal Static Line</td>
</tr>
<tr>
<td>Step 9</td>
<td>Advanced Combat Helmet (Back)</td>
</tr>
<tr>
<td>Step 10</td>
<td>Riser Assemblies</td>
</tr>
<tr>
<td>Step 11</td>
<td>Packway</td>
</tr>
<tr>
<td>Step 12</td>
<td>Diagonal / Horizontal Dock Steps</td>
</tr>
<tr>
<td>Step 13</td>
<td>Saddle</td>
</tr>
</tbody>
</table>

**BACKWARDS FADING**

First the facilitator demonstrates the task from beginning to end while the Soldier watches.

- **Trial 1:** Begins as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the facilitator. There are no “study only” steps in this trial.
- **Trial 2:** The facilitator and the Soldiers perform the first ten task steps and the Soldiers perform the last three task steps alone.
- **Trial 3:** The facilitator and the Soldiers perform the first seven task steps and the Soldiers perform the last six task steps alone.
- **Trial 4:** The facilitator and the Soldiers perform the first five task steps and the Soldiers perform the last eight task steps alone.
- **Trial 5:** The facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last ten task steps alone.
- **Trial 6:** The Soldiers complete the task by themselves.

**Memory Joggers**

- TRIALS
P3 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

Adjust	Extend	Post
Align	Extract	Prepare
Assemble	Forward	Prevent
Camouflage	Fuel	Process
Clear	Guard	Produce
Close	Implement	Protect
Collect	Input	Provide
Complete	Inspect	Publish
Comply	Install	Record
Configure	Inventory	Recover
Connect	Lay	Reduce
Construct	Lead	Refine
Control	Maintain	Release
Correct	Measure	Relocate
Counter	Monitor	Remove
Cross	Move	Repair
Decontaminate	Navigate	Replace
Deliver	Negotiate	Restore
Demonstrate	Neutralize	Retrieve

Practical Exercise Considerations
Demonstration Considerations
Facilitator Induced Errors Example
Backwards Fading Example

Memory Jogger
Memory joggers are designed to reduce the Soldier's cognitive load by providing macro level reminders.

T-11 / MC-6 Series – JMPI Sequence

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Advanced Combat Helmet (front)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Canopy Release Assembly</td>
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<td>Main Lift Web</td>
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<td>Chest Strap</td>
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<td>Waist Band</td>
</tr>
<tr>
<td>Step 6</td>
<td>T-11 Reserve</td>
</tr>
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<td>Step 7</td>
<td>Leg Straps</td>
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<td>Step 8</td>
<td>Universal Static Line</td>
</tr>
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<td>Step 9</td>
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<td>Step 11</td>
<td>Packtray</td>
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<td>Step 12</td>
<td>Diagonal/Horizontal Back Straps</td>
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<tr>
<td>Step 13</td>
<td>Saddle</td>
</tr>
</tbody>
</table>
Appendix H

Military Task Examples
P2+P3 – Manipulation and Precision / Large Group / Familiar with Task
Task Variables

Action Verb
- Perform

Performance Level
P3 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Adjust
- Align
- Assemble
- Camouflage
- Clear
- Close
- Collect
- Extend
- Extract
- Forward
- Fuel
- Guard
- Implement
- Post
- Prepare
- Prevent
- Process
- Produce
- Protect

Recommended Methods and Sequence of Instruction

Time of Instruction
- 2 hours: Demonstration with PE and Facilitator feedback
- 4-8 hours: Demonstration then multiple practice sessions and rehearsals using training aids or actual equipment, IMI, or simulations. Facilitator feedback is essential.

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Demonstration Considerations

Facilitator Induced Errors Example

Backwards Fading Example

Memory Joggers
Task Variables

Action Verb

Perform

Performance Level

P3 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

- Adjust, Extend, Post
- Align, Extract, Prepare
- Assemble, Forward, Prevent
- Camouflage, Fuel, Process
- Clear, Guard, Produce
- Close, Implement, Protect
- Collect, Instruct, Provide
Task Variables

Action Verb
Perform

Performance Level
P9 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Adjust
- Align
- Assemble
- Camouflage
- Clear
- Close
- Collect
- Extend
- Extract
- Forward
- Fuel
- Guard
- Implement
- Post
- Prepare
- Prevent
- Process
- Produce
- Protect
- Provide

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations
- Present Soldiers with faults in the procedures/steps and have the Soldiers troubleshoot these faults in order to successfully address the problems.
- Ask Soldiers to explain why they think they are performing certain errors.
- Provide additional practice opportunities while explaining their steps and errors and demonstrating their ability to troubleshoot.
- Assess whether Soldiers can complete the entire task on their own with minimal errors.
- Follow the completion of each PE with discussions with the large group to answer Soldier questions, obtain different perspectives across the small groups, and summarize the tasks.

When possible:
- Use simulators, desktop trainers, etc. to provide Soldiers with varied performance examples and to test their performance of the procedural tasks.
- Record the learner's performance using devices (such as tape recorders for speech teachers and video cameras for coaches, etc.).
- Strike a balance between explanation, practice, and further explanation.
- Provide "just-in-time" critical information at key points in performing the task (i.e., not all before performing the task).
- Judge progress in terms of technique and output.
- Allow individuals to choose it and when they will receive feedback, which may lead to more active learner involvement, and increased efforts during practice.

Demonstration Considerations

Facilitator Induced Errors Example

Backwards Facing Example
Task Variables

Action Verb

Perform

Performance Level

P3 - Precision

Definition

to carry out an action or pattern of behavior

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

- Adjust
- Align
- Assemble
- Camouflage
- Clear
- Close
- Collect
- Complete
- Comply
- Configure
- Connect
- Construct
- Control
- Extend
- Extract
- Forward
- Fuel
- Guard
- Implement
- Input
- Inspect
- Install
- Inventory
- Lay
- Lead
- Maintain
- Post
- Prepare
- Prevent
- Process
- Produce
- Protect
- Provide
- Publish
- Record
- Recover
- Reduce
- Refine
- Release

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Demonstration Considerations

The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.

Used to:

- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

Key points for success:

- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
- The demonstration must be rehearsed with AIs (the demonstrator and Facilitator must stay in sync or Soldiers will have a tendency to become lost or lose interest).
- The Facilitator must ensure that Soldiers have mastered the prior knowledge needed for the demonstration.
- Soldiers must be able to clearly observe the demonstration and hear what the Facilitator is saying.
- The result of skipped steps or steps performed incorrectly must be explained.
- Soldiers must be shown the responses they control and the cues to which they should react.

Techniques include:

- Soldiers watch but do not participate.
- Soldiers observe the demonstration and then execute each step after being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next step.
  - Provide sufficient AIs to roam the classroom, assist Soldiers having difficulty, and ensure all Soldiers are performing each step properly.

Facilitator Induced Error Example
### Other Verbs at the same Physical Level

<table>
<thead>
<tr>
<th>Action Verb</th>
<th>Performance Level</th>
<th>Definition</th>
<th>Group Size</th>
<th>Experience</th>
<th>Task Number</th>
<th>Task Title</th>
<th>Sub Task</th>
<th>Task Type</th>
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<tbody>
<tr>
<td>Adjust</td>
<td>FG - Precision</td>
<td>To carry out an action or pattern of behavior.</td>
<td>1:16 or less</td>
<td>New to task</td>
<td>971-120-0200</td>
<td>Perform Jumppmaster Duties during an Airborne Operation</td>
<td>Conduct Jumppmaster Personnel Inspection (JMPI)</td>
<td>T-11 Hollywood Jumppmaster Personnel Inspection (JMPI)</td>
</tr>
<tr>
<td>Align</td>
<td>FG - Precision</td>
<td>To carry out an action or pattern of behavior.</td>
<td>1:17 or greater</td>
<td>Proficient</td>
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<td>Assemble</td>
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</tr>
</tbody>
</table>

Key Points for Success:
1. The Facilitator demonstrates the correct method of inspecting a parachutist.
2. The Facilitator ensures that major and minor errors are identified.
3. The remaining hours are spent conducting practical exercises using two-man buddy teams (jumpmaster and jumper), where the Soldier (jumpmaster) is required to conduct a personnel inspection and report any major and minor rigging deficiencies placed in the parachute assembly by the Facilitator.
4. Soldiers are changed over often to ensure all receive the same amount of inspection time.

**Jumpmaster Personnel Inspection (JMPI)**

**Facilitator-induced Errors Example**

- **FACILITATOR-INDUCED ERRORS**
  - Error: Inverted chin strap
  - Error: Canopy release not properly seated
  - Error: Reserve upside-down
  - Error: Leg strap not routed through aviators kit bag

**Facilitator Feedback**

- Use correct nomenclature
- Why is the Canopy release not properly seated?
- What is the correction needed?
- How should the leg strap be routed through aviators kit bag?
Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Defined task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Adjust, Extend, Post
- Align, Extract, Prepare
- Assemble, Forward, Prevent
- Camouflage, Fuel, Process
- Clear, Guard, Produce
- Close, Implement, Protect
- Collect, Input, Provide
- Complete, Inspect, Publish
- Comply, Install, Record
- Connect, LAY, Reduce
- Construct, Lead, Refine
- Control, Maintain, Release
- Correct, Measure, Relocate
- Counter, Monitor, Remove
- Cross, Move, Repair
- Decontaminate, Navigate, Replace
- Deliver, Negotiate, Restore
- Demonstrate, Neutralize, Retrieve
- Deploy, New, Rig
- Direct, Notify, Secure
- Dispatch, Obtain, Set up
- Displace, Occupy, Store
- Employ, Open, Tow
- Employ, Operate, Track

Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

Key points for success:
- Ongoing evaluation of the Soldier’s performance is required.
- The Facilitator determines when to remove instructional support based on Soldier performance.

Techniques include:
- Together, the Facilitator and Soldier perform a series of trials (attempts).
- In early learning trials, both the Soldier and the facilitator are involved in performing the steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

<table>
<thead>
<tr>
<th>TASK: Conduct Jumpmaster Personnel Inspection (MPI)</th>
<th>BACKWARDS FADING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEPS</strong></td>
<td><strong>TRIALS</strong></td>
</tr>
<tr>
<td>Step 1: Advanced Combat Helmet (Front)</td>
<td>Trial 1: Begin as a guided demonstration. In other words, each Soldier watches and monitors the steps performed by the facilitator. There are no student only steps in this trial.</td>
</tr>
<tr>
<td>Step 2: Cargo Release Assembly</td>
<td>Trial 2: The facilitator and the Soldiers perform the first ten steps and the Soldiers perform the last three steps alone.</td>
</tr>
<tr>
<td>Step 3: Main Lift Web</td>
<td>Trial 3: The facilitator and the Soldiers perform the first seven steps, and the Soldiers perform the last five steps alone.</td>
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<td>Step 4: Chest Strap</td>
<td>Trial 4: The facilitator and the Soldiers perform the first five steps, and the Soldiers perform the last six steps alone.</td>
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<td>Step 5: Waist Band</td>
<td>Trial 5: The facilitator and the Soldiers perform the first three steps and the Soldiers perform the last ten steps alone.</td>
</tr>
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<td>Step 6: 111 Reserve</td>
<td></td>
</tr>
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<td>Step 7: Leg Straps</td>
<td></td>
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<td>Step 8: Universal Static Line</td>
<td></td>
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<td></td>
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Other Verbs at the same Physical Level

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Compensate, Install, Record
Configure, Inventory, Recover
Connect, Lay, Reduce
Construct, Lead, Refine
Control, Maintain, Release
Correct, Measure, Relocate
Counter, Monitor, Remove
Cross, Move, Repair
Decontaminate, Navigate, Replace
Deliver, Negotiate, Restore
Demonstrate, Neutralize, Retrieve
Deploy, New, Rig
Direct, Notify, Secure
Dispatch, Obtain, Set up
Displace, Occupy, Store
Empower, Open, Tow
Employ, Operate, Track
Enforce, Order, Train
Erect, Orient, Transport
Escort, Patrol, Treat
Evacuate, Perform, Troubleshoot
Evade, Place, Turn
Evaluate, Plot, Zero
Exchange, Position

The facilitator determines when to remove instructional support based on Soldier performance. Techniques include:

- Together, the Facilitator and Soldier perform a series of trials (attempts).
- In early learning trials, both the Soldier and the facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

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<tbody>
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<td>STEPS</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
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<td>Step 13</td>
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</tbody>
</table>

Trial 1 - Begins as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the facilitator. There are no "student-only" steps in this trial.

Trial 2 - The Facilitator and the Soldiers perform the first ten task steps and the Soldiers perform the last three task steps alone.

Trial 3 - The facilitator and the Soldiers perform the first seven task steps and the Soldiers perform the last six task steps alone.

Trial 4 - The facilitator and the Soldiers perform the first five task steps and the Soldiers perform the last eight task steps alone.

Trial 5 - The facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last ten task steps alone.

Trial 6 - The Soldiers complete the task by themselves.

Memory Joggers
P3 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

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<tr>
<td>Demonstrate</td>
<td>Neutralize</td>
<td>Retrieve</td>
</tr>
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</table>

Practical Exercise Considerations

Demonstration Considerations

Facilitator Induced Errors Example

Backwards Fading Example

Memory Joggers

Memory joggers are designed to reduce the Soldier’s cognitive load by providing macro level reminders.

T-11 / MC-6 Series – JMPl Sequence

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Advanced Combat Helmet (front)</th>
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</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Canopy Release Assembly</td>
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<tr>
<td>Step 3</td>
<td>Main Lift Web</td>
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<td>Step 4</td>
<td>Chest Strap</td>
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<td>Step 5</td>
<td>Waist Band</td>
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<td>Step 6</td>
<td>T-11 Reserve</td>
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<tr>
<td>Step 7</td>
<td>Leg Straps</td>
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<td>Step 8</td>
<td>Universal Static Line</td>
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<tr>
<td>Step 9</td>
<td>Advanced Combat Helmet (back)</td>
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<td>Step 10</td>
<td>Riser Assemblies</td>
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<td>Step 11</td>
<td>Packtray</td>
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<tr>
<td>Step 12</td>
<td>Diagonal/Horizontal Back Straps</td>
</tr>
<tr>
<td>Step 13</td>
<td>Saddle</td>
</tr>
</tbody>
</table>
Appendix I

Military Task Examples
P2+3 – Manipulation and Precision / Small Group / Proficient with Task
Task Variables

Action Verb
Perform

Performance Level
P3 - Precision

Definition
To carry out an action or pattern of behavior.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
- Familiar with task
- Proficient with task

Practical Exercise Considerations

Peer-to-Peer Learning Considerations

Other Verbs at the same Physical Level
- Adjust
- Align
- Assemble
- Camouflage
- Clear
- Close
- Collect
- Extend
- Extract
- Forward
- Fuel
- Guard
- Impenetrable
- Implement
- Prevent
- Process
- Produce
- Protect
- Post
### Definition
To carry out an action or pattern of behavior.

#### Group Size
- 1:16 or less
- 1:17 or greater

#### Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
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<td>Patrol</td>
<td>Treat</td>
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<td>Evacuate</td>
<td>Perform</td>
<td>Troubleshoot</td>
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<tr>
<td>Evade</td>
<td>Place</td>
<td>Turn</td>
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<tr>
<td>Evaluate</td>
<td>Plot</td>
<td>Zero</td>
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<tr>
<td>Exchange</td>
<td>Position</td>
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**Jumpmaster Personnel Inspection (JMPI)**

**Condition 2: T-11 Combat Equipped Parachutist**

**FACILITATOR-INDUCED ERRORS**

- Error: Canopy release not properly seated
- Error: Reserve upside-down
- Error: Leg strap not routed through aviator's kit bag

**FACILITATOR FEEDBACK**

- Why is the canopy release not properly seated?
- What is the correction needed?
- How should the leg strap be routed through the aviator's kit bag?
- Use correct nomenclature (not zip-on)
- Why must the slide fastener be properly secured?
- What is the correction needed?
- How should the leg strap be routed?
Experience

- New to task
- Familiar with task
- Proficient with task

Other Verbs at the same Physical Level

- Adjust
- Align
- Assemble
- Camouflage
- Clear
- Close
- Collect
- Complete
- Comply
- Configure
- Connect
- Construct
- Control
- Correct
- Counter
- Cross
- Decontaminate
- Deliver
- Demonstrate
- Deploy
- Direct
- Dispatch
- Displace
- Employ
- Empy

Just-in-Time Information

The Facilitator provides more detailed information regarding the specific material and information to be learned.

Modular Airborne Weapons Case Nomenclature

1. Quick release buckles
2. Lower tie down strap
3. Quick Release Snap Shackle
4. Pouch attachment ladder system webbing
5. Attachment strap
6. Carrying handle
7. Friction adapter
8. Compression straps
9. Adjustable nose cone

Completion Task Example
Appendix J

Military Task Examples
P2+P3 – Manipulation and Precision / Large Group / Proficient with Task
Task Variables

Action Verb
- Perform

Performance Level
- P3 - Precision

Definition
- To carry out an action or pattern of behavior.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Adjust, Extend, Post
- Align, Extract, Prepare
- Assemble, Forward, Prevent
- Camouflage, Fuel, Process
- Clear, Guard, Produce
- Close, Implement, Protect
- Collect, Include, Provide

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Peer-to-Peer Learning Considerations

The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier relationship. Soldiers learn from other Soldiers who have gained valuable insights through practical experience.

In this instance, the P2P method of instruction for hands-on tasks is generally used to:
- Increase Soldier time-on-task

Key points to consider:
- Facilitators should be knowledgeable about the subject matter.
- The P2P approach takes the Facilitator out of the “expert lecturer” role.
- Facilitators must monitor peer learning to ensure correct information is disseminated.
- Soldier task proficiency must be assessed:
  - Before - to determine the Soldier’s level of understanding/proficiency and identify peer-facilitators;
  - During - to estimate understanding/proficiency and track progress in accomplishing the training objectives;
  - After - to assess what the Soldier learned.
- P2P training places responsibility on the Soldiers to share ideas and resolve differences.

Troubleshooting Example

Just-in-Time Information

Admin Log In
To carry out an action or pattern of behavior.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
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- Proficient with task
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<td>Obtain</td>
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</table>
Appendix K

Military Task Examples
P4 - Articulation / Small Group / Familiar with Task
Task Variables

Action Verb

Engage

Performance Level

P4 - Articulation

Definition

To enter into contest or battle, to fight.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

Recommended Methods and Sequence of Instruction

Choose the method of instruction based on the "Time of Instruction" for the ELC.

Time of Instruction

- 4-8 hours
  - **Less proficient Soldiers**
    - Demonstration then multiple practice sessions using training aids or actual equipment.
  - **More proficient Soldiers**
    - Perform PEs that reflect tasks they would perform on the job.

- Multiple Days
  - **Less proficient Soldiers**
    - Cycle of demonstrations and practice opportunities, probing questions, and feedback; more rigorous proficiency tests could be implemented.
  - **More proficient Soldiers**
    - Test proficiency and then have them assist in preparing lessons, teaching, and researching for longer assignments.

Key Points for Success

- Facilitator Considerations
- Practical Exercise Considerations
- Demonstration Considerations
- Other Considerations
- Demonstration of a Team/System Example
- Team/System Practical Exercise Example
- Backwards Fading Example
- Team/System PE with Increasing Complexity Example
**Task Variables**

**Action Verb**

**Engage**

**Performance Level**

P4 - Articulation

**Definition**

To enter into contest or battle, to fight.

**Group Size**

- 1:16 or less
- 1:17 or greater

**Experience**

- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Physical Level**

- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

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**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

- Soldiers should practice performing two or more tasks together as part of a system.
- Soldiers should be provided PEs across multiple contexts for varied practice.
- Soldiers should learn the deep structural aspects of the procedures even if the surface-level conditions change.
- Exercises should require Soldiers to integrate individual tasks into a larger system or during collective task performance.
- More proficient Soldiers could coach and mentor less-experienced Soldiers.
- Facilitators should provide feedback.

**Facilitator Considerations**

**Practical Exercise Considerations**

**Demonstration Considerations**

**Other Considerations**

**Demonstration of a Team/System Example**

**Team/System Practical Exercise Example**

**Backwards Fading Example**

**Team/System PE with Increasing Complexity Example**
Task Variables

Action Verb
Engage

Performance Level
P4 - Articulation

Definition
To enter into contest or battle, to fight.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  No task knowledge, no fundamentals.
- Familiar with task
  Preliminary task knowledge, understands fundamentals.
- Proficient with task
  Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Demonstration Considerations

The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.

Used to:
- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

Key points for success:
- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
- The demonstration must be rehearsed with Als (the demonstrator and Facilitator must stay in sync, or Soldiers will have a tendency to become lost or lose interest).
- The Facilitator must ensure that Soldiers have mastered the prior knowledge needed for the demonstration.
- Soldiers must be able to clearly observe the demonstration and hear what the Facilitator is saying.
- The result of skipped steps or steps performed incorrectly must be explained.
- Soldiers must be shown the responses they control and the cues to which they should react.

Techniques include:
- Soldiers watch but do not participate.
- Soldiers observe the demonstration and then execute each step after being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next step.
  - Provide sufficient Als to roam the classroom, assist Soldiers having difficulty, and ensure all Soldiers are performing each step properly.

Other Considerations
Demonstration of a Team/System Example

Task Number: 071-APL0023

Task Title: Field Fire 1 Engage Stationary Targets with the M110 (GASS)

A Sniper Team (Shooter and Spotter) will engage targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team’s data book for future engagements by:

- Accurately recording cold barrel and confirmation shot placement, and elevation and windage adjustments and holds.
- Properly identifying targets.
- Accurately determining range to targets.
- Accurately utilizing the ABC.

Prior to the demonstration the Facilitator should accomplish the following:

- Arrange the area so all Soldiers can see and hear the demonstration.
  - Situate the small group near/around the demonstrator(s)
  - If there is a large group, arrange the Soldiers around multiple assistants who mimic the actions of the Facilitator.

During the demonstration:

- Facilitators can provide demonstrations on how individual tasks (identifying targets, determining range, utilizing the ABC, etc.) are integrated and performed as part of collective tasks (shot process).
- The shot process can be demonstrated at normal speed.

**Flowchart:**

1. The Sniper Team selects a target.
2. The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter.
3. The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).
4. The Spotter approximates the range to the target.
5. The Spotter relays the distance and minutes of angle (MOA) back to the Shooter.
6. The Shooter dial the MOA on the rifle scope.
7. The Spotter determines wind direction and speed through his spotting scope.
8. The Spotter makes a “wind” call by announcing how far right or left of target the point of aim should be.
9. The Shooter aims where he will make the shot.
10. The Spotter watches the flight.
11. If the target is hit, the team moves to the next target.
Other Verbs at the same Physical Level

Assault
Attack
Breach
Coordinate
Defend

Destroy
Develop
Disengage
Engage
Infiltrate

Integrate
Land
Launch
Modify

Accurately determining range to targets.
Accurately utilizing the ABC.

