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Instructional Methods Tool

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14. ABSTRACT *(Maximum 200 words)*:

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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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.

INSTRUCTIONAL METHODS TOOL

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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.

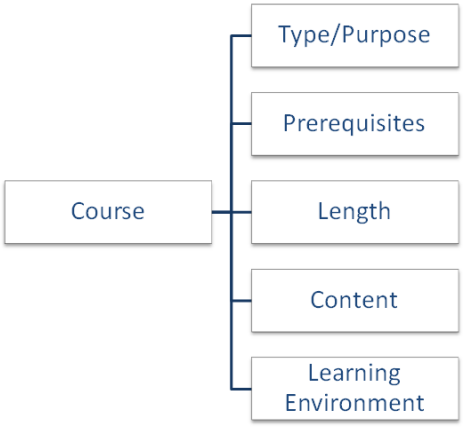


Figure 1. Example of U.S. Army formal school course characteristics.

[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[2]. 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.

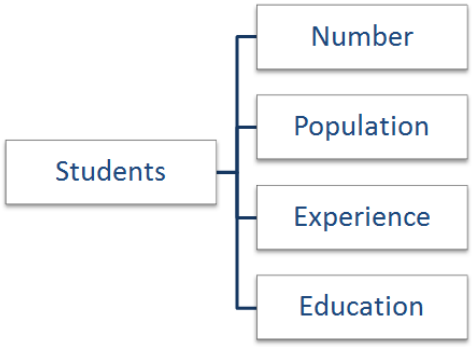


Figure 2. Example of characteristics of students who attend U.S. Army courses.

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

[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[3].

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

[3] This example is based on the author's experience as a student at the United States Army Sergeants Major Academy.

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

Psychomotor and Cognitive Levels: Descriptions and Exemplar Verbs

Psychomotor Level	Verb	Cognitive Level	Verb
1. Imitation: Copy action of another; observe and replicate	Disassemble	1. Remembering: Recall or recognize information	Identify
2. Manipulation: Reproduce activity from instruction or memory	Align	2. Understanding: Understand meaning, re-state data in one's own words, interpret, extrapolate, translate	Confirm
3. Precision: Execute skill reliably, independent of help, activity is quick, smooth, and accurate	Adjust	3. Applying: Use or apply knowledge, put theory into practice, use knowledge in response to real circumstances	Calculate
4. Articulation: Adapt and integrate expertise to satisfy a new context or task	Breach	4. Analyzing: Interpret elements, organizational principles, structure, construction, internal relationships; quality, reliability of individual components	Predict
5. Naturalization:* Instinctive, effortless, unconscious mastery of activity and related skills at strategic level		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	Assess
		6. Creating Develop new unique structures, systems, models, approaches, ideas; creative thinking, operations	Revise

* 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[4]).

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.

Course		Student	Instructor
Psychomotor*	Cognitive	Soldier task experience	Group Size
Imitation	Remembering	New to Task	Small Group (<=1:16)
Manipulation	Understanding	Familiar with Task	Large group (>= 1:17)
Precision	Applying	Proficient with Task	
Articulation	Analyzing		
	Evaluating		
	Creating		

* 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.

Course		Student	Instructor
Psychomotor	Cognitive	Soldier task experience	Group Size
Imitation	Remembering	New to Task	Small Group (<=1:16)
Manipulation and Precision	Understanding and Applying	Familiar with Task	Large group (>= 1:17)
Articulation	Analyzing, Evaluating, and Creating	Proficient with Task	

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 & Feltovich, 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 <u>proficient</u> 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.

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.

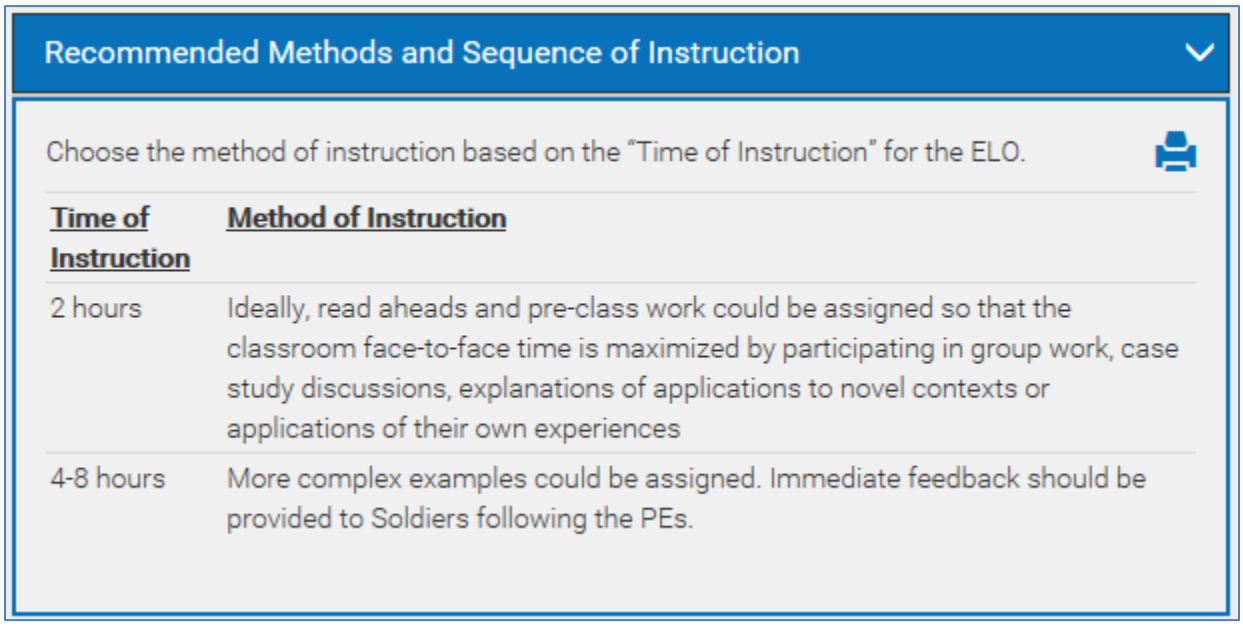


Figure 4. Example of instructional methods based on training time available.

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.

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.

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.

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	Apply the MDMP Step 2 Mission Analysis
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 C3-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.

Figure 6. Example of military context questions used in the extending and lifting question sequencing technique.

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.