Prior to the demonstration the Facilitator should accomplish the following:

- Arrange the area so all Soldiers can see and hear the demonstration.
  - Situate the small group near/around the demonstrator(s)
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During the demonstration:

- Facilitators can provide demonstrations on how individual tasks (identifying targets, determining range, utilizing the ABC, etc.) are integrated and performed as part of collective tasks (shot process).
- The shot process can be demonstrated at normal speed.

The Sniper Team selects a target.
The Shooter measures the target with the rifle scope/ruler and relays the results to the Spotter.
The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).
The Spotter approximates the range to the target.

The Spotter relays the distance and minutes of angle (MOA) back to the Shooter.
The Shooter dial[s] the MOA on the rifle scope.
The Spotter determines wind direction and speed through his spotting scope.
The Spotter makes a "wind" call by announcing how far right or left of target the point of aim should be.

The Shooter aims where the Spotter tells him and fires.
The Spotter watches the flight and impact of the round.
If the target is hit, the team moves to the next target.
If the target is missed, the team makes corrections and re-engages.

Team/System Practical Exercise Example
Backwards Fading Example
Team/System PE with Increasing Complexity Example
Demonstration of a Team/System Example

Team/System Practical Exercise Example

Backwards Fading Example

Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

Key points for success:
- Ongoing evaluation of the Soldier’s performance is required.
- The Facilitator determines when to remove instructional support based on the Soldier’s performance.

Techniques include:
- Together, the Facilitator and Soldier perform a series of trials (attempts) that the facilitator and Soldier perform together.
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

<table>
<thead>
<tr>
<th>STEPS</th>
<th>TRIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Sniper Team selects a target.</td>
<td>Trial 1 - Begins as guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the facilitator. There are no Soldier only steps in this trial.</td>
</tr>
<tr>
<td>The Shooter measures the target with the riflescope reticle and relays the results to the Spotter.</td>
<td>Trial 2 - The facilitator and the Soldiers perform the first eight task steps and the Soldiers perform the last two task steps alone.</td>
</tr>
<tr>
<td>The Spotter inputs the measurements into the ABC.</td>
<td>Trial 3 - The facilitator and the Soldiers perform the first six task steps and the Soldiers perform the last four task steps alone.</td>
</tr>
<tr>
<td>The Spotter approximates the range to the target.</td>
<td>Trial 4 - The facilitator and the Soldiers perform the first four task steps and the</td>
</tr>
<tr>
<td>The Spotter relays the distance and radian angle (MOA) back to the Shooter.</td>
<td></td>
</tr>
<tr>
<td>The Shooter dial MOA on the rifle scope.</td>
<td></td>
</tr>
<tr>
<td>The Shooter determines wind.</td>
<td></td>
</tr>
</tbody>
</table>

Field Fire with the M10
Semi-Automated Sniper System (SASS)
Soldier’s performance.

Techniques include:

- Together, the Facilitator and Soldier perform a series of trials (attempts) that the facilitator and Soldier perform together.
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

### Field Fire with the M110 Semi Automated Sniper System (SASS)

<table>
<thead>
<tr>
<th>STEPS</th>
<th>TRIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Shooter selects a target</td>
<td>Demo</td>
</tr>
<tr>
<td>The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter</td>
<td></td>
</tr>
<tr>
<td>The Spotter inputs the measurements into the ABC</td>
<td></td>
</tr>
<tr>
<td>The Spotter approximates the range to the target</td>
<td></td>
</tr>
<tr>
<td>The Spotter sets the distance and initializes the angle of the MOA back to the Shooter</td>
<td></td>
</tr>
<tr>
<td>The Shooter sets the MOA on the rifle scope</td>
<td></td>
</tr>
<tr>
<td>The Spotter determines wind direction and wind through his spotting scope</td>
<td></td>
</tr>
<tr>
<td>The Spotter makes a &quot;wind call&quot; by announcing how far right or left of target the point of aim should be</td>
<td></td>
</tr>
<tr>
<td>The Shooter aims where the Spotter fails him and fires</td>
<td></td>
</tr>
<tr>
<td>The Spotter watches the flight and impact of the round</td>
<td></td>
</tr>
<tr>
<td>If the target is hit, the team moves to the next target</td>
<td></td>
</tr>
<tr>
<td>If the target is missed, the facilitator steps the exercise and discusses what happened</td>
<td></td>
</tr>
</tbody>
</table>

### BACKWARDS FADING

- **Trial 1**: Begins as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the facilitator. There are no Soldier only steps in this trial.
- **Trial 2**: The facilitator and the Soldiers perform the first eight task steps. Then the Soldiers perform the last two task steps alone.
- **Trial 3**: The facilitator and the Soldiers perform the first four task steps. Then the Soldiers perform the last four task steps alone.
- **Trial 4**: The facilitator and the Soldiers perform the first two task steps. Then the Soldiers perform the last six task steps alone.
- **Trial 5**: The facilitator and the Soldiers perform all task steps. Then the Soldiers perform the last eight task steps alone.
- **Trial 6**: The Soldiers complete the entire task by themselves.

Team/System PE with Increasing Complexity Example
No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

Team/System PE with Increasing Complexity Example

Task Number: 071-FRLC0025
Task Title: Field Fire 2 Engage Moving Targets with the M110 (DASS)

A Sniper Team (Shooter and Spotter) will engage moving targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's database for future engagements by:

- Properly identifying targets
- Accurately determining range to targets
- Accurately utilizing the ABC to determine time of flight of the round
- Accurately compensating for wind effects on the trajectory of the round
- Accurately determining the angle of the target's movement
- Accurately determining the speed of the target
- Accurately applying the appropriate engagement technique:
  - Trapping
  - Tracking

1. The Sniper Team selects a target
2. The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter
3. The Shooter inputs the measurements into the Advanced Ballistic Calculator (ABC)
4. The Spotter approximates the target to the target
5. The Spotter relays the distance and minutes of angle (MOA) back to the Shooter
6. The Shooter dials the MOA on the rifle scope
7. The Shooter determines the speed and angle of movement of the target
8. The Spotter determines the amount of lead for the moving target and relays to the shooter
9. The Spotter determines wind direction and speed through his spotting scope
10. The Spotter compensates for wind and target directions
11. The Spotter makes a 'wind' call by announcing how far right or left of target point of aim should be
12. The Shooter applies the moving target engagement technique and fires
13. If the target is hit, the team moves to the next target
Other Verbs at the same Physical Level

Assault  Destroy  Integrate  Land  Launch
Attack   Develop  Land  Launch
Breach   Disengage  Launch  Modify
Coordinate  Engage  Modify
Defend   Infiltrate

An unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team’s database for future engagements by:

- Properly identifying targets
- Accurately determining range to targets
- Accurately utilizing the ABC to determine time of flight of the round
- Accurately compensating for wind effects on the trajectory of the round
- Accurately determining the angle of the target’s movement
- Accurately determining the speed of the target
- Accurately applying the appropriate engagement technique:
  - Trapping
  - Tracking

The Sniper Team selects a target.
The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).
The Spotter approximates the range to the target.

The Spotter relays the distance and minutes of angle (MOA) back to the Shooter.

The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter.

The Spotter determines the speed and angle of movement of the target.

The Spotter makes a "wind" call by announcing how far right or left of target the point of aim should be.

The Shooter applies the moving target engagement technique and fires.

The Spotter watches the flight and impact of the round.

If the target is hit, the team moves to the next target.
If the target is missed, the team makes corrections and re-engages.
Appendix L

Military Task Examples
P4-Articulation / Large Group / Familiar with Task
Task Variables

Action Verb

Engage

Performance Level

P4 - Articulation

Definition
To enter into contest or battle, to fight.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  No task knowledge, no fundamentals.
- Familiar with task
  Preliminary task knowledge, understands fundamentals.
- Proficient with task
  Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

Recommended Methods and Sequence of Instruction

Key Points for Success

- Resources (training aids, actual equipment, etc.) and additional Facilitators are required to achieve the desired level of proficiency with a large group of Soldiers.
- If resources permit, break large groups into small groups for the PEs.
- Soldiers should practice performing two or more tasks together as part of a system.
- Soldiers should be provided PEs across multiple contexts for varied practice.
- Soldiers should learn the deep structural aspects of the procedures even if the surface-level conditions change.
- Exercises should require Soldiers to integrate individual tasks into a larger system or during collective task performance.
- More proficient Soldiers could coach and mentor less-experienced Soldiers.
- Facilitators should provide feedback.

Facilitator Considerations

Practical Exercise Considerations

Demonstration Considerations

Other Considerations

Demonstration of a Team/System Example

Team/System Practical Exercise Example

Backwards Fading Example

Team/System PE with Increasing Complexity Example
Instructional Methods Tool

**Task Variables**

**Action Verb**
- Engage

**Performance Level**
- P4 - Articulation

**Definition**
To enter into contest or battle, to fight.

**Group Size**
- **1:16 or less**
- **1:17 or greater**

**Experience**
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Physical Level**
- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

---

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

Facilitators should:
- Provide demonstrations of how individual tasks are integrated into larger systems and performed as part of collective tasks.
- Ask the Soldiers to explain why they are performing certain errors, why they are performing certain steps, how they might troubleshoot faults.
- Ask Soldiers to explain how their tasks are integrated with crew/team-based performance or in larger systems.
- Provide additional procedural information or demonstrations of more advanced techniques prior to more complex PEs.
- Increase the complexity of their questions, the rate at which they ask questions, etc. to induce realism of performing these tasks in high stakes dynamic situations.
- Continue to assess Soldiers to ensure that they perform the individual tasks (including sub-tasks and sub-goals) at an autonomous level.
- Continue to provide feedback on how the Soldiers are performing multiple tasks together.

**Practical Exercise Considerations**

**Demonstration Considerations**

**Other Considerations**

**Demonstration of a Team/System Example**

**Team/System Practical Exercise Example**

**Backwards Fading Example**

**Team/System PE with Increasing Complexity Example**
P4 · Articulation

Definition
To enter into contest or battle, to fight.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task  
  No task knowledge, no fundamentals.
- Familiar with task  
  Preliminary task knowledge, understands fundamentals.
- Proficient with task  
  Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

Assault  Destroy  Integrate
Attack  Develop  Land
Breach  Disengage  Launch
Coordinate  Engage  Modify
Defend  Infiltrate

Practical Exercise Considerations

Demonstration Considerations

The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.

Used to:
- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

Key points for success:
- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
- The demonstration must be rehearsed with AIs (the demonstrator and Facilitator must stay in sync or Soldiers will have a tendency to become lost or lose interest).
- The Facilitator must ensure that Soldiers have mastered the prior knowledge needed for the demonstration.
- Soldiers must be able to clearly observe the demonstration and hear what the Facilitator is saying.
- The result of skipped steps or steps performed incorrectly must be explained.
- Soldiers must be shown the responses they control and the cues to which they should react.

Techniques include:
- Soldiers watch but do not participate.
- Soldiers observe the demonstration and then execute each step after being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next step.
  - Provide sufficient AIs to roam the classroom, assist Soldiers having difficulty, and ensure all Soldiers are performing each step properly.

Other Considerations

Demonstration of a Team/System Example

Team/System Practical Exercise Example

Backwards Fading Example
Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

Demonstration of a Team/System Example

Task Number: 071-FRBL0023
Task Title: Field Fire 1 Engage Stationary Targets with the M110 (SASS)
A Sniper Team (Shooter and Spotter) will engage targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's databook for future engagements by:
- Accurately recording cold barrel and confirmation shot placement, and elevation and windage adjustments and holds.
- Properly identifying targets.
- Accurately determining range to targets.
- Accurately utilizing the ABC.

Prior to the demonstration the facilitator should accomplish the following:
- Arrange the area so all Soldiers can see and hear the demonstration.
  - Situate the small group near/around the demonstrator(s).
  - If there is a large group, arrange the Soldiers around multiple assistants who mimic the actions of the Facilitator.

During the demonstration:
- Facilitators can provide demonstrations on how individual tasks (identifying targets, determining range, utilizing the ABC, etc.) are integrated and performed as part of collective tasks (shot process).
- The shot process can be demonstrated at normal speed.
A Sniper Team (shooter and spotter) will engage targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's database for future engagements by:

- Accurately recording cold barrel and confirmation shot placement, and elevation and windage adjustments and holds.
- Properly identifying targets.
- Accurately determining range to targets.
- Accurately utilizing the ABC.

Prior to the demonstration the Facilitator should accomplish the following:

- Arrange the area so all Soldiers can see and hear the demonstration.
  - Situate the small group near/around the demonstrator(s)
  - If there is a large group, arrange the Soldiers around multiple assistants who mimic the actions of the Facilitator.

During the demonstration:

- Facilitators can provide demonstrations on how individual tasks (identifying targets, determining range, utilizing the ABC, etc.) are integrated and performed as part of collective tasks (shot process).
- The shot process can be demonstrated at normal speed.

**Team/System Practical Exercise Example**

![Diagram of the Sniper Team's process]

**The Sniper Team selects a target**

- The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter.

**The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC)**

**The Spotter approximates the range to the target**

**The Spotter relays the distance and minutes of angle (MOA) back to the Shooter**

- The Shooter adjusts the MOA on the rifle scope.

**The Shooter determines wind direction and speed through his spotting scope**

- The Spotter makes a "wind" call by announcing how far right or left of target the point of aim should be.

**The Shooter aims where the Spotter tells him and fires**

- The Shooter watches the flight and impact of the round.

**If the target is hit, the team moves to the next target**

**If the target is missed, the team makes corrections and re-engages**
During the PE, the Facilitator should:

- Provide exercises that require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance.
- Ask the Soldiers to explain why they are performing certain steps, how they might troubleshoot faults, etc.
- Increase the complexity of questions, the rate at which questions are asked, etc., to induce realism of performing these tasks in high-stakes dynamic situations.
- Continue to assess Soldiers to ensure they can perform the individual tasks (including sub-tasks and sub-goals) at an autonomous level.
- Provide focused feedback on how the Soldiers are performing multiple tasks together.
- Repeat the exercise and add a time standard to increase rigor.

The Facilitator confirms correct range to the target.
Other Verbs at the same Physical Level

- Assault
- Attack
- Breach
- Coordinate
- Defend

- Destroy
- Develop
- Disengage
- Engage
- Integrate
- Land
- Launch
- Modify

Familiar with task
Prepared task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.

Team/System PE with Increasing Complexity Example

Task Number: 071-FRBLDDS
Task Title: Field Fire 2: Engage Moving Targets with the M115 (SASS)

A Sniper Team (Shooter and Spotter) will engage moving targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's database for future engagements by:

- Properly identifying targets
- Accurately determining range to targets
- Accurately utilizing the ABC to determine time of flight of the round
- Accurately compensating for wind effects on the trajectory of the round
- Accurately determining the angle of the target's movement
- Accurately determining the speed of the target
- Accurately applying the appropriate engagement technique:
  - Tracking
  - Tracking

The Sniper Team selects a target
The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter
The Spote inputs the measurements into the Advanced Ballistic Calculator (ABC)
The Spote approximates the range to the target

The Spote relays the distance and minutes of angle (MOA) back to the Shooter
The Shooter dials the MOA on the rifle scope
The Shooter determines the speed and angle of movement of the target
The Shooter determines the amount of lead for the moving target and relays to the Spotter

The Spote determines wind direction and speed through his spotting scope
The Spote compensates for wind and target directions
The Spote makes a "wind" call by announcing how far right or left of target the point of aim should be
The Shooter applies the moving target engagement technique and fine

The Spote watches the flight and impact of the round
If the target is hit, the team moves to the next target
If the target is missed, the team makes corrections and re-approximates
Appendix M

Military Task Examples
P4 - Articulation / Small Group / Proficient with Task
### Task Variables

#### Action Verb

Engage

#### Performance Level

P4 - Articulation

#### Definition

To enter into conflict or battle, to fight.

#### Group Size

- 1:16 or less
- 1:17 or greater

#### Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

### Recommended Methods and Sequence of Instruction

#### Time of Instruction

<table>
<thead>
<tr>
<th>Method of Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-8 hours</td>
</tr>
<tr>
<td><strong>Less proficient Soldiers</strong></td>
</tr>
<tr>
<td>Demonstration then multiple practice sessions using training aids or actual equipment.</td>
</tr>
<tr>
<td><strong>More proficient Soldiers</strong></td>
</tr>
<tr>
<td>Perform PEs that reflect tasks they would perform on the job.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple Days</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Less proficient Soldiers</strong></td>
</tr>
<tr>
<td>Cycle of demonstrations and practice opportunities; probing questions, and feedback; more rigorous proficiency tests could be implemented</td>
</tr>
<tr>
<td><strong>More proficient Soldiers</strong></td>
</tr>
<tr>
<td>Test proficiency and then have them assist in preparing lessons, teaching, and researching for longer assignments</td>
</tr>
</tbody>
</table>

### Key Points for Success

- Facilitator Considerations
- Practical Exercise Considerations
- Demonstration Considerations
- Other Considerations
- Demonstration of a Team/System Example
- Team/System Practical Exercise Example
- Backwards Fading Example
- Team/System PE with Increasing Complexity Example
Task Variables

Action Verb

Engage

Performance Level

P4 - Articulation

Definition

To enter into combat or battle, to fight.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

- Assault: Destroy, Integrate
- Attack: Develop, Land
- Breach: Disengage, Launch
- Coordinate: Engage, Modify
- Defend: Infiltrate

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Practical Exercises:

- Should be demonstrated to the Soldiers to provide examples of how two or more tasks are combined as part of a system.
- Could be provided to the Soldiers as completion tasks or backwards fading of complete examples of how two or more tasks are performed together.
- Could require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance.

Assessments

- Soldiers should be tested on the full integration of the two or more tasks and be provided with feedback by the Facilitators.
- Assessments could include asking Soldiers to perform multiple tasks in varied and novel conditions (e.g., performing tasks in novel terrain, weather).
- Assessments could focus on how Soldiers visualize or perform individual tasks within larger systems, teams, etc.

Demonstration Considerations

Other Considerations

Demonstration of a Team/System Example

Team/System Practical Exercise Example

Backwards Fading Example

Team/System PE with Increasing Complexity Example
Definition
To enter into contest or battle, to fight.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify
- Move

Practical Exercise Considerations

Demonstration Considerations

The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.

Used to:
- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

Key points for success:
- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
- The demonstration must be rehearsed with AIs (the demonstrator and Facilitator must stay in sync or Soldiers will have a tendency to become lost or lose interest).
- The Facilitator must ensure that: Soldiers have mastered the prior knowledge needed for the demonstration.
- Soldiers must be able to clearly observe the demonstration and hear what the Facilitator is saying.
- The result of skipped steps or steps performed incorrectly must be explained.
- Soldiers must be shown the responses they control and the cues to which they should react.

Techniques include:
- Soldiers watch but do not participate.
- Soldiers observe the demonstration and then execute each step after being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next step.
  - Provide sufficient AIs to roam the classroom, assist Soldiers having difficulty, and ensure all Soldiers are performing each step properly.
Task Variables

Action Verb
Engage

Performance Level
P4 - Articulation

Definition
To enter into contest or battle, to fight.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  No task knowledge, no fundamentals.
- Familiar with task
  Preliminary task knowledge, understands fundamentals.
- Proficient with task
  Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
- Assault
  Destroy
  Integrate
- Attack
  Develop
  Land
- Breach
  Disengage
  Launch
- Coordinate
  Engage
  Modify
- Defend
  Infiltrate

Recommended Methods and Sequence of Instruction
- Key Points for Success
- Facilitator Considerations
- Practical Exercise Considerations
- Demonstration Considerations

Other Considerations
- Rehearsals, practice, assessments, and feedback could focus on the integration of these skills in a larger context.
- Simulators such as C2TT, VBS3 could be employed to rehearse and practice crew/team collective performance prior to live exercises.
- With longer classes, highly proficient Soldiers could design products, repair live equipment, perform on-the-job training, shadow Facilitators, demonstrate tasks to different audiences; and prepare explanations, briefings, papers to unit leaders, stakeholders, etc.

Demonstration of a Team/System Example
- Team/System Practical Exercise Example
- Backwards Fading Example
- Team/System PE with Increasing Complexity Example
Demonstration of a Team/System Example

Task Number: 071-PR1LC023

Task Title: Field Fire 1 Engage Stationary Targets with the M110 (GASS)

A Sniper Team (Shooter and Spotter) will engage targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's databook for future engagements by:

- Accurately recording cold barrel and confirmation shot placement, and elevation and windage adjustments and holds.
- Properly identifying targets.
- Accurately determining range to targets.
- Accurately utilizing the ABC.

Prior to the demonstration the Facilitator should accomplish the following:

- Arrange the area so all Soldiers can see and hear the demonstration.
  - Situate the small group near/around the demonstrator(s)
  - If there is a large group, arrange the Soldiers around multiple assistants who mimic the actions of the Facilitator.

During the demonstration:

- Facilitators can provide demonstrations on how individual tasks (identifying targets, determining range, utilizing the ABC, etc.) are integrated and performed as part of collective tasks (shot process).
- The shot process can be demonstrated at normal speed.

![Diagram of the demonstration process]

- The Shooter selects a target.
- The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).
- The Spotter approximates the range to the target.
- The Spotter makes a "wind" call by announcing how far right or left of target the point of aim should be.
- The Shooter measures the target with the rifle scope and relays the results to the Spotter.
- The Spotter calculates the MOA back to the Shooter.
- The Spotter watches the flight.
- The Shooter adjusts the rifle scope.
- If the target is hit, the team moves to the next target.

M-8
Other Verbs at the same Physical Level

<table>
<thead>
<tr>
<th>Assault</th>
<th>Destroy</th>
<th>Integrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attack</td>
<td>Develop</td>
<td>Land</td>
</tr>
<tr>
<td>Breach</td>
<td>Disengage</td>
<td>Launch</td>
</tr>
<tr>
<td>Coordinate</td>
<td>Engage</td>
<td>Modify</td>
</tr>
<tr>
<td>Defend</td>
<td>Infiltrate</td>
<td></td>
</tr>
</tbody>
</table>

Prior to the demonstration, the Facilitator should accomplish the following:

- Arrange the area so all Soldiers can see and hear the demonstration.
  - Situate the small group near/around the demonstrator(s).
  - If there is a large group, arrange the Soldiers around multiple assistants who mimic the actions of the Facilitator.

During the demonstration:

- Facilitators can provide demonstrations on how individual tasks (identifying targets, determining range, utilizing the ABC, etc.) are integrated and performed as part of collective tasks (shot process).
  - The shot process can be demonstrated at normal speed.

**Team/System Practical Exercise Example**

**Backwards Fading Example**

**Team/System PE with Increasing Complexity Example**
### M-12

**Demonstration of a Team/System Example**

#### Team/System Practical Exercise Example

**Backwards Fading Example**

Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

**Used to:**
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

**Key Points for Success:**
- Ongoing evaluation of the Soldier's performance is required.
- The Facilitator determines when to remove instructional support based on the Soldier's performance.

**Techniques Include:**
- Together, the Facilitator and Soldier perform a series of trials (attempts) that the facilitator and Soldier perform together.
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

---

<table>
<thead>
<tr>
<th>Field Fire w/ the M10</th>
<th>Semi-Automated Sniper System (SASS)</th>
<th>BACKWARDS FADEING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEPS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Sapper Team selects a target!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Spotter inputs the measurements into the ABC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Spotter approximates the range to the target.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Spotter relays the distance and radius of angle (MOA) back to the Shooter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Shooter sets the MOA on the riflescope.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Spotter determines wind.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TRIALS</strong></td>
<td>First the Facilitator demonstrates the task from beginning to end while the Soldiers watch.</td>
<td></td>
</tr>
<tr>
<td><strong>FACILITATOR</strong></td>
<td>Trial 1: Begins as a guided demonstration. In other words, each Soldier watches and mimics the steps performed by the Facilitator. There are no Soldier only steps in this trial.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trial 2: The Facilitator and the Soldiers perform the first five task steps and the Soldiers perform the last two task steps alone.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trial 3: The Facilitator and the Soldiers perform the first six task steps and the Soldiers perform the last four task steps alone.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trial 4: The Facilitator and the Soldiers perform the first four task steps alone.</td>
<td></td>
</tr>
</tbody>
</table>

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### Experience

- **New to task**
  - No task knowledge, no fundamentals.
- **Familiar with task**
  - Preliminary task knowledge, understands fundamentals.
- **Proficient with task**
  - Definitive task knowledge, executes the fundamentals.

### Other Verbs at the same Physical Level

- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

---

**M-12**
**Soldier's performance.**

**Techniques include:**

- Together, the Facilitator and Soldier perform a series of trials (attempts) that the facilitator and Soldier perform together.
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

<table>
<thead>
<tr>
<th>Field Fire w/M10 Semi-Automated Sniper System (SASS)</th>
<th>BACKWARDS FADING</th>
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</thead>
<tbody>
<tr>
<td><strong>STEPS</strong></td>
<td><strong>TRIALS</strong></td>
</tr>
<tr>
<td>The Shooter selects a target</td>
<td>Trial 1: Begins as a guided demonstration.</td>
</tr>
<tr>
<td>The Shooter measures the target with the rifle scope and relays the results to the Spotter</td>
<td>In other words, each Soldier watches and mimics the task steps performed by the facilitator. There are no Soldier only steps in this trial.</td>
</tr>
<tr>
<td>The Spotter inputs the measurements into the ABC</td>
<td>Trial 2: The facilitator and the Soldiers perform the first eight task steps and the Soldiers perform the last two task steps alone.</td>
</tr>
<tr>
<td>The Spotter approximates the range to the target</td>
<td>Trial 3: The facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last four task steps alone.</td>
</tr>
<tr>
<td>The Spotter sets the distance and calculates the angle (MOA) back to the Shooter</td>
<td>Trial 4: The facilitator and the Soldiers perform the first six task steps and the Soldiers perform the last six task steps alone.</td>
</tr>
<tr>
<td>The Shooter adjusts the MOA on the rifle scope</td>
<td>Trial 5: The facilitator and the Soldiers perform the first two task steps and the Soldiers perform the last eight task steps alone.</td>
</tr>
<tr>
<td>The Spotter determines wind correction and speed through his spotting scope</td>
<td>Trial 6: The Soldiers complete the whole task by themselves.</td>
</tr>
<tr>
<td>The Spotter makes a “wind call” by announcing how far right or left of target the point of aim should be</td>
<td>In this example, the 10 task steps are channeled, i.e., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 9, 10 based on the complexity of the task.</td>
</tr>
</tbody>
</table>

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**Team/System PE with Increasing Complexity Example**
Team/System PE with Increasing Complexity Example

Task Number: 071-PRBLC025
Task Title: Field Fire 2 Engage Moving Targets with the M110 (GASS)
A Sniper Team (Shooter and Spotter) will engage moving targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team’s databook for future engagements by:
• Properly identifying targets
• Accurately determining range to targets
• Accurately utilizing the ABC to determine time of flight of the round
• Accurately compensating for wind effects on the trajectory of the round
• Accurately determining the angle of the target’s movement
• Accurately determining the speed of the target
• Accurately applying the appropriate engagement technique:
  • Trapping
  • Tracking

The Sniper Team selects a target

The Shooter

The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter

The Spotter

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC)

The Shooter

The Shooter determines the speed and angle of movement of the target

The Spotter

The Spotter determines the amount of lead for the moving target and relays to the Shooter

The Spotter

The Spotter compensates for wind and target directions

The Spotter

The Spotter makes a ‘wind’ call by announcing how far right or left of target the point of aim should be

The Shooter

The Shooter applies the moving target engagement technique and fires

The Spotter

The Spotter

If the target is hit, the team moves to the next target

The Spotter

Assault

Attack

Breach

Coordinate

Defend

Destroy

Develop

Disengage

Engage

Infiltrate

Land

Launch

Modify

Integrate

No task knowledge, no fundamentals.

Familiar with task
• Preliminary task knowledge, understands fundamentals.

Proficient with task
• Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level
Other Verbs at the same Physical Level

Assault Destroy Integrate
Attack Develop Land
Breach Disengage Launch
Coordinate Engage Modify
Defend Infiltrate

An unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team’s databook for future engagements by:

- Properly identifying targets
- Accurately determining range to targets
- Accurately utilizing the ABC to determine time of flight of the round
- Accurately compensating for wind effects on the trajectory of the round
- Accurately determining the angle of the target’s movement
- Accurately determining the speed of the target
- Accurately applying the appropriate engagement technique:
  - Trapping
  - Tracking

The Sniper Team selects a target

The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC)

The Shooter approximates the range to the target

The Spotter relays the distance and minutes of angle (MOA) back to the Shooter

The Shooter inputs the MOA on the rifle scope

The Shooter determines the speed and angle of movement of the target

The Spotter determines the amount of lead for the moving target and relays to the Shooter

The Spotter determines wind direction and speed through his spotting scope

The Spotter compensates for wind and target directions

The Spotter makes a “Wind” call by announcing how far right or left of target the point of aim should be

The Shooter applies the moving target engagement technique and fires

If the target is hit, the team moves to the next target

If the target is missed, the team makes corrections and re-engages

The Spotter watches the flight and impact of the round

The Shooter watches the flight and impact of the round

M-15
Appendix N

Military Task Examples
P4-Articulation / Large Group / Proficient with Task
Task Variables

Action Verb

Engage

Performance Level

P4 - Articulation

Definition
To enter into contest or battle, to fight.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  No task knowledge, no fundamentals.
- Familiar with task
  Preliminary task knowledge, understands fundamentals.
- Proficient with task
  Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify
### Recommended Methods and Sequence of Instruction

#### Key Points for Success
- Resources (training aids, actual equipment, etc.) and additional facilitators are required to achieve the desired level of proficiency with a large group of soldiers (200+).
- If resources permit, break large groups into small groups for the PEs.
- Soldiers should practice performing two or more tasks together as part of a system.
- Soldiers should be provided PEs across multiple contexts for varied practice.
- Soldiers should learn the deep structural aspects of the procedures even if the surface-level conditions change.
- Exercises should require soldiers to integrate individual tasks into a larger system or during collective task performance.
- More proficient soldiers could coach and mentor less-experienced soldiers.
- Facilitators should provide feedback.

### Facilitator Considerations
- Practical Exercise Considerations
- Demonstration Considerations
- Other Considerations
- Demonstration of a Team/System Example
- Team/System Practical Exercise Example
- Backwards Fading Example
- Team/System PE with Increasing Complexity Example

---

### Action Variables

#### Action Verb
- **Engage**

#### Performance Level
- **P4 - Articulation**

#### Definition
- To enter into contest or battle, to fight.

#### Group Size
- **1:16 or less**
- **1:17 or greater**

#### Experience
- **New to task**
  - No task knowledge, no fundamentals.
- **Familiar with task**
  - Preliminary task knowledge, understands fundamentals.
- **Proficient with task**
  - Definitive task knowledge, executes the fundamentals.

### Other Verbs at the same Physical Level
- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify
**Task Variables**

**Action Verb**

- Engage

**Performance Level**

P4 - Articulation

**Definition**
To enter into contest or battle, to fight.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task: No task knowledge, no fundamentals.
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**Other Verbs at the same Physical Level**

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<td>Modify</td>
</tr>
<tr>
<td>Defend</td>
<td>Infiltrate</td>
<td></td>
</tr>
</tbody>
</table>

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

Facilitators should:
- Provide demonstrations of how individual tasks are integrated into larger systems and performed as part of collective tasks.
- Ask the Soldiers to explain why they are performing certain errors, why they are performing certain steps, how they might troubleshoot faults.
- Ask Soldiers to explain how their tasks are integrated with crew/team-based performance or in larger systems.
- Provide additional procedural information or demonstrations of more advanced techniques prior to more complex PEs.
- Increase the complexity of their questions, the rate at which they ask questions, etc. to induce realism of performing these tasks in high stakes dynamic situations.
- Continue to assess Soldiers to ensure that they perform the individual tasks (including sub-tasks and sub-goals) at an autonomous level.
- Continue to provide feedback on how the Soldiers are performing multiple tasks together.

**Practical Exercise Considerations**

**Demonstration Considerations**

**Other Considerations**

**Demonstration of a Team/System Example**

**Team/System Practical Exercise Example**

**Backwards Fading Example**

**Team/System PE with Increasing Complexity Example**
Task Variables

**Action Verb**

Engage

**Performance Level**

P4 - Articulation

**Definition**

To enter into contest or battle, to fight.

**Group Size**

- 1:16 or less
- 1:17 or greater

**Experience**

- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Physical Level**

- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Infiltrate
- Integrate
- Land
- Launch
- Modify

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

**Practical Exercise Considerations**

**Practical exercises**:

- Should be demonstrated to the Soldiers to provide examples of how two or more tasks are combined as part of a system.
- Could be provided to the Soldiers as completion tasks or backwards fading of complete examples of how two or more tasks are performed together.
- Could require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance.
- Follow the completion of each PE with discussions with the large group to answer Soldier questions, obtain different perspectives across the small groups, and summarize the tasks.

**Assessments**

- Soldiers should be tested on the full integration of the two or more tasks and be provided with feedback by the Facilitators.
- Assessments could include asking Soldiers to perform multiple tasks in varied and novel conditions (e.g., performing tasks in novel terrain, weather).
- Assessments could focus on how Soldiers visualize or perform individual tasks within larger systems, teams, etc.

**Demonstration Considerations**

**Other Considerations**

**Demonstration of a Team/System Example**

**Team/System Practical Exercise Example**

**Backwards Fading Example**
Task Variables

Action Verb

Engage

Performance Level

P4 - Articulation

Definition

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Group Size

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- 1:17 or greater

Experience

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  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Physical Level

Assault  Destroy  Integrate
Attack    Develop  Land
Breach    Disengage  Launch
Coordinate Engage  Modify
Defend    Infiltrate

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Demonstration Considerations

The demonstration method of instruction helps people who learn well by modeling others; it provides an opportunity for targeted questions while drawing attention to specific details.

Used to:

- Train manipulative and operative skills
- Develop understandings
- Teach new practices
- Gain acceptance of new and improved ways of doing things

Key points for success:

- The Facilitator must rehearse prior to presenting the demonstration.
- All necessary training resources must be present and functional.
- The demonstration must be rehearsed with AIs (the demonstrator and Facilitator must stay in sync or Soldiers will have a tendency to become lost or lose interest).
- The Facilitator must ensure that Soldiers have mastered the prior knowledge needed for the demonstration.
- Soldiers must be able to clearly observe the demonstration and hear what the Facilitator is saying.
- The result of skipped steps or steps performed incorrectly must be explained.
- Soldiers must be shown the responses they control and the cues to which they should react.

Techniques include:

- Soldiers watch but do not participate.
- Soldiers observe the demonstration and then execute each step after being demonstrated by the Facilitator.
- Soldiers perform steps during the demonstration. In this case, the Facilitator should:
  - Ensure that all Soldiers have properly completed the step before starting the next step.
  - Provide sufficient AIs to roam the classroom, assist Soldiers having difficulty, and ensure all Soldiers are performing each step properly.

Other Considerations
Demonstration of a Team/System Example

Task Number: 071-PRBL0023
Task Title: Field Fire 1 Engage Stationary Targets with the M110 (SASS)

A Sniper Team (Shooter and Spotter) will engage targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's checklist for future engagements by:

- Accurately recording cold barrel and confirmation shot placement, and elevation and windage adjustments and holds.
- Properly identifying targets.
- Accurately determining range to targets.
- Accurately utilizing the ABC.

Prior to the demonstration the Facilitator should accomplish the following:

- Arrange the area so all Soldiers can see and hear the demonstration.
  - Situate the small group near/around the demonstrator(s).
  - If there is a large group, arrange the Soldiers around multiple assistants who mimic the actions of the Facilitator.

During the demonstration:

- Facilitators can provide demonstrations on how individual tasks (identifying targets, determining range, utilizing the ABC, etc.) are integrated and performed as part of collective tasks (shot process).
- The shot process can be demonstrated at normal speed.

The Sniper Team selects a target.
The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter.
The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).
The Spotter approximates the range to the target.
The Spotter makes a "wind" call by announcing how far right or left of target the point of aim should be.
The Spotter relays the distance and minutes of angle (MOA) back to the Shooter.
The Shooter diais the MOA on the rifle scope.
The Shooter determines wind direction and speed through his spotting scope.
The Shooter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Shooter watches the flight and impact of the round.
If the target is hit, the team moves to the next target.
If the target is missed, the team makes corrections and re-engages.

The Spotter makes a "wind" call by announcing how far right or left of target the point of aim should be.

The Shooter selects a target.
The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter.

Other Verbs at the same Physical Level

Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Infiltrate
Integrate
Land
Launch
Modify

N-8
Team/System Practical Exercise Example

During the PE, the Facilitator should:
- Provide exercises that require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance.
- Ask the Soldiers to explain why they are performing certain errors, why they are performing certain steps, how they might troubleshoot faults, etc.
- Increase the complexity of questions, the rate at which questions are asked, etc. to induce realism of performing these tasks in high-stakes dynamic situations.
- Continue to assess Soldiers to ensure they can perform the individual tasks (including sub-tasks and sub-goals) at an autonomous level.
- Provide focused feedback on how the Soldiers are performing multiple tasks together.
- Repeat the exercise and add a time standard to increase rigor.

The Facilitator confirms correct range to the target. If in error, talks about the range estimation process and asks the Spotter questions.

The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Spotters makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Shooter signals the Spotter to engage the target.

The Facilitator confirms the wind call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.

The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC).

The Spotter approximates the range to the target.

The Shooter makes a "wind" call by announcing how far right or left of target, the point of aim should be.

The Shooter makes a "wind" call. If in error, talks to the Spotter about reading wind.
A Sniper Team (Shooter and Spotter) will engage moving targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team’s database for future engagements by:
- Properly identifying targets
- Accurately determining range to target
- Accurately utilizing the ABC to determine time of flight of the round
- Accurately compensating for wind effects on the trajectory of the round
- Accurately determining the angle of the target’s movement
- Accurately determining the speed of the target
- Accurately applying the appropriate engagement technique
- Tracking

**Other Verbs at the same Physical Level**

- Assault
- Attack
- Breach
- Coordinate
- Defend
- Destroy
- Develop
- Disengage
- Engage
- Integrate
- Land
- Launch
- Modify
- Intimate

**Task Flow**

1. The Sniper Team selects a target
2. The Shooter measures the target with the rifle scope reticle and relays the results to the Spotter
3. The Spotter inputs the measurements into the Advanced Ballistic Calculator (ABC)
4. The Spotter approximates the range to the target
5. The Spotter relays the distance and minutes of angle (MOA) back to the Shooter
6. The Shooter dials the MOA on the rifle scope
7. The Shooter determines the speed and angle of movement of the target
8. The Spotter determines wind direction and speed through his spotting scope
9. The Spotter compensates for wind and target directions
10. The Shooter makes a “wind” call by announcing how far right or left of target the point of aim should be
11. The Shooter applies the moving target engagement technique and fires
12. The Spotter watches the flight and impact of the round
13. If the target is hit, the team moves to the next target
14. If the target is missed, the team makes corrections and re-engages
Appendix O

Military Task Examples
C1-Remembering / Small Group / New to Task and Familiar with Task
### Task Variables

#### Action Verb
- **Locate**

#### Performance Level
- **01 - Remembering**

#### Definition
To seek out and determine or set the place, site, position, or limits of.

#### Group Size
- **1:16 or less**
- **1:17 or greater**

#### Experience
- **New to task**
  - No task knowledge, no fundamentals.
- **Familiar with task**
  - Preliminary task knowledge, understands fundamentals.
- **Proficient with task**
  - Definitive task knowledge, executes the fundamentals.

### Other Verbs at the same Cognitive Level
- Check
- Define
- Detect
- Download
- Identify
- Locate
- Orient
- Record
- Recognize
- Reconnect
- Select
- Write

### Recommended Methods and Sequence of Instruction

<table>
<thead>
<tr>
<th>Time of Instruction</th>
<th>Method of Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 hour</td>
<td>Lecture and presentation with Guided Notes</td>
</tr>
<tr>
<td>2 hours</td>
<td>Practical exercises. Soldiers who are familiar with the task could assist after presentation and check on learning.</td>
</tr>
<tr>
<td>4-8 hours</td>
<td>Multiple practice sessions with Facilitator feedback</td>
</tr>
</tbody>
</table>

### Key Points for Success

### Facilitator Considerations

### Practical Exercise Considerations

### Guided Notes

### Advanced Organizers Example

### Backwards Facing Example

### Contrasting Cases Considerations

### Contrasting Cases Example
<table>
<thead>
<tr>
<th>Lifting</th>
<th>and implied tasks?</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3-Applying</td>
<td>Identify and list the specified and implied tasks within the OPORD that pertain to your organization.</td>
</tr>
<tr>
<td>Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Narrow to broad – ask lower level specific questions, followed by next higher level general questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example</strong></td>
</tr>
<tr>
<td>Narrow</td>
</tr>
<tr>
<td>C1-Remembering</td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
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<tr>
<td>• What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?</td>
</tr>
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<td>• What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?</td>
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<tr>
<td>• What enabling assets are assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?</td>
</tr>
<tr>
<td>• Explain how the enemy would deploy a MECH Inf (IFV) Co as the focusing element during offensive operations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Broad to narrow (funneling) – ask low level general questions, followed by next higher level specific questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example</strong></td>
</tr>
<tr>
<td>Broad</td>
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<tr>
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<td>• What are the five paragraphs of an OPORD?</td>
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<td>• Summarize the enemy’s composition, disposition, location, strength, and probable courses of action.</td>
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<td>• Outline a tentative task organization based on the attachments and detachments.</td>
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<td>• Restate the task to subordinate units statement into a mission statement using Who, What, When, Where, and Why</td>
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**Facilitator Considerations**

**Practical Exercise Considerations**
**Task Variables**

**Action Verb**

Locate

**Performance Level**

01 - Remembering

**Definition**

To seek out and determine or set the place, site, position, or limits of.

**Group Size**

- 1:16 or less
- 1:17 or greater

**Experience**

- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Cognitive Level**

- Check
- Define
- Detect
- Download
- Identify
- Locate
- Orient
- Recognize
- Reconnoiter
- Record
- Select
- Write

---

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

**Practical Exercise Considerations**

- A backwards fading PE is where Soldiers are first shown the complete worked example, certain components are then removed, and finally the Soldiers complete the entire task on their own.

- Some tasks related to verbs at this level involve recognizing, identifying, locating, detecting, etc. a target, pattern, etc. (e.g., aircraft, vehicle, patterns of life) and taking action or making decisions based on the outcome of those tasks.

- For these types of tasks, PEs would first involve defining the conditions under which the task occurs. This includes defining the features of the situation. Then, materials are developed to train and test Soldiers to recognize the features and use that recognition to identify the target. Attention to cues and a high level of vigilance characterize these tasks.

- Practical exercises could include rapid exposure to stimulus cues thereby requiring Soldiers to quickly develop strategies to successfully complete the tasks. Other approaches could include the use of simulations to present cues across a wide range of scenarios (e.g., different threat conditions, shoot/don’t shoot contexts, friendly or enemy actions) so that Soldiers have multiple opportunities to practice these tasks. Deliberate practice across diverse situations increases the likelihood that the skills will transfer to novel situations.

**Guided Notes**

- Whether Soldiers can complete the entire task on their own with minimal errors.

---

**Advanced Organizers Example**
Instructional Methods Tool

Task Variables
Action Verb
Locate

Performance Level
01 - Remembering

Definition
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Other Verbs at the same Cognitive Level
Check  Define  Detect  Download
Locate  Orient  Recognize
Record  Select  Write
Reconnoiter

Recommended Methods and Sequence of Instruction
- Key Points for Success
- Facilitator Considerations
- Practical Exercise Considerations

Guided Notes
Guided notes help Soldiers attend to important concepts. They can be used when the Facilitator is presenting new content, or they can be used as study guides.

Used to:
- Ease note taking
- Enhance processing of new information
- Identify critical concepts

Techniques include:
- Full version of notes: Be sure to save the full version of your notes. Some Soldiers may need this type of accommodation.
- Highly supported notes: From the File menu, choose Save As and rename your file. Then strategically replace more key words and phrases in your document with blanks. This provides a high level of scaffolding. (Limit the number of fill in the blanks at this level.)
- Moderately supported notes: From the File menu, choose Save As and rename your file again. Then strategically replace more key words and phrases in your document with blanks. This provides a moderate level of scaffolding.
- Outlined notes: From the File menu, choose Save As and rename your file again. Eliminate most of the text so that you have a note-taking outline. Outlines are best used with Soldiers who have learned how to summarize key constructs.

Guided Notes
Task Number: 071-329-1014
Task Title: Locate an Unknown Point on a Map and on the Ground by Intersection
Identify an unknown point on a map by intersection using the map-and-compass method.

a. _____ the map on a flat surface using a compass.
Other Verbs at the same Cognitive Level

Check  Identify  Reconnoiter
Define  Locate  Record
Detect  Orient  Select
Download  Recognize  Write

Guided Notes

Task Number: 071-329-1014
Task Title: Locate an Unknown Point on a Map and on the Ground by Intersection

Identify an unknown point on a map by intersection using the map-and-compass method.

1. _____ the map on a flat surface using a compass.
2. Plot the azimuths from known points (A and B) to the unknown point on the map.
   1) Mark the ______ azimuth position (the observer) on the map.
   2) Determine the ______ azimuth from your position (A) to the unknown point.
3. Convert the ______ azimuth to a ______ azimuth.
4. Place the index point of a ______ on your plotted position.
5. Align the protractor's 0 to 180- ______ line to the top of the map's North-South grid line.
6. Ensure the 0-degree mark is pointing to the ______ (or top of map).
7. Place a tick mark on the map beside the number on the protractor that corresponds to the computed ______ azimuth.
8. Draw a straight line from your ______ position to the tick mark and beyond.
9. Repeat steps 1(b) through 1(b) for the observer position (B).
10. Identify the point where the lines ______ as the location of the unknown point.
11. Determine the ______ to this location with desired accuracy.

Advanced Organizers Example
Backwards Fading Example
Contrasting Cases Considerations
Contrasting Cases Example
Advanced Organizers are an effective strategy for activating a student's prior knowledge, focusing a student's interests, and setting goals for further instruction. This method of instruction refreshes (if necessary) and relates prior knowledge required to learn a new skill.

Advanced organizers should:
- Be composed of a short set of verbal or visual information
- Be presented prior to learning
- Contain no specific content from the preceding learning task
- Generate the logical relations with among the elements in the preceding learning task
- Influence the learners encoding process

Facilitators should:
- Discuss how the Sailer's prior knowledge relates to the new task.
- Provide refresher training on prior knowledge (if necessary)

Related Prior Knowledge
- Determine Grid Coordinates
- Convert Magnetic to Grid Azimuth
- Identify Terrain Features
- Use a Protractor
- Read Marginal Information
- Determine Azimuths

New Skill
Locate an Unknown Point on a Map and on the Ground by Intersection
Instructional Methods Tool

Task Variables

Action Verb
Locate

Performance Level
01 - Remembering

Definition
To seek out and determine or set the place, site, position, or limits of.

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Other Verbs at the same Cognitive Level
- Check
- Define
- Detect
- Download
- Identify
- Locate
- Orient
- Recognize
- Reconnoiter
- Record
- Select
- Write

Recommended Methods and Sequence of Instruction
- Key Points for Successes
- Facilitator Considerations
- Practical Exercise Considerations
- Guided Notes
- Advanced Organizers Example

Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

Key points for success:
- Requires ongoing evaluation of the Soldier’s performance.
- Facilitator determines when to remove instructional support based on Soldier performance

Techniques include:
- Series of trials (attempts) that the facilitator and Soldier perform together.
- In early learning trials, both the Soldier and the facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.
### TASK: Locate an Unknown Point on a Map and on the Ground by Intersecation

#### STEPS

1. **Identify an unknown point on a map by intersecation using the map-and-compass method.**
   a. Orient the map on a flat surface using a compass.
   b. Plot grid azimuths from known points to the unknown point on the map.
   c. Mark your position (the observer) on the map.
   d. Determine the magnetic azimuth from your position to the unknown point.
   e. Convert the magnetic azimuth to a grid azimuth.
   f. Place the index point of a protractor on your plotted position.
   g. Align the protractor's 0 to 180-degree line to the top of the map's North-South grid line.
   h. Ensure the degree mark is pointing to the north (or top) of the map.
   i. Place a tick mark on the map beside the number on the protractor that corresponds to the computed grid azimuth.
   j. Draw a straight line from your plotted position to the tick mark and beyond.
   k. Repeat steps 1.a through 1.j for each observer position.

2. **Identify the point where the lines intersect as the location of the unknown point.**

3. **Determine the grid coordinates of this location to the desired accuracy.**

#### BACKWARDS FACING

First, the facilitator demonstrates the task from beginning to end while the soldiers watch.

**Trial 1:** Begin as a guided demonstration. In other words, each soldier watches and mimics the task steps performed by the facilitator. There are no Soldier-only steps in this trial.

**Trial 2:** The facilitator and the soldiers perform the first five task steps and the soldiers perform the last task step alone.

**Trial 3:** The facilitator and the soldiers perform the first four task steps and the soldiers perform the last two task steps alone.

**Trial 4:** The facilitator and the soldiers perform the first three task steps and the soldiers perform the last three task steps alone.

**Trial 5:** The facilitator and the soldiers perform the first two task steps and the soldiers perform the last four task steps alone.

**Trial 6:** The facilitator and the soldiers perform the first task step and the soldiers perform the last five task steps alone.

**Trial 7:** The soldiers complete the task by themselves.

#### FACILITATOR FEEDBACK

- **Ensure map is oriented correctly:**
  - Face the compass on the map with the outside edge along the North-South grid line.
  - Turn the map and compass until the north-seeking arrow on the compass faces north (0 or 360 degrees).

- **Convert grid to magnetic azimuth:**
  - Use the declination diagram in the map legend to convert from magnetic to grid.

- **End of the facilitator’s role:**
  - Complete the task as described in the trial.

- **Ensure protractor is properly aligned on the map:**
  - North-South (0 and 180 degrees) and East-West (90 and 270 degrees).

- **Degrees to the right:**
  - Repeat steps 1.a through 1.j for the magnetic azimuth from the second known position.

- **Determine a 8-digit grid coordinate where the lines intersect:**

#### SOLDIERS

- **Westerly G-M Angle:**
  - Eastsly G-M Angle

- **Grid to Map:**
  - Grid to Grid

- **Add:**
  - Subtract

Ensure: Map is oriented correctly.
Task Variables

Action Verb
Locate

Performance Level
01 - Remembering

Definition
To seek out and determine or set the place, site, position, or limits of.

Group Size
- 1:16 or less
- 1:17 or greater

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- New to task
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- Proficient with task
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Other Verbs at the same Cognitive Level
- Check
- Define
- Detect
- Download
- Identify
- Locate
- Orient
- Recognize
- Reconnoiter
- Record
- Select
- Write
O-13

Other Verbs at the Same Cognitive Level

Task Title: Identify Contact Vehicles
Identify the characteristics of the observed contact vehicle(s). NOTE: Four areas of characteristics are used to determine the nomenclature: hull, turret, and armament characteristics.

1. Identify general characteristics of the hull.
   a. Identify main gun(s) present.
   b. Identify location and shape of the turret and location of its parts or turrets.
   c. Identify shape and composition of the hull.
   d. Identify door of hatch and characteristics of the hull.

2. Identify armament characteristics.
   a. Identify presence of ammunition storage boxes or racks.
   b. Identify shape and composition of the armament.
   c. Identify shape and composition of the armament.
   d. Identify assignment of ammunition and composition.

3. Identify Turret characteristics.
   a. Identify turret gun location and location of its parts.
   b. Identify turret characteristics of the turret.
   c. Identify location and shape of the turret and location of its parts.
   d. Identify turret characteristics of the turret.

4. Identify characteristics of the contact vehicle(s).
   a. Identify presence of turret or wipers.
   b. Identify shape and composition of the contact vehicle(s).
   c. Identify door of hatch and characteristics of the contact vehicle(s).
   d. Identify shape and composition of the contact vehicle(s).

Contrasting Case Example
Appendix P

Military Task Examples
C1-Remembering / Large Group / New to Task and Familiar with Task
Task Variables

Action Verb

Locate

Performance Level

01 - Remembering

Definition

To seek out and determine or set the place, site, position, or limits of.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
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  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
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Other Verbs at the same Cognitive Level

- Check
- Define
- Detect
- Download

Identify
Recognize
Locate
Orient
Record
Select
Recommender
Write

Recommended Methods and Sequence of Instruction

Direct Instruction

- Facilitators present material to the large group then break the group into smaller groups to conduct the PEs.
- Lecture and presentation of information with Guided Notes and practical exercises for Soldiers new to task.
- Soldiers familiar with the task should demonstrate proficiency first and become peer-to-peer coaches.

Choose the method of instruction based on the "Time of Instruction" for the ELO.

Time of Instruction

- 1 hour: Lecture and presentation with Guided Notes.
- 2 hours: Practical exercises in small groups, then discuss as a large group. Soldiers who are familiar with the task could assist after presentation and check on learning.
- 4-6 hours: Multiple practice sessions in small groups with Facilitator feedback, then discuss as a larger group.

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Guided Notes

Advanced Organizer Example

Backwards Fading Example

Contrasting Cases Considerations
## Task Variables

### Action Verb
- **Locate**

### Performance Level
- **C1 - Remembering**

### Definition
To seek out and determine or set the place, site, position, or limits of.

### Group Size
- **1:16 or less**
- **1:17 or greater**

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- **New to task**
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- **Familiar with task**
  - Preliminary task knowledge, understands fundamentals.
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### Other Verbs at the same Cognitive Level
- **Check**
- **Define**
- **Detect**
- **Download**
- **Identify**
- **Locate**
- **Orient**
- **Record**
- **Select**
- **Recognize**
- **Write**

### Recommended Methods and Sequence of Instruction

#### Key Points for Success
- Provide multiple practice opportunities
- Facilitator feedback is essential
- Facilitators should develop questions based on the desired level of performance.
- Use the key words in the table below as guides to structure questions and use task content to complete the question.

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Question Key Words</th>
<th>Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks</th>
</tr>
</thead>
</table>
| C1 - Remembering | Who, What, When, Where, Why, How, List, Match, Name, Recall, Select, etc. | - What are the 3 types of mission orders?  
- Name the 5 paragraphs of an Operation Order.  
- List the steps 7 steps of the MDMP.  
- Match the 4 types of military briefings by definitions. |

### Question Sequencing Techniques to Promote Learning
- **Extending and lifting** - involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.

#### Example
- **Extending**
  - C2: Understanding
  - Ask questions or assign tasks at the lower level first

#### Apply the MDMP Step 2 Mission Analysis
- **Lifting**
  - C3: Applying
  - Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.
### Narrow to Broad — ask lower level specific questions, followed by next higher level general questions

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Narrow</strong></td>
<td>C1-Rembering</td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Broad</th>
<th>C2-Understanding</th>
<th>Then ask general questions at the next higher level.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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### Broad to narrow (funneling) — ask low level general questions, followed by next higher level specific questions

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<td>• Rstate the task to subordinate units statement into a mission statement using Who, What, When, Where, and Why.</td>
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Task Variables

Action Verb

Locate

Performance Level

03 - Remembering

Definition

To seek out and determine or set the place, site, position, or limits of.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  No task knowledge, no fundamentals.
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Other Verbs at the same Cognitive Level

- Check
- Define
- Detect
- Download
- Identify
- Locate
- Orient
- Recognize
- Reconnoiter
- Record
- Select
- Write

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Practical Exercises

- A backwards fading PE where Soldiers are first shown the complete worked example and certain components are then removed to finally the Soldiers complete the entire task on their own.
- Some tasks related to verbs at this level involve recognizing, identifying, locating, detecting, etc. a target, pattern, etc. (e.g., aircraft, vehicle, patterns of life) and taking action or making decisions based on the outcome of these tasks.
  - For these types of tasks, PEs would first involve defining the conditions in which the task occurs. This includes defining the features of the situation. Then, materials are developed to train and test Soldiers to recognize those features and use that recognition to identify the target. Attention to cues and a high level of vigilance characterize these tasks.
  - A contrasting cases PE where the Soldier is required to observe multiple items and determine the similarities (compare) or differences (contrast) between them.
  - Practical exercises could include rapid exposure to stimulus cues thereby requiring Soldiers to quickly develop strategies to successfully complete the tasks. Other approaches could include the use of simulations to present cues across a wide range of scenarios (e.g., different threat conditions, shoot-don’t shoot contexts, friendly or enemy actions) so that Soldiers have multiple opportunities to practice these tasks. Deliberate practice across diverse situations increases the likelihood that the skills will transfer to novel situations.

Assess

- Whether Soldiers can complete the entire task on their own with minimal errors.

Guided Notes
Definition

To seek out and determine or set the place, site, position, or limits of.

Group Size

- ☐ 1:16 or less
- ☑ 1:17 or greater

Experience

- ☐ New to task
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- ☐ Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

- Check
- Define
- Detect
- Download
- Identify
- Locate
- Orient
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- Reconnoiter
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- Write

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- Highly supported notes: From the File menu, choose Save as and rename your file. Then strategically replace key words in your document with some blanks. This provides a high level of scaffolding. (Limit the number of fill-in-the-blanks at this level).
- Moderately supported notes: From the File menu, choose Save as and rename your file again. Then strategically replace more key words and phrases in your document with blanks. This provides a moderate level of scaffolding.
- Outlined notes: From the File menu, choose Save as and rename your file again. Eliminate most of the text so that you have a note taking outline. Outlines are best used with Soldiers who have learned how to summarize key constructs.

Guided Notes:

Task Number: 071-329-1014
Task Title: Locate an Unknown Point on a Map and on the Ground by Intersection

Identify an unknown point on a map by intersection using the map and compass method.

a. _____ the map on a flat surface using a compass.

b. Plot the azimuths from known points (A and B) to the unknown point on the map.

1. Mark ______ position (the observer) on the map.
2. Determine the ______ azimuth from your position (A) to the unknown point.
3. Convert the ______ azimuth to a ______ azimuth.
4. Place the index point of a ______ on your plotted position.
5. Align the protractor’s 0 to 180 ______ line to the top of the map’s North-South grid line.
6. Ensure the 0-degree mark is pointing to the ______ (or top of map).
7. Place a tick mark on the map beside the number on the protractor that corresponds to the computed ______ azimuth.
8. Draw a straight line from your ______ position to the tick mark and beyond.
9. Repeat steps 1.b.1 through 1.b.8 for the observer position (B).

c. Identify the point where the lines ______ as the location of the unknown point.

d. Determine the ______ to this location to the desired accuracy.
Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level
- Check
- Define
- Detect
- Download
- Identify
- Orient
- Recognize
- Reconnoiter
- Record
- Select
- Write

Advanced Organizers Example
Advanced organizers are an effective strategy for activating student's prior knowledge, focusing student's interests, and setting goals for further instruction. This method of instruction refreshes (if necessary) and relates prior knowledge required to learn a new skill.

Advanced Organizers should:
- Be composed of a short set of verbal or visual information;
- Be presented prior to learning;
- Contain no specific content from the preceding learning task;
- Generate the logical relationships among the elements in the preceding learning task; and
- Influence the learners' encoding process.

Facilitators should:
- Discuss how the soldier's prior knowledge relates to the new task;
- Provide refresher training on prior knowledge (if necessary).

Related Prior Knowledge
- Determine Grid Coordinates
- Convert Magnetic to Grid Azimuth
- Use a Protractor
- Read Marginal Information
- Identify Terrain Features
- Determine Azimuths

New Skill

Locate an Unknown Point on a Map and on the Ground by Intersection
TASK: Locate an Unknown Point on a Map and on the Ground by Interrelation

STEPS

Identify an unknown point on a map by interrelation using the map and compass method.

a. Orient the map on a flat surface using a compass.
b. Plot grid azimuths from known points to the unknown point on the map.
   (1) Mark your position (the observer) on the map.
   (2) Determine the magnetic azimuth from your position to the unknown point.
   (3) Convert the magnetic azimuth to a grid azimuth.
   (4) Place the index point of a protractor on your plotted position.
   (5) Align the protractor's 0 to 180-degree line to the top of the map's North-South grid line.
   (6) Ensure the degree mark is pointing to the North (or top of map).
   (7) Place a tick mark on the map beside the number on the protractor that corresponds to the computed grid azimuth.
   (8) Draw a straight line from your plotted position to the tick mark and beyond.
   (9) Repeat steps 1-8 through 1-8 for each observer position.

b. Identify the point where the lines intersect as the location of the unknown point.
c. Determine the grid coordinates to this location to the desired accuracy.

TRIALS

First, the facilitator demonstrates the task from beginning to end while the soldiers watch.

Tikal 1: The facilitator and the soldiers perform the first five task steps and the soldiers perform the last task step alone.

Tikal 2: The facilitator and the soldiers perform the first four task steps and the soldiers perform the last two task steps alone.

Tikal 3: The facilitator and the soldiers perform the first three task steps and the soldiers perform the last three task steps alone.

Tikal 4: The facilitator and the soldiers perform the first two task steps and the soldiers perform the last four task steps alone.

Tikal 5: The facilitator and the soldiers perform the first task step and the soldiers perform the last five task steps alone.

Tikal 6: The facilitator and the soldiers perform the first task step and the soldiers perform the last five task steps alone.

Tikal 7: The soldiers complete the task by themselves.

FEEDBACK

FACILITATOR

Ensure map is oriented correctly.
• Place the compass on the map with the outside edge along the North-South grid line.
• Turn the map and compass until the North-Segovia arrow on the compass face north (0 or 360 degrees).
• Convert grid to magnetic azimuth.
• Use the declination diagram in the map legend to convert from magnetic to grid.

SOLDIERS

Western G-M Angle
• Subtract

Eastern G-M Angle
• Add

Grid to Map Grid to Map Grid to Grid
• Subtract

Map to Grid Map to Grid Add

Ensure protractor is properly aligned on the map.
• North-South (0 and 180 degrees) and East-West (90 and 270 degrees)
• Degrees to the right

Repeat steps 1-8 through 1-8 for the magnetic azimuth from the second known position.

Determine a 8-digit grid coordinate where the lines intersect.
Experience

- New to task
  No task knowledge, no fundamentals.
- Familiar with task
  Preliminary task knowledge, understands fundamentals.
- Proficient with task
  Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

- Check
- Define
- Detect
- Download
- Identify
- Locate
- Orient
- Recognize
- Reconnoiter
- Record
- Select
- Write

Contrasting Cases Example

**Task Number:** 071-730-0014

**Task Title:** Identify Combat Vehicles

Identify the characteristics of the observed combat vehicle(s). NOTE: Four areas of characteristics are used to determine the nomenclature: hull, armament, turret, and suspension (HATS).

**Identify HULL characteristics.**

1. Identify the general characteristics of the hull front.
   a. Identify proportionality.
   b. Identify lights, trim vane, spade, etc.
   c. Identify driver position/hatches.
2. Identify the general characteristics of the hull side.
   a. Identify slope/shape.
   b. Identify skirting shape and composition.
   c. Identify door or hatch locations and shapes.
3. Identify the general characteristics of the hull ear.
   a. Identify slope/shape.
   b. Identify skirting shape and composition.
   c. Identify door or hatch locations and shapes.

**Identify ARMAMENT characteristics.**

1. Identify the main gun (if present).
   a. Identify the presence of a main gun bore evacuator to include location on the tube, size, and shape.
   b. Identify the presence of a muzzle brake or bore deflector.
2. Identify the size, shape, type, and location of missiles or rockets.

**Identify TURRET/commander’s cupola characteristics.**

1. Identify location and shape of the turret/commander’s cupola.
2. Identify presence of searchlight or external optics.
3. Identify presence of ammo/storage boxes or baskets.
4. Identify presence of smoke dispensers.

**Identify SUSPENSION characteristics.**

1. Identify tracked system characteristics.
2. Identify wheeled system characteristics.

Determine the exact name or nomenclature of the observed combat vehicle(s).
ROC-V Mobile can be downloaded from the Google Play Store for Android smartphones or Apple Store for Apple smartphones.

Appendix Q

Military Task Examples
C2+C3 – Understanding and Applying / Small Group / New with Task
Task Variables

Action Verb

Calculate

Performance Level

03 - Applying

Definition

To ascertain by exercise of practical judgment or mathematical processes.

Group Size

1:16 or less
1:17 or greater

Experience

New to task
None task knowledge, no fundamentals.

Familiar with task
Preliminary task knowledge, understands fundamentals.

Proficient with task
Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

Access, Debrief, Prepare
Administer, Demonstrate, Perform
Annotate, Employ, Present
Apply, Ensure, Process
Brief, Estimate, Produce
Calculate, Facilitate, React

Recommended Methods and Sequence of Instruction

Without pre-class work:
- Start the class with a practical exercise designed to have Soldiers solve a particular problem, review elements of a case study, or research possible reasons for particular mission outcomes.

With pre-class work:
- Start with a review of the homework and how it applies across a range of contexts.
- Choose the method of instruction based on the “Time of Instruction” for the ELO.

Time of Instruction

2 hours
PE without presentation or information, then presentation with information, then review of student’s work as a group.
Or
Case study and answer questions, then discuss as a group; information could be presented after the group discussions
4-6 hours
After initial PE and presentation or group discussion and presentation, students apply their knowledge to a novel context.

Key Points for Success

Facilitator Considerations
Practical Exercise Considerations
Sequence of Instruction Example
Just-in-Time Information Examples
Backward Facing Example
Memory Joggers Examples
Task Variables

Action Verb
- Calculate

Performance Level
- C3 - Applying

Definition
To ascertain by exercise of practical judgment or mathematical processes.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
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Other Verbs at the same Cognitive Level
- Access, Debrief, Perform
- Administer, Demonstrate, Prepare
- Annotate, Employ, Present
- Apply, Ensure, Process
- Brief, Estimate, Produce
- Calculate, Facilitate, React

Recommended Methods and Sequence of Instruction

Key Points for Success
Without pre-class work:
- Soldiers apply knowledge and skills across varied contexts
- Facilitator feedback is essential.

With pre-class work:
- Homework is provided, such as read-aheads, interactive multimedia instruction, presentation slides, operational manuals and pamphlets.
- Soldiers apply the information to their own experiences, and then discuss these experiences in class.
- Face-to-face time in the classroom is used to build on existing or learned knowledge.
- Existing knowledge can be related to different contexts.
- Facilitator feedback is essential.
- Facilitators should develop questions based on the desired level of performance.
- Use the key words in the table below as guides to structure questions and use task context to complete the question.

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Question Key Words</th>
<th>Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks</th>
</tr>
</thead>
</table>
| C2 - Understanding | Relate, Infer, Compare, Contrast, Summarize, Interpret, Restate, Explain, etc. | • Compare and Contrast the similarities and differences between plans and orders.
• Explain the purpose of the running estimate.
• Summarize higher headquarters concept of the operation.
• Restate the commander’s intent in your own words. |
| C3 - Applying    | Develop, Identify, Construct, Organize, Plan, Utilize, etc.                         | • Identify the specified, implied, and essential tasks.
• Develop 200As based on commander’s guidance.
• Construct tentative task process. |
### Question Sequencing Techniques to Promote Learning

**Extending and Lifting** — involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 2 Mission Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extending</strong></td>
<td></td>
</tr>
<tr>
<td>C2: Understanding</td>
<td>• Summarize the higher headquarters concept of the operation.</td>
</tr>
<tr>
<td>Ask questions or assign tasks at the lower level first</td>
<td>• Restate your organization's mission as a Task and Purpose statement.</td>
</tr>
<tr>
<td></td>
<td>• What are the differences between specified and implied tasks?</td>
</tr>
<tr>
<td><strong>Lifting</strong></td>
<td></td>
</tr>
<tr>
<td>C3: Applying</td>
<td>• Identify and list the specified and implied tasks within the OPLDP that pertain to your organization.</td>
</tr>
<tr>
<td>Then ask or assign a task at the next higher level to lift the Soldier's level of cognitive learning</td>
<td></td>
</tr>
</tbody>
</table>

**Narrow to Broad** — ask lower level specific questions, followed by next higher level general questions.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Narrow</strong></td>
<td></td>
</tr>
<tr>
<td>C1: Remembering</td>
<td>• What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH INF (IFV) Co)?</td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td>• What are the main offensive weapons of an OPFOR MECH INF (IFV) Co?</td>
</tr>
<tr>
<td></td>
<td>• What enabling assets as assigned to an OPFOR MECH INF (IFV) Co to tailor it as a Company Detachment (CDEET)?</td>
</tr>
<tr>
<td><strong>Broad</strong></td>
<td></td>
</tr>
<tr>
<td>C2: Understanding</td>
<td>• Explain how the enemy would deploy a MECH INF (IFV) Co as the crossfire element during offensive operations.</td>
</tr>
<tr>
<td>Then ask general questions at the next higher level</td>
<td></td>
</tr>
</tbody>
</table>

**Broad to Narrow (funneling)** — ask low level general questions, followed by next higher level specific questions.
<table>
<thead>
<tr>
<th>C2-Understanding</th>
<th>Ask questions or assign tasks at the lower level first</th>
<th>Task and Purpose statement. What are the differences between specified and implied tasks?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifting C3-Applying</td>
<td>Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
<td>Identify and list the specified and implied tasks within the OPORD that pertain to your organization.</td>
</tr>
</tbody>
</table>

**Narrow to broad** – ask lower level specific questions, followed by next higher level general questions

**Example**
Apply the MDMP Step 4 COA Analysis (War Game)

<table>
<thead>
<tr>
<th>Narrow C1-Remembering</th>
<th>Ask specific questions at the lower level first</th>
<th>What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)? What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co? What enabling assets as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?</th>
</tr>
</thead>
</table>

**Broad C2-Understanding**
Then ask general questions at the next higher level

<table>
<thead>
<tr>
<th>Broad</th>
<th>Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.</th>
</tr>
</thead>
</table>

**Broad to narrow (funneling)** – ask low level general questions, followed by next higher level specific questions

**Example**
Apply the MDMP Step 4 COA Analysis (War Game)

<table>
<thead>
<tr>
<th>Broad C1-Remembering</th>
<th>Ask specific questions at the lower level first</th>
<th>What are the five paragraphs of an OPORD?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Narrow C2-Understanding</th>
<th>Then ask specific questions at the next higher level</th>
<th>Summarize the enemy’s composition, disposition, location, strength, and probable courses of action. Outline a tentative task organization based on the attachments and detachments. Restate the task to subordinate units statement into a mission statement using Who, What, When, Where, and Why</th>
</tr>
</thead>
</table>
Q-6

**Task Variables**

**Action Verb**
- Calculate

**Performance Level**
- 03 - Applying

**Definition**
To ascertain by exercise of practical judgment or mathematical processes.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Cognitive Level**
- Access
- Administer
- Annotate
- Apply
- Brief
- Calculate
- Debrief
- Demonstrate
- Employ
- Ensure
- Estimate
- Facilitate
- Perform
- Prepare
- Present
- Process
- Produce
- React

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

Without pre-class work, Facilitators should:
1. Conduct the first Practical Exercise (PE) (before providing information).
2. Provide more detailed information regarding the specific material and information to be learned (e.g., a lecture).
3. Conduct a second PE.
4. If the class has a short time frame, provide feedback to the Soldiers on their attempted solutions, discuss the intended outcomes, discuss that although the contexts differed the knowledge and skills to perform successfully in those situations were the same.
5. Ask probing questions requiring Soldiers to explain their responses should and provide feedback on these responses.

With pre-class work, Facilitators should:
- Ask the Soldiers questions about the reading such as how they would apply the information across a range of contexts.
- Provide more complex examples as the Soldiers show proficiency in applying the learned information.
- Provide feedback to the Soldiers regarding whether their understanding and application of the material is accurate, realistic, practical, and meets the standard.
- Provide additional cues, prompts, procedural information, memory joggers, etc. as just-in-time information, to determine whether the Soldiers can reach a higher level of understanding of the material.

**Practical Exercise Considerations**

**Sequence of Instruction Example**

**Just-In-Time Information Examples**

**Backwards Fading Example**
Q-8
Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
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- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

<table>
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<th>Access</th>
<th>Debrief</th>
<th>Perform</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Calculate</td>
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<td>React</td>
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<tr>
<td>Challenge</td>
<td>Implement</td>
<td>Read</td>
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<tr>
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<td>Refine</td>
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<tr>
<td>Confirm</td>
<td>Manage</td>
<td>Review</td>
</tr>
<tr>
<td>Control</td>
<td>Order</td>
<td>Translate</td>
</tr>
</tbody>
</table>

Backwards Fading Example

Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem solving

Key points for success:
- Ongoing evaluation of the Soldier’s performance is required.
- The Facilitator determines when to remove instructional support based on the Soldier’s performance.

Techniques include:
- Together, the Facilitator and Soldier perform a series of trials (attempts) that the facilitator and Soldier perform together.
- In early learning trials, both the Soldier and the Facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

<table>
<thead>
<tr>
<th>TASK</th>
<th>Calculate the number of packages of Composition C-4 it would take to cut a 30-inch diameter tree using an internal timber-cutting charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKWARDS FADING</td>
<td>FACILITATOR FEEDBACK</td>
</tr>
<tr>
<td>STEPS</td>
<td>Trials</td>
</tr>
<tr>
<td>Step 1. Obtain critical data.</td>
<td></td>
</tr>
</tbody>
</table>
- One tree = one charge
- 120" of diameter
| FACILITATOR | FACILITATOR FEEDBACK |
| Trial 1: Begins as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the facilitator. There are no ‘Soldier only’ steps in this trial. | What is the critical data? |
| Trial 2: The facilitator and the Soldier perform the first five task steps and the Soldier performs the last task step alone. | Number of trees to cut |
| Trial 3: The facilitator and the Soldier perform the first four task steps. | Diameter of the trees |

What are the three formulas used for timber-cutting? |
- Internal
- External
- Atbash
**Definition**
To ascertain by exercise of practical judgment or mathematical processes.

**Group Size**
- **1:16 or less**
- **1:17 or greater**

**Experience**
- New to task
  - No task knowledge, no fundamentals.
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**Other Verbs at the same Cognitive Level**
- Access
- Administer
- Annotate
- Apply
- Brief
- Calculate
- Challenge
- Change
- Communicate
- Compute
- Conduct
- Confirm
- Control
- Debrief
- Demonstrate
- Employ
- Ensure
- Estimate
- Facilitate
- Implement
- Inform
- Interact
- Investigate
- Lead
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- Order
- Perform
- Prepare
- Present
- Process
- Produce
- React
- Read
- Refine
- Register
- Report
- Request
- Review
- Translate

**Sequence of Instruction Example**

**Just-in-Time Information Examples**

**Backwards Fading Example**

**Memory Joggers Examples**

Memory joggers are designed to reduce the Soldier’s cognitive load by providing macro-level reminders.

<table>
<thead>
<tr>
<th>Formula</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>P=D/250</td>
<td>Internal Charges</td>
</tr>
<tr>
<td>P=D/50</td>
<td>Abatis</td>
</tr>
<tr>
<td>P=D/40</td>
<td>External Charges</td>
</tr>
<tr>
<td>P = Pounds of TNT</td>
<td></td>
</tr>
<tr>
<td>D = The least dimension in inches</td>
<td></td>
</tr>
</tbody>
</table>

**Internal Charges**

**Abatis**

**External Charges**

**Charge Type**

<table>
<thead>
<tr>
<th>Packages of Composition C4 Required (1.25-pound packages) by Timber Diameter (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
</tr>
<tr>
<td>Internal</td>
</tr>
<tr>
<td>External</td>
</tr>
<tr>
<td>Abatis</td>
</tr>
</tbody>
</table>

Note: Packages required are rounded UP to the next whole package.
Appendix R

Military Task Examples
C2+C3 – Understanding and Applying / Large Group / New and Familiar with Task
Action Verb

Calculate

Performance Level

C3 - Applying

Definition

To ascertain by exercise of practical judgment or mathematical processes.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

<table>
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<tr>
<th>Access</th>
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<th>Annotate</th>
<th>Apply</th>
<th>Brief</th>
<th>Calculate</th>
<th>Challenge</th>
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<td>Demonstrate</td>
<td>Employ</td>
<td>Ensure</td>
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<td>Facilitate</td>
<td>Implement</td>
<td>Inform</td>
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<td>Order</td>
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<td>Present</td>
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<td>Produce</td>
<td>React</td>
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<td>Refine</td>
<td>Register</td>
<td>Report</td>
<td>Request</td>
<td>Review</td>
<td>Translate</td>
</tr>
</tbody>
</table>

Recommended Methods and Sequence of Instruction

Key Points for Success

- Basic knowledge, i.e. remembering facts, is a prerequisite for understanding and applying task knowledge and procedures.
- PEs as the first activity are too difficult to manage with a large group.
- Facilitator feedback is essential.

With pre-class work:

- Provide homework such as read aheads, interactive multimedia instructor presentation slides, Army doctrinal manuals and pamphlets.
- Start with a review of the homework and relate how it applies across a range of contexts.
- Use face-to-face time in the classroom to build on existing or learned knowledge.
- Soldiers apply the information to their own experiences and then discuss these experiences in class.

Without pre-class work:

- Use advanced organizers to relate prior knowledge to current class work or present new information with guided notes.
- Facilitators should develop questions based on the desired level of performance.
- Use the key words in the table below as guides to structure questions and use task content to complete the question.

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Question Key Words</th>
<th>Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks</th>
</tr>
</thead>
</table>
| C2 - Understanding | Relate, Infer, Compare, Contrast, Summarize, Interpret, Restate, Explain, etc. | • Compare and Contrast the similarities and differences between plans and orders.  
• Explain the purpose of the running estimate.  
• Summarize higher headquarters concept of the operation.  
• Restate the commander’s intent in your own words. |
| C3 - Applying    | Develop, Identify, Construct, Organize, Plan, Utilize, etc. | • Identify the specified implied, and essential tasks.  
• Develop 2 COAs based on commander’s guidance.  
• Construct tentative task organizations for each COA.  
• Identify resource shortfalls. |
### Question Sequencing Techniques to Promote Learning

- **Extending and lifting** — involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.

<table>
<thead>
<tr>
<th>Extending</th>
<th>Lifting</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2:Understanding</td>
<td></td>
</tr>
<tr>
<td>Ask questions or assign tasks at the lower level first</td>
<td></td>
</tr>
<tr>
<td>C2:Applying</td>
<td></td>
</tr>
<tr>
<td>Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
<td></td>
</tr>
</tbody>
</table>

- **Example**
  - Apply the MDMP Step 2 Mission Analysis
  - **Extending**
    - Summarize the higher headquarters concept of the operation.
    - Restate your organization’s mission as a Task and Purpose statement.
    - What are the differences between specified and implied tasks?
  - **Lifting**
    - Identify and list the specified and implied tasks within the OPORD that pertain to your organization.

- **Narrow to broad** — ask lower level specific questions, followed by next higher level general questions.

<table>
<thead>
<tr>
<th>Narrow</th>
<th>Broad</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1:Remembering</td>
<td></td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td></td>
</tr>
<tr>
<td>C2:Understanding</td>
<td></td>
</tr>
<tr>
<td>Then ask general questions at the next higher level.</td>
<td></td>
</tr>
</tbody>
</table>

- **Example**
  - Apply the MDMP Step 4 COA Analysis (War Game)
  - **Narrow**
    - What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?
    - What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?
    - What enabling assets are assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDE)?
  - **Broad**
    - Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.

- **Broad to narrow (funneling)** — ask low level general questions, followed by next higher level specific questions.

<table>
<thead>
<tr>
<th>Broad</th>
<th>Narrow</th>
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</thead>
<tbody>
<tr>
<td>C1:Remembering</td>
<td></td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td></td>
</tr>
</tbody>
</table>

- **Example**
  - Apply the MDMP Step 4 COA Analysis (War Game)
  - **Broad**
    - What are the five paragraphs of an OPORD?
    - Summarize the enemy’s composition.
<table>
<thead>
<tr>
<th><strong>Narrow</strong></th>
<th><strong>Broad</strong></th>
</tr>
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<tbody>
<tr>
<td>C1-Renemembering</td>
<td>C2-Understanding</td>
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<tr>
<td>Ask specific questions at the lower level first</td>
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</table>

**Broad to narrow (funneling)** – ask low level general questions, followed by next higher level specific questions

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<tr>
<th><strong>Example</strong></th>
<th><strong>Apply the MDMP Step 4 COA Analysis (War Game)</strong></th>
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- What is the vehicle composition of an Oppor Mechanized Infantry Company (MECH Inf (IFV) Co)?
- What are the main offensive weapons of an Oppor MEDH Inf (IFV) Co?
- What enabling assets are assigned to an Oppor MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?
- Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.
- What are the five paragraphs of an OPORD?
- Summarize the enemy’s composition, disposition, location, strength, and probable courses of action.
- Outline a tentative task organization based on the attachments and detachments.
- Restate the task to subordinate units statement into a mission statement using “Who, What, When, Where, and Why.”
Task Variables

Action Verb
- Calculate

Performance Level
- 03 - Applying

Definition
To ascertain by exercise of practical judgment or mathematical processes.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
- Familiar with task
- Proficient with task

Other Verbs at the same Cognitive Level
- Access
- Administer
- Annotate
- Apply
- Brief
- Calculate
- Debrief
- Demonstrate
- Employ
- Ensure
- Estimate
- Facilitate
- Prepare
- Process
- Produce
- React

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations
- Use advanced organizers to relate prior knowledge to current class work, or present new information with guided notes, and then break into groups for PEs
- After PEs, small groups can share outcomes of discussions with the larger group.
- Over multiple days, PEs could consist of
  - Homework
  - A cycle of Facilitated presentations with more complex examples
  - Exercises conducted with small groups followed by group presentations with probing questions that require Soldiers to explain their responses.
- PEs could consist of
  - Application of knowledge across different contexts
  - Discussion of case studies
  - Examples relating to personal experiences

Assessments
- More rigorous assessments could be given so that Soldiers are required to demonstrate their proficiency levels.

Guided Notes

Just-in-Time Information Examples

Sequence of Instruction Example

Advanced Organizers Example

R-7
Guided Notes help Soldiers attend to important concepts. They can be used when the Facilitator is presenting new content or they can be used as study guides.

Used to:
- Ease note taking
- Enhance processing of new information
- Identify critical concepts

Techniques include:
- Full version of notes: Be sure to save the full version of your notes. Some Soldiers may need this type of accommodation.
- Highly supported notes: From the File menu, choose Save as and rename your file. Then strategically replace key words in your document with some blanks. This provides a high level of scaffolding. (Limit the number of fill-in-the-blanks at this level.)
- Moderately supported notes: From the File menu, choose Save as and rename your file again. Then strategically replace more key words and phrases in your document with blanks. This provides a moderate level of scaffolding.
- Outlined notes: From the File menu, choose Save as and rename your file again. Eliminate most of the text so that you have a note taking outline. Outlines are best used with Soldiers who have learned how to summarize key constructs.

Example:

Calculate timber-cutting charges using the six-step problem solving format.

**Task:** Calculate the number of packages of Composition C4 it would take to cut a 30-inch diameter tree using an internal timber-cutting charge.

**Steps:**

**Step 1. Obtain critical data.**

- One tree = ______
- ______ 30°

**Step 2. Calculate the weight of a single charge of TNT using the appropriate demolition formula.**

- Internal cutting charge
  - \[ P = \frac{D \times D}{2} \]
  - \[ P = (30^2)/2 \]
  - \[ P = (900)/2 \]
  - \[ P = 450 \] pounds of TNT

- Explosive
  - R.E.

<table>
<thead>
<tr>
<th>Explosive</th>
<th>R.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Powder</td>
<td>0.55</td>
</tr>
<tr>
<td>Composition C4</td>
<td>7</td>
</tr>
<tr>
<td>Hexogen (RDX)</td>
<td>1.60</td>
</tr>
</tbody>
</table>

**Step 3. Divide the quantity of explosive by the factor.**

- \[ \frac{P}{R.E.} = \text{pounds of explosive} \]
- \[ \frac{450}{7} = \text{pounds of Composition C4} \]

**Step 4. Determine the number of packages of explosive for a single charge by dividing the individual charge ______ by the standard package ______ of the chosen explosive. Round this result to the next highest whole package.
Other Verbs at the same Cognitive Level

Access  Debrief  Perform
Administer  Demonstrate  Prepare
Annotate  Employ  Present
Apply  Ensure  Process
Brief  Estimate  Produce
Calculate  Facilitate  React
Challenge  Implement  Read
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file again. Then strategically replace more key words and phrases in your document with blanks. This provides a moderate level of scaffolding.

Outlined notes: From the File menu, choose Save as and rename your file again.
Eliminate most of the text so that you have a note taking outline. Outlines are best used with students who have learned how to summarize key constructs.

Calculate timber-cutting charges using the six-step problem solving format

Task: Calculate the number of packages of Composition C4 if it would take to cut a 30-inch diameter tree using an internal timber-cutting charge

Steps

Step 1. Obtain critical data.
• One tree = 30"

Step 2. Calculate the weight of a single charge of TNT using the appropriate demolition formula.
• Internal cutting charge
  \[ P = \frac{(D+15)}{2} \]
  \[ P = \frac{(30+15)}{2} \]
  \[ P = \frac{45}{2} \]
  \[ P = 22.5 \text{ pounds of TNT} \]

Step 3. Divide the quantity of explosive by the factor.
• \[ \frac{P}{RE} = \text{pounds of explosive} \]
  \[ \frac{22.5}{0.55} = 41 \text{ pounds of Composition C4} \]

Step 4. Determine the number of packages of explosive for a single charge by dividing the individual charge by the standard package of the chosen explosive. Round this result to the next higher whole package.
• \[ \frac{P}{\text{number of packages (round up to next whole package)}} \]
  \[ \frac{22.5}{2.14} = 10.57 \text{ packages of C4} \]

Step 5. Determine the number of charges based on the targets.
• 1 tree = ___ charge

Step 6. Determine the total quantity of explosives required to destroy the target by multiplying the number of (Step 5) by the number of (Step 4) required per charge (Step 4).
• 3 packages per target * 1 target = 3 packages of Composition C4

Just-in-Time Information Examples
Sequence of Instruction Example
Advanced Organizers Example
**Group Size**
- ☐ 1:15 or less
- ☐ 1:17 or greater

**Experience**
- ☐ New to task
  - No task knowledge, no fundamentals.
- ☐ Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- ☐ Proficient with task
  - Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Cognitive Level**

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<th>Debrief</th>
<th>Perform</th>
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<td>Employ</td>
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<td>Translate</td>
</tr>
</tbody>
</table>

---

**Sequence of Instruction: Example**

1. Presentation with guided notes or advanced organizers
2. FE 1
3. Just-in-time information
4. FE 2
5. Group discussion

**Task Number:** 052-193-3022

**Task Title:** Calculate Timber-Cutting Charges

- The Soldier must accurately calculate the timber-cutting charges correctly using a formula and given a handheld calculator and the information needed.
- Calculate timber-cutting charges using the six-step problem-solving format.

**Six-step problem solving format**

1. **Presentation vs Guided Notes or Advanced Organizer**
   - Problem 1: Calculate the number of packages of Composition C4 it would take to cut three 45-inch diameter trees using an internal timber-cutting charge.
   - Formulas
   - FE Factors

2. **How to determine the diameter of a tree**

3. **Just-in-Time Information**

4. **Formulas**

5. **Group Discussion**

---

**Advanced Organizers Example**
Advanced Organizers Example

Advanced organizers are an effective strategy for activating a student’s prior knowledge, focusing a student’s interests, and setting goals for further instruction. This method of instruction refreshes (if necessary) and relates prior knowledge required to learn a new skill.

Advanced organizers should:

- Be composed of a short set of verbal or visual information
- Be presented prior to learning
- Contain no specific content from the preceding learning task
- Generate the logical relationships among the elements in the preceding learning task
- Influence the learners’ encoding process

Facilitators should:

- Discuss how the Soldier’s prior knowledge relates to the new task.
- Provide refresher training on prior knowledge (if necessary).

---

**Calculate a Timber-Cutting Charge**

- **Composite C4 Characteristics**
- **Initiating Devices**
- **Demolition Knots**
- **Time Fuse/Det Cord Characteristics**

---

**Related Prior Knowledge**

- New Skill
Appendix S

Military Task Examples
C2+C3 – Understanding and Applying / Small Group / Familiar with Task
## Task Variables

### Action Verb
- **Calculate**

### Performance Level
- **C3** - Applying

### Definition
To ascertain by exercise of practical judgment or mathematical processes.

### Group Size
- **1:16 or less**
- **1:17 or greater**

### Experience
- **New to task**
  - No task knowledge, no fundamentals.
- **Familiar with task**
  - Preliminary task knowledge, understands fundamentals.
- **Proficient with task**
  - Definitive task knowledge, executes the fundamentals.

### Other Verbs at the same Cognitive Level

### Recommended Methods and Sequence of Instruction

#### Key Points for Success
- Video-taped lectures, PowerPoint presentations, read-aheads could all be assigned as refresher or new information to be learned as assigned pre-class work or homework.
- Homework also could consist of having the students apply the information to their own experiences, and then the students could discuss these experiences in class.
- One way to sequence the class is to have students first use specific examples from their prior experience or through case studies to further learn the specific knowledge and information of the concepts, then the students could practice this knowledge by applying the specific declarative knowledge structures, rules, and procedures to novel contexts.
- Facilitators should develop questions based on the desired level of performance.
- Use the key words in the table below as guides to structure questions and use task-content to complete the question.

### Cognitive Level | Question Key Words | Military Task: Apply the Military Decision Making Process (MDMP) Task Example: Questions/Tasks
---|---|---
**C2** - **Understanding** | Relate, Infer, Compare, Contrast, Summarize, Interpret, Restate, Explain, etc. | - Compare and Contrast the similarities and differences between plans and orders.
- Explain the purpose of the running estimate.
- Summarize higher headquarters concept of the operation.
- Restate the commander’s intent in your own words.

**C3** - **Applying** | Develop, Identify, Construct, Organize, Plan, Utilize, etc. | - Identify the specified, implied, and essential tasks.
- Develop 2 COAs based on commander’s guidance.
- Construct tentative task organizations for each COA.
- Identify resource shortfalls.
### Question Sequencing Techniques to Promote Learning

<table>
<thead>
<tr>
<th>Extending and Lifting – involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example</strong></td>
</tr>
</tbody>
</table>
| **Extending** C2-Understanding  
Ask questions or assign tasks at the lower level first. | • Summarize the higher headquarters concept of the operation.  
• Restate your organization’s mission as a Task and Purpose statement.  
• What are the differences between specified and implied tasks? |
| **Lifting** C2-Applying  
Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning. | • Identify and list the specified and implied tasks within the OPORD that pertain to your organization. |

<table>
<thead>
<tr>
<th>Narrow to Broad – ask lower level specific questions, followed by next higher level general questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example</strong></td>
</tr>
</tbody>
</table>
| **Narrow** C1-Recall  
Ask specific questions at the lower level first. | • What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?  
• What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?  
• What enabling assets as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CODET)? |
| **Broad** C2-Applying  
Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning. | • Explain how the enemy would deploy a MECH Inf (IFV) Co as the fix element during offensive operations. |

<table>
<thead>
<tr>
<th>Broad to Narrow (funneling) – ask low level general questions, followed by next higher level specific questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example</strong></td>
</tr>
</tbody>
</table>
| **Broad** C1-Recall  
Ask specific questions at the lower level first. | • What are the five paragraphs of an OPORD? |
<table>
<thead>
<tr>
<th>Lifting</th>
<th>and implied tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB: Applying</td>
<td>Identify and list the specified and implied tasks within the OPORD that pertain to your organization.</td>
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<td>C1: Remembering</td>
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<td>C2: Understanding</td>
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Facilitator Considerations

- What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?
- What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?
- What enabling assets are assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CODET)?

- Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.

- What are the five paragraphs of an OPORD?

- Summarize the enemy’s composition, disposition, location, strength, and probable courses of action.
- Outline a tentative task organization based on the attachments and detachments.
- Restate the task to subordinate units statement into a mission statement using Who, What, When, Where, and Why.
## Instructional Methods Tool

### Task Variables

#### Action Verb
- **Calculate**

#### Performance Level
- **03 - Applying**

#### Definition
To ascertain by exercise of practical judgment or mathematical processes.

#### Group Size
- **1:16 or less**
- **1:17 or greater**

#### Experience
- **New to task**
  - No task knowledge, no fundamentals.
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  - Preliminary task knowledge, understands fundamentals.
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### Other Verbs at the same Cognitive Level

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<th>Brief</th>
<th>Calculate</th>
<th>Debrief</th>
<th>Demonstrate</th>
<th>Perform</th>
<th>Prepare</th>
<th>Present</th>
<th>Employ</th>
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<th>Process</th>
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<th>Facilitate</th>
<th>React</th>
</tr>
</thead>
</table>

### Recommended Methods and Sequence of Instruction

#### Key Points for Success

#### Facilitator Considerations
Facilitators should
- Maximize the face-to-face time with activities that require the students to participate in group work, case study discussions, explanations of applications of the content to novel contexts, etc.
- Provide more complex examples as the students show proficiency in applying the learned information.
- Provide feedback to the students regarding whether their understanding and application of the material is accurate, realistic, practical, meets the standard, etc.
- Provide additional cues, prompts, procedural information, memory joggers, etc., as just-in-time information to determine whether the students can reach a higher level of understanding of the material.
- Ask probing, rapid questions that ask students to explain their responses and provide feedback regarding these explanations.

### Practical Exercise Considerations

### Other Considerations

### Case Studies

### Case Study Example

### Sequence of Instruction Example

### Just-in-Time Information Example

### Backwards Fading Example

### Memory Joggers Examples
Task Variables

Action Verb

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Performance Level

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Definition

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**Case Studies**

Case studies can provide a basis for developing student’s problem-solving and decision making skills. Case studies are based on real events, or are a construction of events which could reasonably take place. They tell a story, one involving issues or conflicts which need to be resolved—though most case studies do not have one obvious or clear solution. The information contained in a case study might be complex (including charts, graphs, and relevant historical background materials) or simple—a human story that illustrates a difficult situation requiring a decision. The Military Staff Ride is one form of case study.

**The Military Staff Ride**

- A field staff ride is a historical study of a campaign or battle that envisions a systematic preliminary study phase, an extensive field study phase on the actual historic site, and an integration phase to capture the lessons derived from each.
- A virtual staff ride (VSR) follows the same methodology as a field staff ride but because restrictions preclude a trip to battlefield sites, the terrain is replicated in a virtual environment in the classroom.

**The Military Staff Ride Purpose and Objectives**

**General Purpose:**
- To further the professional development of U.S. Army leaders

**Specific Objectives:**
- Expose students to the dynamics of battle
- Show the human dimension – the “face of battle”
- Provide case studies in the enduring principles of joint operations
- Provide case studies in combined arms operations
- Show the relationship between technology and doctrine
- Provide case studies in mission command and leadership
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Definition
To ascertain by exercise of practical judgment or mathematical processes.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task
  No task knowledge, no fundamentals.
- Familiar with task
  Preliminary task knowledge, understands fundamentals.
- Proficient with task
  Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

Access
Administer
Annotate
Apply
Brief
Calculate
Challenge
Change
Communicate
Compute
Conduct
Confirm
Control
Debrief
Demonstrate
Employ
Ensure
Estimate
Facilitate
Implement
Inform
Interpret
Investigate
Lead
Manage
Order

Practical Exercise Considerations
Other Considerations
Case Studies
Case Study Example

The Ardennes: Battle of the Bulge

On 16 December 1944 the German Army launched a counterattack designed to halt the Allied advance, regain lost ground, disrupt the Allied supply line, and seize the port of Antwerp. The counterattack was launched from the forests of Ardennes and succeeded in pushing Allied forces back and creating a salient (Bulge) in which some Allied forces were surrounded. Response to the counterattack was slow at first, with many Allied units retreating in the face of the Germans. However, Allied units re-grouped and initiated actions to slow, and eventually stop, the German counterattack.

Student Outline

Review the events of 18 – 25 December focusing on the Allies attempts to delay the German Counterattack.

Analyze the terrain in and around Ardennes from the IPB and MCDD perspective.

Discuss/Review – Disposition and composition of Allied Engineer forces.

Identify and discuss examples of the Engineer’s use of obstacles (craters, abatis, bridge demolition) to delay the counterattack.

Analyze the effectiveness of the delay in relation to the terrain and the use of obstacles.

Resources

Band of Brothers: Episode 6 - Bastogne

Sequence of Instruction Example
**Task Variables**

**Action Verb**
- **Calculate**

**Performance Level**
- G3 - Applying

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**Other Verbs at the same Cognitive Level**
- Access, Administer, Annotate, Apply, Brief, Calculate, Challenge
- Debrief, Demonstrate, Employ, Ensure, Estimate, Facilitate, Implement
- Perform, Prepare, Present, Process, Produce, React, Read

---

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

**Practical Exercise Considerations**

**Other Considerations**

**Case Studies**

**Case Study Example**

**Sequence of Instruction Example**

- Soldiers have completed the first PE.
- Facilitators provide more detailed information regarding the specific material and information to be learned.
- Soldiers complete a second PE that varies in context.

**Task Number:** 052-193-3022

**Task Title:** Calculate Timber-Cutting Charges

- The Soldier must accurately calculate the timber-cutting charges correctly using a formula and given a handheld calculator and the information needed.
- Calculate timber-cutting charges using the six-step problem-solving format:
  - Step 1. Obtain critical data.
  - Step 2. Calculate the weight of a single charge of TNT using the appropriate demolition formula.
  - Step 3. Divide the quantity of explosive by the Relative Effectiveness (RE) factor.
  - Step 4. Determine the number of packages of explosive for a single charge by dividing the individual charge weight by the standard package weight of the chosen explosive. Round this result to the next higher, whole package.
  - Step 5. Determine the number of charges based on the targets.
  - Step 6. Determine the total quantity of explosives required to destroy the target by multiplying the number of charges (Step 5) by the number of packages required per charge (Step 4).
Problem 1: Calculate the number of packages of Composition C4 it would take to cut a 30-inch diameter tree using an internal timber-cutting charge.

PE1

RDX RE Factor and package
weight

Feedback/
Just-in-Time
Information

Just-in-Time Information Example
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example

Problem 2: Calculate the number of packages of RDX it would take to cut one 94-inch circumference tree using a timber-cutting ring charge.

PE2
### Group Size
- 1:16 or less
- 1:17 or greater

### Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
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### Other Verbs at the same Cognitive Level
- Access, Administer, Announce, Apply, Brief, Calculate, Challenge, Change, Communicate, Compute, Conduct, Confirm, Control
- Debrief, Demonstrate, Employ, Ensure, Estimate, Facilitate, Implement, Inform, Interpret, Investigate, Lead, Manage, Order, Translate

### Case Study Example
The Facilitator provides more detailed information regarding the specific material and information to be learned.

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<td>P = D^2/50</td>
</tr>
<tr>
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<td>P = D^2/40</td>
</tr>
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<td></td>
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<td>D = The least dimension in inches</td>
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### Relative Effectiveness (RE) factor examples

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<tr>
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<td>1.54</td>
</tr>
<tr>
<td>诺贝尔's Dynamite</td>
<td>1.25</td>
</tr>
<tr>
<td>Octol</td>
<td>1.54</td>
</tr>
<tr>
<td>Penetrating (PETN)</td>
<td>1.66</td>
</tr>
<tr>
<td>Semtex</td>
<td>1.35</td>
</tr>
<tr>
<td>Trinitrotoluene (TNT)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

### How to measure the circumference of a tree
1. Use engineer tape, or similar length of cord (e.g., 550 cord).
2. Wrap the tape/cord around the tree.
3. Mark the tape/cord where it makes one complete circle around the tree.
4. Measure the length of tape/cord against your M16 (length approx. 40-inches) to get total length from start point to marked point.
5. This is the circumference of the tree.

### How to determine the diameter of the tree
- Diameter = Circumference / \pi
- \pi = 3.14159265359 or 3.14

### Backwards Fading Example

### Memory Jogger Examples

### Task Complexity Example
Backwards Fading Example

Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.

Used to:
- Teach tasks to individuals who have no prior knowledge of the task
- Teach tasks that are cumulative in nature (relationship between steps)
- Move individuals from worked examples to problem-solving

Key points for success:
- Ongoing evaluation of the Soldier’s performance is required.
- The Facilitator determines when to remove instructional support based on Soldier performance.

Techniques include:
- Together, the Facilitator and Soldier perform a series of trials (attempts).
- In early learning trials, both the Soldier and the facilitator are involved in performing task steps.
- In later learning trials, more and more of the task steps are performed by the Soldier alone.

**TASK:** Calculate the number of packages of Composition C4 it would take to cut a 30-inch diameter tree using an internal timber-cutting charge.

**STEPS**
1. Obtain critical data.
   - One tree = one charge
   - D = 30"
2. Calculate the weight of a single charge of TNT using the appropriate demolition formula.
   - Internal cutting charge
   - \( P = \frac{D^2 \times 256}{250} \)
   - \( P = \frac{30^2 \times 250}{250} \)
   - \( P = 3600 \) pounds of TNT
3. Divide the quantity of explosive by the Relative Effectiveness (RE) factor.
   - \( RE = \frac{pounds}{pounds} \) of explosive
   - \( 3.6/3.34 = 2.62 \) pounds of Composition C4.

**TRAILS**
<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>Trial 1 - Begins as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by the facilitator. There are no “Soldier only” steps in this trial.</td>
<td></td>
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<tr>
<td>Trial 3 - The facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last task step alone.</td>
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**FACILITATOR FEEDBACK**
- What is the critical data?
- Number of trees to cut
- Diameter of the trees
- What are the three formulas used for timber-cutting?
- Internal
- External
- "Atolls"
Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
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Other Verbs at the same Cognitive Level

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Case Study Example

Sequence of Instruction Example

Just-in-Time Information Example

Backwards Fading Example

Memory Jogger Examples

Memory joggers are designed to reduce the Soldier's cognitive load by providing macro level reminders.

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P = Pounds of TNT
D = The least dimension in inches

Internal Charges

Abatis

External Charges

Formula for Packages of Composition C4 Required (1.25-pound packages) by Timber Diameter (Inches)

<table>
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<tr>
<th>Charge Type</th>
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<tr>
<td>Internal</td>
<td>6 1 1 1 1 1 1 1 2 2 2 3 3 3 4</td>
</tr>
<tr>
<td>External</td>
<td>1 1 2 3 4 5 5 7 9 9 11 13 16</td>
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Note: Packages required are rounded up to the next whole package
Appendix T

Military Task Examples
C2+C3 – Understanding and Applying / Large Group / Familiar with Task
## Broad to narrow (funneling) – ask low level general questions, followed by next higher level specific questions

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
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## Broad

- C2-Understanding
- Then ask general questions at the next higher level

- Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.

- C1-Remembering
- Ask specific questions at the lower level first

- What are the five paragraphs of an OPORD?

## Narrow

- C2-Understanding
- Then ask specific questions at the next higher level

- Summarize the enemy's composition, disposition, location, strength, and probable courses of action.
- Outline a tentative task organization based on the attachments and detachments.
- Restate the task to subordinate units statement into a mission statement using Who, What, When, Where, and Why

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### Facilitator Considerations
- [Expand](#)

### Practical Exercise Considerations
- [Expand](#)

### Other Considerations
- [Expand](#)

### Case Studies
- [Expand](#)

### Case Study Example
- [Expand](#)

### Sequence of Instruction Example
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### Task Variables

**Action Verb**
- Calculate

**Performance Level**
- 03 - Applying

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### Recommended Methods and Sequence of Instruction

**Key Points for Success**

**Facilitator Considerations**

**Practical Exercise Considerations**

**Other Considerations**

**Case Studies**

**Case Study Example**

- Soldiers complete the first PE in small groups.
- Facilitators provide feedback to the large group.
- Facilitators provide just-in-time information to the large group.
- Soldiers complete the second PE in small groups.
- Facilitators conduct a large group discussion.

**Task Number:** 052-193-3022

**Task Title:** Calculate Timber-Cutting Charges

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**Problem 1:**
Calculate the number of packages of Composition C4 it would take to cut 4 30-inch diameter trees using an internal timber-cutting charge.

**Problem 2:**
Calculate the number of packages of RDX it would take to cut one 94-inch circumference tree using a timber-cutting ring charge.

**Just-in-Time Information Examples**

- Backwards Fading Example
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**Case Study Example**

**Sequence of Instruction Example**

**Just-in-Time Information Examples**

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<td>Pentolite (PETN)</td>
<td>1.66</td>
</tr>
<tr>
<td>Semtex</td>
<td>1.35</td>
</tr>
<tr>
<td>Trinitrotoluene (TNT)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**How to measure the circumference of a tree**

- Use engineer tape, or similar length of cord (e.g. 550 cord)
- Wrap the tape/cord around the tree
- Mark the tape/cord where it makes one complete circle around the tree
- Measure the length of the tape/cord against your M16 (length approx. 40 inches) to get total length from start point to marked point

This is the circumference of the tree

**How to determine the diameter of the tree**

\[ D = \frac{Circumference}{\pi} \]

\( \pi \approx 3.14159265359 \) or 3.14

**Bore Holes**

Use one bore hole to place the explosives in trees up to 18 inches in diameter.

For larger trees use two bore holes, drilled at right angles to each other without intersecting, but as close together as possible.
### TASK: Calculate the number of packages of Composition C4 it would take to cut a 30-inch diameter tree using an internal timber-cutting charge

<table>
<thead>
<tr>
<th>STEPS</th>
<th>TASKS</th>
<th>BACKWARDS PASSING</th>
<th>FACILITATOR FEEDBACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Obtain critical data.</td>
<td>- One tree = one charge (3,200)</td>
<td>- What is the critical data?</td>
<td>- Number of trees to cut</td>
</tr>
<tr>
<td>Step 2: Calculate the weight of a single charge of TNT using the appropriate demolition formula.</td>
<td>- F = (20 / 250)</td>
<td>- Diameter of the tree</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- P = (50 * 30) / 250</td>
<td>- How many charges required for one tree?</td>
<td>- Where do we find the details of the explosive?</td>
</tr>
<tr>
<td></td>
<td>- P = (40) / 250</td>
<td>- Similar sized trees?</td>
<td>- Where would we use one bore hole?</td>
</tr>
<tr>
<td></td>
<td>- P = 1.6 pounds of TNT</td>
<td>- How would we place two bore holes?</td>
<td></td>
</tr>
<tr>
<td>Step 3: Divide the quantity of explosive by the Relative Effectiveness (RE) factor.</td>
<td></td>
<td>- Why do we first use a formula for TNT and then divide by the RE of the explosive we are using?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- RE = pounds of explosive</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 3.6 / 1.6 = 2.26 pounds of Composition C4</td>
<td>- Where do we find the package weights for different explosives?</td>
<td></td>
</tr>
<tr>
<td>Step 4: Determine the number of packages of explosive for a single charge by dividing the individual charge weight by the standard package weight of the chosen explosive. Round this result to the next higher whole package.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- P / Package Weight = number of packages (round-up to next whole package)</td>
<td>- What is the number of packages required for one tree?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- P / 2.26 lbs = 3.24, round up to 4 packages of C4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5: Determine the number of charges based on the targets.</td>
<td></td>
<td>- How would we know the size required?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 1 tree = 1 charge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 6: Determine the total quantity of explosives required to destroy the target by multiplying the number of charges (Step 4) by the number of packages required per charge (Step 3).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 3 packages per target * 1 target = 3 packages of Composition C4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Memory Jogger Examples**
Experience
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

Access  Debrief  Perform
Administer  Demonstrate  Prepare
Announce  Employ  Present
Apply  Ensure  Process
Brief  Estimate  Produce
Calculate  Facilitate  React
Challenge  Implement  Read
Change  Inform  Refine
Communicate  Interpret  Register
Compute  Investigate  Report
Conduct  Lead  Request
Confirm  Manage  Review
Control  Order  Translate

Just-in-Time Information Examples

Backwards Falcing Example

Memory Joggers Examples

Task Complexity Example

Facilitators could provide more complex examples as PEs as the Soldiers show proficiency in the task.

To increase the complexity for "Calculating a Timber-Cutting Charge" change the conditions of the task, i.e.:
- Change the dimensions of the trees
- Change the types of explosives
- Increase the number of trees
- Provide a collective task and purpose in a field environment.

Task: Create a 200 meter Abatis on ASR Red Cloud

Purpose: To deny enemy movement along ASR Red Cloud

Determine the amount of G4 required to create the Abatis given 6 trees with a circumference of 87 inches and 6 trees with a diameter of 20 inches.
Appendix U

Military Task Examples
C2+C3 – Understanding and Applying / Small Group / Proficient with Task
Instructional Methods Tool

Task Variables

Action Verb
- Calculate

Performance Level
- 03 - Applying

Definition
To ascertain by exercise of practical judgment or mathematical processes.

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level
- Access
- Administer
- Annotate
- Apply
- Brief
- Calculate
- Debrief
- Demonstrate
- Employ
- Ensure
- Estimate
- Facilitate
- Perform
- Prepare
- Present
- Process
- Produce

Recommended Methods and Sequence of Instruction

Direct Instruction and Experiential Learning
Choose the method of instruction based on the "Time of Instruction" for the ELO.

Time of Instruction
- 4-6 hours: Perform PEs that reflect tasks the Soldiers would perform on-the-job. Allow peer-to-peer coaching in mixed learner groups.
- Multiple Days: Test Soldier proficiency and then have them assist in preparing lessons, teaching, and researching for longer assignments.

Key Points for Success
- Facilitator Considerations
- Practical Exercise Considerations
- Peer-to-Peer Learning Considerations
- Other Considerations
- On-the-Job Example
- Just-in-Time Information Example
Task Variables

Action Verb

Calculate

Performance Level
C3 - Applying

Definition
To ascertain by exercise of practical judgment or mathematical processes.

Group Size

1:16 or less
1:17 or greater

Experience

New to task
No task knowledge, no fundamentals.

Familiar with task
Preliminary task knowledge, understands fundamentals.

Proficient with task
Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

Access
Administer
Annotate
Apply
Brief
Calculate
Debrief
Demonstrate
Employ
Ensure
Estimate
Facilitate
Perform
Prepare
Present
Process
Produce
Rat

Recommended Methods and Sequence of Instruction

Key Points for Success

- Proficient Soldiers could provide the class with additional examples and/or applications of the information that is presented by the Facilitators.
- Proficient Soldiers could provide peer-to-peer coaching while the less experienced Soldiers are conducting the on-the-job PEs. They should assist in providing feedback and on-the-spot corrections.
- Proficient Soldiers could assist the Facilitators in preparing lessons and researching ideas for class discussion.
- Facilitators should develop questions based on the desired level of performance.
- Use the key words in the table below as guides to structure questions and use task content to complete the question.

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Question Key Words</th>
<th>Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks</th>
</tr>
</thead>
</table>
| C2 - Understanding | Relate, Infer, Compare, Contrast, Summarize, Interpret, Restate, Explain, etc. | • Compare and Contrast the similarities and differences between plans and orders.
• Explain the purpose of the running estimate.
• Summarize higher headquarters concept of the operation.
• Restate the commander’s intent in your own words. |
| C3 - Applying | Develop, Identify, Construct, Organize, Plan, Utilize, etc. | • Identify the specified implied, and essential tasks.
• Develop 2 COAs based on commander’s guidance.
• Construct tentative task organizations for each COA.
• Identify resource shortfalls. |
### Question Sequencing Techniques to Promote Learning

**Extending and Lifting** — involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 2 Mission Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extending</strong></td>
<td></td>
</tr>
<tr>
<td>C2-Understanding</td>
<td>Ask questions or assign tasks at the lower level first</td>
</tr>
<tr>
<td></td>
<td>• Summarize the higher headquarters concept of the operation.</td>
</tr>
<tr>
<td></td>
<td>• Restate your organization’s mission as a Task and Purpose statement.</td>
</tr>
<tr>
<td></td>
<td>• What are the differences between specified and implied tasks?</td>
</tr>
<tr>
<td><strong>Lifting</strong></td>
<td></td>
</tr>
<tr>
<td>C3-Applying</td>
<td>Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
</tr>
<tr>
<td></td>
<td>• Identify and list the specified and implied tasks within the OPORD that pertain to your organization.</td>
</tr>
</tbody>
</table>

**Narrow to broad** — ask lower level specific questions, followed by next higher level general questions.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Narrow</strong></td>
<td></td>
</tr>
<tr>
<td>C1-Remembering</td>
<td>Ask specific questions at the lower level first</td>
</tr>
<tr>
<td></td>
<td>• What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?</td>
</tr>
<tr>
<td></td>
<td>• What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?</td>
</tr>
<tr>
<td></td>
<td>• What enabling assets as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (COET)?</td>
</tr>
<tr>
<td><strong>Broad</strong></td>
<td></td>
</tr>
<tr>
<td>C3-Applying</td>
<td>Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
</tr>
<tr>
<td></td>
<td>• Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.</td>
</tr>
</tbody>
</table>

**Broad to narrow (funneling)** — ask low level general questions, followed by next higher level specific questions.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Broad</strong></td>
<td></td>
</tr>
<tr>
<td>C1-Remembering</td>
<td>Ask specific questions at the lower level first</td>
</tr>
<tr>
<td></td>
<td>• What are the five paragraphs of an OPORD?</td>
</tr>
<tr>
<td>Narrow</td>
<td>Broad to narrow (funneling)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C1-Remembering Ask specific questions at the lower level first</td>
<td>OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)? • What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co? • What enabling assets as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (COET)?</td>
</tr>
<tr>
<td>C2-Understanding Then ask specific questions at the next higher level</td>
<td>• Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.</td>
</tr>
<tr>
<td>C3-Applying Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
<td>Broad to narrow (funneling) – ask low level general questions, followed by next higher level specific questions</td>
</tr>
<tr>
<td>Example</td>
<td>Apply the MDMP Step 4 COA Analysis (War Game)</td>
</tr>
<tr>
<td>Broad C1-Remembering Ask specific questions at the lower level first</td>
<td>• What are the five paragraphs of an OPORD?</td>
</tr>
<tr>
<td></td>
<td>Narrow C2-Understanding Then ask specific questions at the next higher level</td>
</tr>
<tr>
<td></td>
<td>• Summarize the enemy’s composition, disposition, location, strength, and probable courses of action. • Outline a tentative task organization based on the attachments and detachments. • Restate the task to subordinate units statement into a mission statement using Who, What, When, Where, and Why</td>
</tr>
</tbody>
</table>
**Task Variables**

**Action Verb**
- Calculate

**Performance Level**
- 03 - Applying

**Definition**
To ascertain by exercise of practical judgment or mathematical processes.

**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Cognitive Level**
- Access
- Administer
- Annotate
- Apply
- Brief
- Calculate
- Debrief
- Demonstrate
- Employ
- Ensure
- Estimate
- Facilitate
- Prepare
- Present
- Process
- Produce

**Recommended Methods and Sequence of Instruction**

**Key Points for Success**

**Facilitator Considerations**

**Practical Exercise Considerations**

**Peer-to-Peer Learning Considerations**

The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier relationship. Soldiers learn from other Soldiers who have gained valuable insights through practical experience.

In this instance, the P2P method of instruction for hand-on tasks is generally used to:
- Increase Soldier time-on-task

**Key points to consider:**
- Facilitators should be knowledgeable about the subject matter.
- The P2P approach takes the Facilitator out of the “expert lecturer” role.
- Facilitators must monitor peer learning to ensure correct information is disseminated.
- Soldier task proficiency must be assessed:
  - Before – to determine the Soldier’s level of understanding/proficiency and identify peer-facilitators
  - During – to estimate understanding/proficiency and track progress in accomplishing the training objectives
  - After – to assess what the Soldier learned
- P2P training places responsibility on the Soldiers to share ideas and resolve differences.

**Other Considerations**

**On-the-Job Example**
**Group Size**
- 1:16 or less
- 1:17 or greater

**Experience**
- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

**Other Verbs at the same Cognitive Level**

<table>
<thead>
<tr>
<th>Access</th>
<th>Debrief</th>
<th>Perform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administer</td>
<td>Demonstrate</td>
<td>Prepare</td>
</tr>
<tr>
<td>Annotate</td>
<td>Employ</td>
<td>Present</td>
</tr>
<tr>
<td>Apply</td>
<td>Ensure</td>
<td>Process</td>
</tr>
<tr>
<td>Brief</td>
<td>Estimate</td>
<td>Produce</td>
</tr>
<tr>
<td>Calculate</td>
<td>Facilitate</td>
<td>React</td>
</tr>
<tr>
<td>Challenge</td>
<td>Implement</td>
<td>Read</td>
</tr>
<tr>
<td>Change</td>
<td>Inform</td>
<td>Refine</td>
</tr>
<tr>
<td>Communicate</td>
<td>Interpret</td>
<td>Register</td>
</tr>
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<td>Investigate</td>
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<td>Request</td>
</tr>
<tr>
<td>Confirm</td>
<td>Manage</td>
<td>Review</td>
</tr>
<tr>
<td>Control</td>
<td>Order</td>
<td>Translate</td>
</tr>
</tbody>
</table>

**On-the-Job Example**

Facilitators could provide examples of on-the-job PEAs as the Soldiers show proficiency in the task.

Facilitators could provide a collective task and purpose that places the Soldiers in a situation similar to what they would find within the assigned units.

**Task:** Create an Abatis on Route Red Clay

**Purpose:** To deny enemy movement along Route Red Clay

**Specified Task:** Create an Abatis

**Implied Tasks:**
- Determine start and stop point
- Select trees
- Determine manpower requirements
  - To prepare trees
  - To provide security
- Determine total amount of explosives needed
  - Calculate timber-cutting charges using the six-step problem-solving format
- Determine total time for completion
- Backbrief higher headquarters
Appendix V

Military Task Examples
C2+C3 – Understanding and Applying / Large Group / Proficient with Task
## Task Variables

### Action Verb
- **Calculate**

### Performance Level
- **03 - Applying**

### Definition
To ascertain by exercise of practical judgment or mathematical processes.

### Group Size
- 1:16 or less
- 1:17 or greater

### Experience
- New to task
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### Other Verbs at the same Cognitive Level
- Access
- Administer
- Annotate
- Apply
- Brief
- Calculate
- Challenge
- Change
- Communicate
- Debrief
- Demonstrate
- Employ
- Ensure
- Estimate
- Facilitate
- Implement
- Inform
- Internet
- Perform
- Prepare
- Present
- Process
- Produce
- React
- Read
- Refine
- Register

## Recommended Methods and Sequence of Instruction

### Direct Instruction and Experiential Learning
Choose the method of instruction based on the "Time of Instruction" for the ELO.

<table>
<thead>
<tr>
<th>Time of Instruction</th>
<th>Method of Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-6 hours</td>
<td>Perform PFs that reflect tasks the Soldiers would perform on-the-job. Allow peer-to-peer coaching in mixed learner groups.</td>
</tr>
<tr>
<td>Multiple Days</td>
<td>Test Soldier proficiency and then have them assist in preparing lessons, teaching, and researching for longer assignments.</td>
</tr>
</tbody>
</table>

### Key Points for Success
- [Detailed information]

### Facilitator Considerations
- [Detailed information]

### Practical Exercise Considerations
- [Detailed information]

### Peer-to-Peer Learning Considerations
- [Detailed information]

### Other Considerations
- [Detailed information]

### On-the-Job Example
- [Detailed information]

### Just-in-Time Information Examples
- [Detailed information]
<table>
<thead>
<tr>
<th>Extending and Lifting</th>
<th>Example</th>
<th>Question Sequencing Techniques to Promote Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2: Understanding</td>
<td>Apply the NDMP Step 2 Mission Analysis</td>
<td></td>
</tr>
<tr>
<td>Ask questions or assign tasks at the lower level first</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Summarize the higher headquarters concept of the operation.</td>
<td></td>
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<tr>
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<td>• Restate your organization’s mission as a Task and Purpose statement.</td>
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<tr>
<td></td>
<td>• What are the differences between specified and implied tasks?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting</th>
<th>Example</th>
<th>Question Sequencing Techniques to Promote Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2: Applying</td>
<td>Apply the NDMP Step 4 CEA Analysis (War Game)</td>
<td></td>
</tr>
<tr>
<td>Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identify and list the specified and implied tasks within the OPORD that pertain to your organization.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Narrow to Broad</th>
<th>Example</th>
<th>Question Sequencing Techniques to Promote Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1: Remembering</td>
<td>Apply the NDMP Step 4 CEA Analysis (War Game)</td>
<td></td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What enabling assets are assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Broad to Narrow (funneling)</th>
<th>Example</th>
<th>Question Sequencing Techniques to Promote Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1: Remembering</td>
<td>Apply the NDMP Step 4 CEA Analysis (War Game)</td>
<td></td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What are the five paragraphs of an OPORD?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Summarize the enemy’s composition</td>
<td></td>
</tr>
<tr>
<td>Narrow</td>
<td>Broad</td>
<td>Broad to narrow (funneling) – ask level general questions, followed by next higher level specific questions</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>C1-Remembering</td>
<td>C2-Understanding</td>
<td>Apply the MDMP Step 4 COA Analysis (War Game)</td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td>Then ask general questions at the next higher level</td>
<td>What are the five paragraphs of an OPORD?</td>
</tr>
<tr>
<td>What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)</td>
<td>Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations</td>
<td>Summarize the enemy’s composition, disposition, location, strength, and probable courses of action. Outline a tentative task organization based on the attachments and detachments. Restate the task to subordinate units statement into a mission statement using 'Who, What, When, Where, and Why'</td>
</tr>
</tbody>
</table>

**Facilitator Considerations**

**Practical Exercise Considerations**

**Peer-to-Peer Learning Considerations**

**Other Considerations**

**On-the-Job Example**

**Just-in-Time Information Examples**
Task Variables

Action Verb

Calculate

Performance Level

03 - Applying

Definition
To ascertain by exercise of practical judgment or mathematical processes.

Group Size

- 1:15 or less
- 1:17 or greater

Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

- Access
- Administer
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- Estimate
- Facilitate
- Prepare
- Present
- Process
- Produce
- Perform

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

- Practical exercises could reflect the types of tasks that the Soldiers would perform on the job, for example:
  - Translating authentic materials
  - Preparing operations orders
  - Researching complex problems
  - Synchronizing intelligence information
  - Performing knowledge management activities
  - Preparing strategic level briefings
- Soldiers should practice these types of tasks and receive feedback, cues, and just-in-time information from the Facilitators to enhance their learning and maximize their performance.

Peer-to-Peer Learning Considerations

Other Considerations

On-the-Job Example

Just-in-Time Information Examples
Task Variables

Action Verb
Calculate

Performance Level
03 - Applying

Definition
To ascertain by exercise of practical judgment or mathematical processes.

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

Access
Administer
Annotate
Apply
Brief
Calculate
Debrief
Demonstrate
Employ
Ensure
Estimate
Facilitate
Perform
Prepare
Present
Process
Produce

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Peer-to-Peer Learning Considerations

The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier relationship. Soldiers learn from other Soldiers who have gained valuable insights through practical experience.

In this instance, the P2P method of instruction for hands-on tasks is generally used to:

- Increase Soldier time-on-task

Key points to consider:

- Facilitators should be knowledgeable about the subject matter.
- The P2P approach takes the Facilitator out of the “expert lecturer” role.
- Facilitators must monitor peer learning to ensure correct information is disseminated.
- Soldier task proficiency must be assessed:
  - Before — to determine the Soldier’s level of understanding/proficiency and identify peer-facilitators
  - During — to estimate understanding/proficiency and track progress in accomplishing the training objectives
  - After — to assess what the Soldier learned.
- P2P training places responsibility on the Soldiers to share ideas and resolve differences.

On-the-Job Example

Other Considerations

V-8
Appendix W

Military Task Examples
C4+C5+C6 – Analyzing, Evaluating, and Creating / Small Group / Familiar with Task
### Question Sequencing Techniques to Promote Learning

<table>
<thead>
<tr>
<th>Extending and lifting</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example</strong></td>
<td><strong>Apply the MDMP Step 2 Mission Analysis</strong></td>
</tr>
<tr>
<td><strong>Extending</strong></td>
<td></td>
</tr>
<tr>
<td>C2: Understanding</td>
<td></td>
</tr>
<tr>
<td>Ask questions or assign tasks at the lower level first</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lifting</strong></td>
<td></td>
</tr>
<tr>
<td>C2: Applying</td>
<td></td>
</tr>
<tr>
<td>Then ask or assign a task at the next higher level to lift the Soldier's level of cognitive learning</td>
<td></td>
</tr>
</tbody>
</table>

### Narrow to Broad (narrowing)

<table>
<thead>
<tr>
<th>Example</th>
<th><strong>Apply the MDMP Step 4 COA Analysis (War Game)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Narrow</strong></td>
<td></td>
</tr>
<tr>
<td>C1: Remembering</td>
<td></td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td></td>
</tr>
</tbody>
</table>

### Broad to Narrow (funneling)

<table>
<thead>
<tr>
<th>Example</th>
<th><strong>Apply the MDMP Step 4 COA Analysis (War Game)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Broad</strong></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Ask specific questions at the lower level first</td>
<td></td>
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</tbody>
</table>

- Facilitators can use the below sequencing techniques to promote learning.

**Extending and lifting** – involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.

**Narrow to broad** – ask lower level specific questions, followed by next higher level general questions.

**Broad to narrow** (funneling) – ask lower level general questions, followed by next higher level specific questions.
| Narrow to broad — ask lower level specific questions, followed by next higher level general questions |
| Example | Apply the MDMP Step 4 COA Analysis (War Game) |
| Narrow | C1-Remembering | Ask specific questions at the lower level first |
| | | • What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)? |
| | | • What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co? |
| | | • What enabling assets are assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)? |
| Broad | C2-Understanding | Then ask general questions at the next higher level |
| | | • Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixed element during offensive operations. |

| Broad to narrow (funneling) — ask low level general questions, followed by next higher level specific questions |
| Example | Apply the MDMP Step 4 COA Analysis (War Game) |
| Broad | C1-Remembering | Ask specific questions at the lower level first |
| | | • What are the five paragraphs of an OPORD? |
| Narrow | C2-Understanding | Then ask specific questions at the next higher level |
| | | • Summarize the enemy’s composition, disposition, location, strength, and probable courses of action. |
| | | • Outline a tentative task organization based on the attachments and detachments. |
| | | • Restate the task to subordinate units statement into a mission statement using Who, What, When, Where, and Why |

Facilitator Considerations
Practical Exercise Considerations
Analysis/Development Example
Just-in-Time Information Example
### Task Variables

#### Action Verb
- **Develop**

#### Performance Level
- **06 - Creating**

#### Definition
To create or produce especially by deliberate effort over time

#### Group Size
- 1:16 or less
- 1:17 or greater

#### Experience
- **New to task**
  - No task knowledge, no fundamentals.
- **Familiar with task**
  - Preliminary task knowledge, understands fundamentals.
- **Proficient with task**
  - Definitive task knowledge, executes the fundamentals.

### Other Verbs at the same Cognitive Level
- Analyze
- Approve
- Assemble
- Assess
- Compare
- Consolidate
- Coordinate
- Direct
- Draft
- Edit
- Establish
- Integrate
- Lead
- Reorganize
- Resolve
- Review
- Schedule
- Secure
- Test
- Task

### Recommended Methods and Sequence of Instruction

#### Key Points for Success

#### Facilitator Considerations
- **Facilitators should:**
  - Assign individuals to different roles in a case and discuss different viewpoints and perspectives, especially cross-cultural ones.
  - Assess learning at this level by requiring the Soldiers to:
    - Create a new approach for their specific domain area.
    - Propose how to integrate information from two different systems to increase performance effectiveness in a particular domain.
    - Defend the logic of their decision making processes, solutions, and outcomes.

### Practical Exercise Considerations

### Analysis/Development Example

### Just-in-Time Information Example
Task Variables

Action Verb
- Develop

Performance Level
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<th>Reorganize</th>
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<td>Approve</td>
<td>Direct</td>
<td>Resolve</td>
</tr>
<tr>
<td>Assemble</td>
<td>Draft</td>
<td>Review</td>
</tr>
<tr>
<td>Assess</td>
<td>Edit</td>
<td>Rewrite</td>
</tr>
<tr>
<td>Compare</td>
<td>Establish</td>
<td>Schedule</td>
</tr>
<tr>
<td>Consolidate</td>
<td>Integrate</td>
<td>Secure</td>
</tr>
<tr>
<td>Coordinate</td>
<td>Localize</td>
<td>Task</td>
</tr>
<tr>
<td>Correlate</td>
<td>Modify</td>
<td>Test</td>
</tr>
<tr>
<td>Counsel</td>
<td>Organize</td>
<td>Troubleshoot</td>
</tr>
<tr>
<td>Deconflict</td>
<td>Plan</td>
<td>Update</td>
</tr>
<tr>
<td>Defend</td>
<td>Predict</td>
<td>Validate</td>
</tr>
<tr>
<td>Designate</td>
<td>Project</td>
<td>Verify</td>
</tr>
<tr>
<td>Determine</td>
<td>Recommend</td>
<td></td>
</tr>
</tbody>
</table>
2. Assess the enemy's capabilities and intentions.
   a. Identify the enemy's objectives and plans.
   b. Determine the enemy's strength and capabilities.
   c. Assess the enemy's support and support capability.
   d. Analyze the enemy's potential courses of action.
   e. Evaluate the enemy's intelligence and signals intelligence.

3. Develop an operations plan to neutralize the enemy.
   a. Establish a common base of information for decision making.
   b. Define the mission and objectives.
   c. Plan the sequence of events and operations.
   d. Allocate resources and adjust the plan as necessary.

4. Emplace weapon systems.
   a. Select tentative platoon battle positions.
   b. Establish sector boundaries.
   c. Coordinate fire support.
   d. Establish communication channels.
   e. Prepare for counterattacks.

5. Implement the plan and execute the mission.
   a. Coordinate fire support.
   b. Establish communication channels.
   c. Prepare for counterattacks.
   d. Review and adjust the plan as necessary.

6. Evaluate the mission and adjust the plan as necessary.
   a. Review the enemy's response to the plan.
   b. Adjust the plan to neutralize the enemy.
   c. Establish a new common base of information for decision making.
   d. Ensure that all units are coordinated and communicating effectively.

7. Maintain the plan and adjust as necessary.
   a. Monitor the enemy's movements.
   b. Adjust the plan to neutralize the enemy.
   c. Ensure that all units are coordinated and communicating effectively.
   d. Review and adjust the plan as necessary.

8. Close the mission and adjust the plan as necessary.
   a. Review the enemy's response to the plan.
   b. Adjust the plan to neutralize the enemy.
   c. Coordinate fire support.
   d. Establish communication channels.
   e. Prepare for counterattacks.

9. Implement the plan and execute the mission.
   a. Coordinate fire support.
   b. Establish communication channels.
   c. Prepare for counterattacks.
   d. Review and adjust the plan as necessary.

10. Evaluate the mission and adjust the plan as necessary.
    a. Review the enemy's response to the plan.
    b. Adjust the plan to neutralize the enemy.
    c. Coordinate fire support.
    d. Establish communication channels.
    e. Prepare for counterattacks.
    f. Review and adjust the plan as necessary.
b. Conduct a leader’s reconnaissance of the tentative battle positions.

c. Drive the engagement area to confirm that selected positions are tactically advantageous.

d. Confirm and mark the selected battle positions.

e. Ensure that battle positions do not conflict with those of adjacent units and that they are effectively tied in with adjacent positions.

f. Select primary, alternate, and supplementary fighting positions to achieve the desired effect for each TRP in the engagement area.

g. Ensure that platoon leaders, platoon sergeants, section leaders, and squad leaders position weapons systems to effectively cover each TRP with the required number of weapons systems (by type) and platoons.

h. Site and mark vehicle positions in accordance with unit SOP so engineers can dig in the positions while section leaders supervise.

i. Proof all vehicle positions before engineer assets depart.

5. Plan and integrate obstacles

a. Understand obstacle group intent.

b. Coordinate with the engineers.

c. Site and mark individual obstacle locations.

d. Refined direct and indirect fire control measures.

e. Identify lanes and gaps.

f. Report obstacle locations and gaps to higher headquarters.

6. Plan and integrate indirect fires.

a. Determine the purpose of fires and the essential fire support task.
5. Plan and integrate obstacles
   a. Understand obstacle group intent.
   b. Coordinate with the engineers.
   c. Site and mark individual obstacle locations.
   d. Refine direct and indirect fire control measures.
   e. Identify lanes and gaps.
   f. Report obstacle locations and gaps to higher headquarters.

6. Plan and integrate indirect fires.
   a. Determine the purpose of fires and the essential fire support task (EFST) that supports it.
   b. Determine where that purpose can best be achieved.
   c. Establish the observation plan, with redundancy for each target. Observers include the RIST (if available) as well as members of maneuver elements with fire support responsibilities (such as section leaders).
   d. Establish triggers.
   e. Obtain accurate target locations using lazering devices.
   f. Refine target locations to ensure coverage of obstacles.
   g. Adjust artillery and mortar targets.
   h. Plan FPFs.
   i. Request critical friendly zones (CFZ) for protection of maneuver elements and no-fire areas (NFAs) for protection of observation posts and forward positions.
Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understands fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level
- Analyze
- Approve
- Assemble
- Assess
- Compare
- Consolidate
- Coordinate
- Correlate
- Counsel
- Decisive
- Defend
- Designate
- Determine
- Develop
- Direct
- Draft
- Edit
- Establish
- Integrate
- Localize
- Modify
- Organize
- Plan
- Predict
- Project
- Reorganize
- Resolve
- Review
- Revise
- Schedule
- Secure
- Test
- Troubleshoot
- Update
- Validate
- Verify

Obstacle Types and Effects
- Block: An obstacle effect that integrates fire planning and obstacle effort to stop an attacker along a specific avenue of approach or to prevent the attacking force from passing through an engagement area.
- Disrupt: An obstacle effect that focuses fire planning and obstacle effort to cause the enemy to break up his formation and tempo, interrupt his timetable, commit breaching assets prematurely, and attack in a piecemeal effort.
- Fix: An obstacle effect that focuses fire planning and obstacle effort to slow an attacker's movement within a specified area, normally an engagement area.
- Turn: An obstacle effect that integrates fire planning and obstacle effort to divert an enemy formation from one avenue of approach to an adjacent avenue of approach or into an engagement area.

Motorized Rifle Company (BMP) Organization and Equipment

Motorized Rifle Company (BMP)

Company Headquarters (1 - BMP)
- 3

Machine Gun Platoon (2 - BMP)
- 1
- 16

Motorized Rifle Platoon (3 - BMP)
- 1
- 28

Principle Items of Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-mm Pistol</td>
<td>43</td>
</tr>
<tr>
<td>5.45-mm Assault Rifle, AK-74</td>
<td>58</td>
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Other Verbs at the Same Cognitive Level

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Motorized Rifle Company (BMP) Organization and Equipment

Motorized Rifle Company (BMP) 103

- Company Headquarters (1 - BMP) 3
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<td>58</td>
</tr>
<tr>
<td>5.45-mm Light Machine Gun, RPK-74</td>
<td>9</td>
</tr>
<tr>
<td>7.62-mm, Sniper Rifle, SVD</td>
<td>3</td>
</tr>
<tr>
<td>Antitank Grenade launcher, RPG-7V</td>
<td>9</td>
</tr>
<tr>
<td>Amphibious Infantry Combat Vehicle BMP/BMP-1/BMP-2</td>
<td>12</td>
</tr>
<tr>
<td>7.62-mm General Purpose MG, PKM</td>
<td>6</td>
</tr>
</tbody>
</table>

Radios:
- VHF, Portable, Low Power 5
- VHF, Manpack, Low Power 1
- VHF, Vehicle Mount, Medium Power 12
Appendix X

Military Task Examples
C4+C5+C6 – Analyzing, Evaluating, and Creating / Large Group / Familiar with Task
Question Sequencing Techniques to Promote Learning

<table>
<thead>
<tr>
<th>Technique</th>
<th>Example</th>
<th>Activity</th>
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<td>Apply the MDMP Step 2 Mission Analysis</td>
</tr>
<tr>
<td><strong>Extending</strong></td>
<td>C2 Understanding: Ask questions or assign tasks at the lower level first.</td>
<td>• Summarize the higher headquarters concept of the operation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Restate your organization’s mission as a Task and Purpose statement.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• What are the differences between specified and implied tasks?</td>
</tr>
<tr>
<td><strong>Lifting</strong></td>
<td>C3-Applying: Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning.</td>
<td>Identify and list the specified and implied tasks within the CPORD that pertain to your organization.</td>
</tr>
<tr>
<td><strong>Narrow to broad</strong></td>
<td>ask lower level specific questions, followed by next higher level general questions</td>
<td>Apply the MDMP Step 4 COA Analysis (War Game)</td>
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<tr>
<td><strong>Narrow</strong></td>
<td>C1-Remembering: Ask specific questions at the lower level first.</td>
<td>• What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH INF (IPY) Co)?</td>
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<td><strong>Broad</strong></td>
<td>C2 Understanding: Then ask general questions at the next higher level.</td>
<td>Explain how the enemy would deploy a MECH INF (IPY) Co as the fixed element during offensive operations.</td>
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<td><strong>Broad to narrow (funneling)</strong></td>
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<td><strong>Broad</strong></td>
<td>C1-Remembering: Ask specific questions at the lower level first.</td>
<td>• What are the five paragraphs of an CPORD?</td>
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Facilitator Considerations
Task Variables

Action Verb
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Performance Level
06 - Creating

Definition
To create or produce especially by deliberate effort over time

Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
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Other Verbs at the same Cognitive Level

- Analyze
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- Assemble
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- Compare
- Consolidate
- Coordinate
- Develop
- Direct
- Draft
- Edit
- Establish
- Integrate
- Secure
- Task
Analysis/Development Example

Task Number: 052-310-7106

Task Title: Develop an Engagement Area

As a Platoon Leader your unit has been given a mission that requires development of an engagement area. You are given an operations order, maps, situational template, maneuver graphics, any existing obstacle overlays, direct or indirect fire overlays, combat service support graphics, calculator, paper, pencil, compass, and protractor.

The facilitator can assign different roles, i.e. BLUFOR PL, Engineer, Fire Support Officer, etc., to individuals or groups for the PE. At the completion of the PE each role has to brief his/her part to the peer group.

1. Identify likely enemy avenues of approach:
   a. Conduct initial reconnaissance.
   b. Identify key (K) and/or decisive (D) terrain.
   c. Determine which avenues will afford cover and concealment for the enemy.
   d. Evaluate lateral routes adjoining each avenue of approach.

2. Determine the enemy scheme of maneuver:
   a. Determine how the enemy will structure the attack.
   b. Determine how the enemy will use his reconnaissance assets.
   c. Determine where and when the enemy will change formations and/or established support by fire positions.
   d. Determine enemy equipment and
2. Determine the enemy scheme of maneuver.
   a. Determine how the enemy will structure the attack.
   b. Determine how the enemy will use his reconnaissance assets.
   c. Determine where and when the enemy will change formations and/or establish support by fire positions.
   d. Determine enemy equipment and weapons capabilities and where, when, and how the enemy will conduct his assault, breaching operations, and commit follow-on forces.
   e. Determine the enemy’s expected rates of movement.
   f. Assess the effects of his combat multipliers.
   g. Determine what reactions the enemy is likely to have in response to projected friendly actions.

3. Determine where to kill the enemy
   a. Identify target reference points (TRP) that match the enemy’s scheme of maneuver, allowing the company to identify where it will engage enemy forces through the depth of the sector.
   b. Identify and record the exact location of each TRP.
   c. Determine how many weapons systems, by type, must focus fires on each TRP to achieve the desired effects.
   d. Determine which platforms will mass fires on each TRP.
   e. Establish engagement areas around TRPs.
   f. Develop the direct fire planning measures necessary to focus fires at each TRP.
4. Emplace weapon systems.
   a. Select tentative platoon battle positions. (When possible, select these while moving in the engagement area. Using the enemy’s perspective enables the commander to assess survivability of the positions.)
   b. Conduct a leader’s reconnaissance of the tentative battle positions.
   c. Drive the engagement area to confirm that selected positions are tactically advantageous.
   d. Confirm and mark the selected battle positions.
   e. Ensure that battle positions do not conflict with those of adjacent units and that they are effectively tied in with adjacent positions.
   f. Select primary, alternate, and supplementary fighting positions to achieve the desired effect for each TRP in the engagement area.
   g. Ensure that platoon leaders, platoon sergeants, section leaders, and squad leaders position weapons systems to effectively cover each TRP with the required number of weapons systems (by type) and platoons.
   h. Site and mark vehicle positions in accordance with unit SOP so engineers can dig in the positions while section leaders supervise.
   i. Proof all vehicle positions before engineer assets depart.

5. Plan and integrate obstacles
   a. Understand obstacle group intent.
   b. Coordinate with the engineers.
   c. Site and mark individual obstacle locations.
   d. Refine direct and indirect fire
5. Plan and integrate obstacles
   a. Understand obstacle group intent.
   b. Coordinate with the engineers.
   c. Site and mark individual obstacle locations.
   d. Refine direct and indirect fire control measures.
   e. Identify lanes and gaps.
   f. Report obstacle locations and gaps to higher headquarters.

6. Plan and integrate indirect fires.
   a. Determine the purpose of fires and the essential fire support task (EFST) that supports it.
   b. Determine where that purpose can best be achieved.
   c. Establish the observation plan, with redundancy for each target.
   d. Establish triggers.
   e. Obtain accurate target locations using laser devices.
   f. Refine target locations to ensure coverage of obstacles.
   g. Adjust artillery and mortar targets.
   h. Plan FFPs.
   i. Request critical friendly zones (CFZs) for protection of maneuver elements and no-fire areas (NFAs) for protection of observation posts and forward positions.
Motorized Rifle Company (BMP) Organization and Equipment

- **F**ix is an obstacle effect that focuses fire planning and obstacle effort to slow an attacker's movement within a specified area, normally an engagement area.

- **T**urn is an obstacle effect that integrates fire planning and obstacle effort to divert an enemy formation from one avenue of approach to an adjacent avenue of approach or into an engagement area.

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<tr>
<td>5.45-mm Assault Rifle, AK-74</td>
<td>58</td>
</tr>
<tr>
<td>5.45-mm Light Machine Gun, RPK-74</td>
<td>9</td>
</tr>
<tr>
<td>7.62-mm, Sniper Rifle, SVD</td>
<td>3</td>
</tr>
<tr>
<td>Antitank Grenade launcher, RPG-7V</td>
<td>9</td>
</tr>
<tr>
<td>Amphibious Infantry Combat Vehicle BMP/BMP-1/BMP-2</td>
<td>12</td>
</tr>
<tr>
<td>7.62-mm General Purpose MG, PKM</td>
<td>6</td>
</tr>
<tr>
<td><strong>Radios:</strong></td>
<td></td>
</tr>
<tr>
<td>VHF, Portable, Low Power</td>
<td>5</td>
</tr>
<tr>
<td>VHF, Manpack, Low Power</td>
<td>1</td>
</tr>
<tr>
<td>VHF, Vehicle Mount, Medium Power</td>
<td>12</td>
</tr>
</tbody>
</table>
Appendix Y

Military Task Examples
C4+C5+C6 – Analyzing, Evaluating, and Creating / Small Group / Proficient with Task
**Key Points for Success**

- Soldiers must have foundational knowledge, such as remembering facts, understanding concepts, and applying knowledge in order to reach a desired level of proficiency with these types of tasks.
- Proficient Soldiers should be able to formulate their own hypotheses, judgments, and solutions for complex problems and be able to defend their logic, rationale, and processes/procedures of their decisions and outcomes.
- Proficient Soldiers should be able to critique and evaluate the assertions of others.
- Soldiers should be able to think at a high strategic or operational level, integrate disparate pieces of information, and distinguish between facts and inferences.
- Facilitator feedback is essential.
- Facilitators should develop questions based on the desired level of performance.
- Use the key words in the table below as guides to structure questions and use task content to complete the question.

<table>
<thead>
<tr>
<th>Cognitive Level</th>
<th>Question Key Words</th>
<th>Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks</th>
</tr>
</thead>
</table>
| C4 - Analyzing  | Analyze, Examine, Classify, Categorize, Determine, etc. | • What is your estimation for movement time of the main effort from the TAA to the LD?  
• How does the Go and NoGo terrain on the MCOG affect maneuver for COA 2?  
• Analyze each friendly COA in relation to the enemy’s most likely and most dangerous COA.  
• Determine branches and sequels during COA analysis. |
| C5 - Creating    | Plan, Predict, Modify, Change, Improve, Adapt, Combine, etc. | • How do you predict the enemy will respond to COA 1?  
• How would you modify the COAs based on the war-game results?  
• What aspects of each COA can you combine into 1 COA to meet the commander’s guidance?  
• Create a synchronization matrix. |
| C6 - Evaluating  | Defend, Dispute, Judge, Recommend, Assess, Conclude, Prioritize, etc. | • Prioritize each COA using the evaluation criteria.  
• Recommend and defend a COA to the commander. |

Facilitators can use the below sequencing techniques to promote learning...
### Question Sequencing Techniques to Promote Learning

**Extending and lifting** — involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 2 Mission Analysis</th>
</tr>
</thead>
</table>
| Extending C2-Understanding Ask questions or assign tasks at the lower level first | • Summarize the higher headquarters concept of the operation.  
• Restate your organization’s mission as a Task and Purpose statement.  
• What are the differences between specified and implied tasks? |
| Lifting C2-Applying Then ask or assign a task at the next higher level to lift the Soldier’s level of cognitive learning | • Identify and list the specified and implied tasks within the OPORD that pertain to your organization. |

**Narrow to broad** — ask lower level specific questions, followed by next higher level general questions.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
</tr>
</thead>
</table>
| Narrow C1-Remembering Ask specific questions at the lower level first | • What is the vehicle composition of an OPFOR Mechanized Infantry Company (MEOH Inf (IFV) Co)?  
• What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?  
• What enabling assets as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)? |
| Broad C2-Understanding Then ask general questions at the next higher level. | • Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations. |

**Broad to narrow (funneling)** — ask low level general questions, followed by next higher level specific questions.

<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
</tr>
</thead>
</table>
| Broad C1-Remembering Ask specific questions at the lower level first | • What are the five paragraphs of an OPORD?  
• Summarize the enemy’s composition, |
<table>
<thead>
<tr>
<th>Example</th>
<th>Apply the MDMP Step 4 COA Analysis (War Game)</th>
</tr>
</thead>
<tbody>
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<td><strong>Narrow</strong>&lt;br&gt;C1-Remembering&lt;br&gt;Ask specific questions at the lower level first</td>
<td>• What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?&lt;br&gt;• What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?&lt;br&gt;• What enabling assets as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?</td>
</tr>
<tr>
<td><strong>Broad</strong>&lt;br&gt;C2-Understanding&lt;br&gt;Then ask general questions at the next higher level.</td>
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</tr>
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<td><strong>Broad to narrow (funneling)</strong> – ask low level general questions, followed by next higher level specific questions</td>
<td></td>
</tr>
</tbody>
</table>
Y-8
Group Size
- 1:16 or less
- 1:17 or greater

Experience
- New to task: No task knowledge, no fundamentals.
- Familiar with task: Preliminary task knowledge, understand fundamentals.
- Proficient with task: Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

- Analyze
- Approve
- Assess
- Compare
- Consolidate
- Correlate
- Counsel
- Deconflict
- Defend
- Designate
- Determine
- Develop
- Draft
- Edit
- Establish
- Integrate
- Localize
- Modify
- Organize
- Plan
- Predict
- Project
- Reorganize
- Resolve
- Review
- Schedule
- Secure
- Task
- Test
- Troubleshoot
- Update
- Validate
- Verify

Case Studies

Case studies can provide a basis for developing student’s problem-solving and decision-making skills. Case studies are based on real events, or are a construction of events that could reasonably take place. They tell a story, one involving issues or conflicts that need to be resolved—though most case studies have no obvious or clear solution. The information contained in a case study might be complex (including charts, graphs, and relevant historical background materials) or simple—a human story that illustrates a difficult situation requiring a decision. The Military Staff Ride is one form of case study.

The Military Staff Ride

- A field staff ride is a historical study of a campaign or battle that envisions a systematic preliminary study phase, an extensive field study phase on the actual historic site, and an integration phase to capture the lessons derived from each.
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The Military Staff Ride Purpose and Objectives

General Purpose:
- To further the professional development of U.S. Army leaders

Specific Objectives:
- Expose students to the dynamics of battle.
- Show the human dimension—the “face of battle.”
- Provide case studies in the enduring principles of joint operations.
- Provide case studies in combined arms operations.
- Show the relationship between technology and doctrine.
- Provide case studies in mission command and leadership.
- Provide case studies in unit cohesion.
- Show how sustainment affects operations.
- Show effects of terrain upon plans.
- Provide analytical framework for battle analysis.
- Encourage the study of U.S. military history.
- Kindle interest in U.S. Army heritage.

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Other Verbs at the same Cognitive Level

Analyze  Develop  Reorganize
Approve   Direct  Resolve
Assemble  Draft  Review
Assess     Edit   Revise
Compare    Establish  Schedule
Consolidate  Integrate  Secure
Coordinate  Localize  Task
Correlate  Modify  Test
Counsel   Organize  Troubleshoot
Defend  Predictor  Validate
Designate  Project  Verify
Determine  Recommend

Case Study Exemple

Battle of Wanat

On 13 July 2008, nine American Soldiers perished while fighting a pitched battle in the village of Wanat in Afghanistan’s Waygal Valley. On that day, the men of Company C, 2d Battalion, 503d Parachute Infantry Regiment endured 4 hours of intense close quarters combat and mounting casualties. The contingent of 49 United States and 24 Afghan National Army Soldiers valiantly defended their small outpost against a coordinated attack by a determined insurgent force armed with rocket propelled grenades and automatic weapons. Despite the initial advantage of tactical surprise and numerical superiority, it was the insurgents who ultimately broke contact and withdrew from Combat Outpost Kahler.

Resources
http://usasoc.army.mil/cors-cunetctions/military-history/staff-rides
http://www.benning.army.mil/Library/content/Wanat.pdf
http://www.rand.org/content/dam/rand/pubs/occasional_papers/2011/RAND_0P329z1.pdf
https://www.youtube.com/watch?v=AurwROEImY

Example of a Facilitator's outline requiring Soldiers to analyze and evaluate the outcomes of a historical battle

- Background: Operational Orientation of Terrain and Events prior to the Battle of Wanat
  - Discussion/View the Afghanistain Valleys (Pech, Korengal, Waygal) that affected and led to the battle
  - Review of the Events/Background (Operational and Tactical, March 2006-July 2008) that led to the battle
Example of a Facilitator’s outline requiring Soldiers to analyze and evaluate the outcomes of a historical battle:

- Background: Operational Orientation of Terrain and Events prior to the Battle of Wanat.
  - Discussion/View the Afghanistan Valleys (Pech, Korengal, Waygal) that affected and led to the Battle.
  - Review of the Events/Background (Operational and Tactical, March 2006–July 2008) that led up to the battle.
  - Analysis: This section gives the framework to understand why the unit is occupying the Village and how the leaders arrive at some of their decisions.

- Move to Wanat: Tactical Orientation of the Terrain and events
  - Discussion/view of the Village of Wanat that will show where units are located and their fields of vision.
  - Review of the Events (9–12 July) just prior to the attack.
  - View of the Enemy approaches to the Platoon positions.
  - Analysis: Soldiers will review/discuss several leadership issues the unit leaders face as they emplace a defense in Afghanistan.
    - Emplacement of defensive positions
    - Motivation of Soldiers in difficult times
    - Intelligence assessments

- The Fight: Battle of Wanat (13 July 2008)
  - Discussion/view of the initial Attacks on COP Kahler.
  - Discussion/view of the attempts to defend and reinforce COP Topside.
  - Discussion/view of the counter-attacks/reinforcement of COP Kahler.
  - Analysis: Soldiers will review/discuss several leadership issues the unit leaders face as they execute a defense in Afghanistan.
    - Small unit leader actions during battle
    - Importance of training/initiative during battle

- Integration Phase
  - Soldiers participate in a discussion that culminates the staff ride by answering two general questions:
    - What has changed in your perception of how this battle progressed, now that you have seen the terrain?
    - What external insights were gained that you can apply to your future job/mission?

Appendix Z

Military Task Examples
C4+C5+C6 – Analyzing, Evaluating, and Creating / Large Group / Proficient with Task
Instructional Methods Tool

Task Variables

Action Verb

Develop

Performance Level

C6 - Creating

Definition

To create or produce especially by deliberate effort over time

Group Size

- 1:16 or less
- 1:17 or greater

Experience

- New to task
  - No task knowledge, no fundamentals.
- Familiar with task
  - Preliminary task knowledge, understands fundamentals.
- Proficient with task
  - Definitive task knowledge, executes the fundamentals.

Other Verbs at the same Cognitive Level

- Analyze
- Approve
- Assemble
- Assess
- Compare
- Consolidate

- Develop
- Direct
- Draft
- Edit
- Establish
- Integrate

- Reorganize
- Resolve
- Review
- Revise
- Schedule
- Secure

Recommended Methods and Sequence of Instruction

Experiential Learning

Choose the method of instruction based on the "Time of Instruction" for the ELO.

<table>
<thead>
<tr>
<th>Time of Instruction</th>
<th>Method of Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-8 hours</td>
<td>Perform PEs in small groups that reflect tasks the Soldiers would perform on-the-job. Allow peer-to-peer coaching in mixed learner groups. Facilitator feedback is essential.</td>
</tr>
<tr>
<td>Multiple Days</td>
<td>Test Soldier proficiency and then have them assist in preparing lessons, teaching, and researching for longer assignments.</td>
</tr>
</tbody>
</table>

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Peer-to-Peer Learning Considerations

Case Studies

Case Study Example
**Action Verb**

**Develop**

**Performance Level**

C6 - Creating

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- How does the Go and NoGo terrain on the M000 affect maneuver for CDA?  
- Analyze each friendly CDA in relation to the enemy’s most likely and most dangerous CDA  
- Determine branches and sequels during CDA analysis. |
| C5 - Creating    | Plan, Predict, Modify, Change, Improve, Adapt, Combine, etc. | - How do you predict the enemy will respond to CDA?  
- How would you modify the CDA’s based on the war-game results?  
- What aspects of each CDA can you combine into a CDA to meet the commander’s guidance?  
- Create a synchronization matrix. |
| C6 - Evaluating  | Defend, Dispute, Judge, Recommend, Assess, Conclude, Prioritize, etc. | - Prioritize each CDA using the evaluation criteria.  
- Recommend and defend a CDA to the commander. |
### Question Sequencing Techniques to Promote Learning

<table>
<thead>
<tr>
<th>Technique</th>
<th>Example</th>
<th>Apply the MDMP Step 3 COA Analysis (War Game)</th>
</tr>
</thead>
</table>
| **Extending and lifting**        | C2: Understanding<br>Acknowledge key questions or assign tasks at the lower level first | • Summarize the higher headquarters concept of the operation.  
 • Restate your organization’s mission as a task and purpose statement.  
 • What are the differences between specified and implied tasks? |
| **Lifting**                      | C3: Applying<br>Then ask or assign a task at the next higher level to lift the soldier’s level of cognitive learning. | • Identify and list the specified and implied tasks within the CPORD that pertain to your organization. |
| **Narrow to broad**              | C1: Remembering<br>Acknowledge key questions at the lower level first | • What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IPV) Co)?  
 • What are the main offensive weapons of an OPFOR MECH Inf (IPV) Co?  
 • What enabling assets as assigned to an OPFOR MECH Inf (IPV) Co to tailor it as a Company Detachment (CDDET)? |
| **Broad to narrow (funneling)**  | C2: Understanding<br>Then ask general questions at the next higher level | • Explain how the enemy would deploy a MECH Inf (IPV) Co as the fixed element during offensive operations. |

#### Facilitators can use the below sequencing techniques to promote learning
Task Variables

Action Verb
Develop

Performance Level
06 - Creating

Definition
To create or produce especially by deliberate effort over time

Group Size
- 1:16 or less
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Experience
- New to task
  - No task knowledge, no fundamentals.
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Other Verbs at the same Cognitive Level
- Analyze
- Approve
- Assemble
- Assess
- Compare
- Consolidate
- Analyze
- Direct
- Draft
- Edit
- Establish
- Integrate
- Reorganize
- Resolve
- Review
- Schedule
- Secure
- Task

Recommended Methods and Sequence of Instruction

Key Points for Success

Facilitator Considerations

Practical Exercise Considerations

Peer-to-Peer Learning Considerations

The peer-to-peer (P2P) training approach teaches knowledge, skills, and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier relationship. Soldiers learn from other Soldiers who have gained valuable insights through practical experience.

In this instance, the P2P method of instruction for hands-on tasks is generally used to:
- Increase Soldier time-on-task

Key points to consider:
- Facilitators should be knowledgeable about the subject matter.
- The P2P approach takes the Facilitator out of the “expert lecturer” role.
- Facilitators must monitor peer learning to ensure correct information is disseminated.
- Soldier task proficiency must be assessed:
  - Before — to determine the Soldier’s level of understanding/proficiency and identify peer-facilitators
  - During — to estimate understanding/proficiency and track progress in accomplishing the training objectives
  - After — to assess what the Soldier learned
- P2P training places responsibility on the Soldiers to share ideas and resolve differences.

Case Studies

Case Study Example
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</tr>
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- Deconflict, Plan, Update
- Defend, Predict, Validate
- Designate, Project, Verify
- Determine, Recommend

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Case Studies

Case Study Example

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Resources
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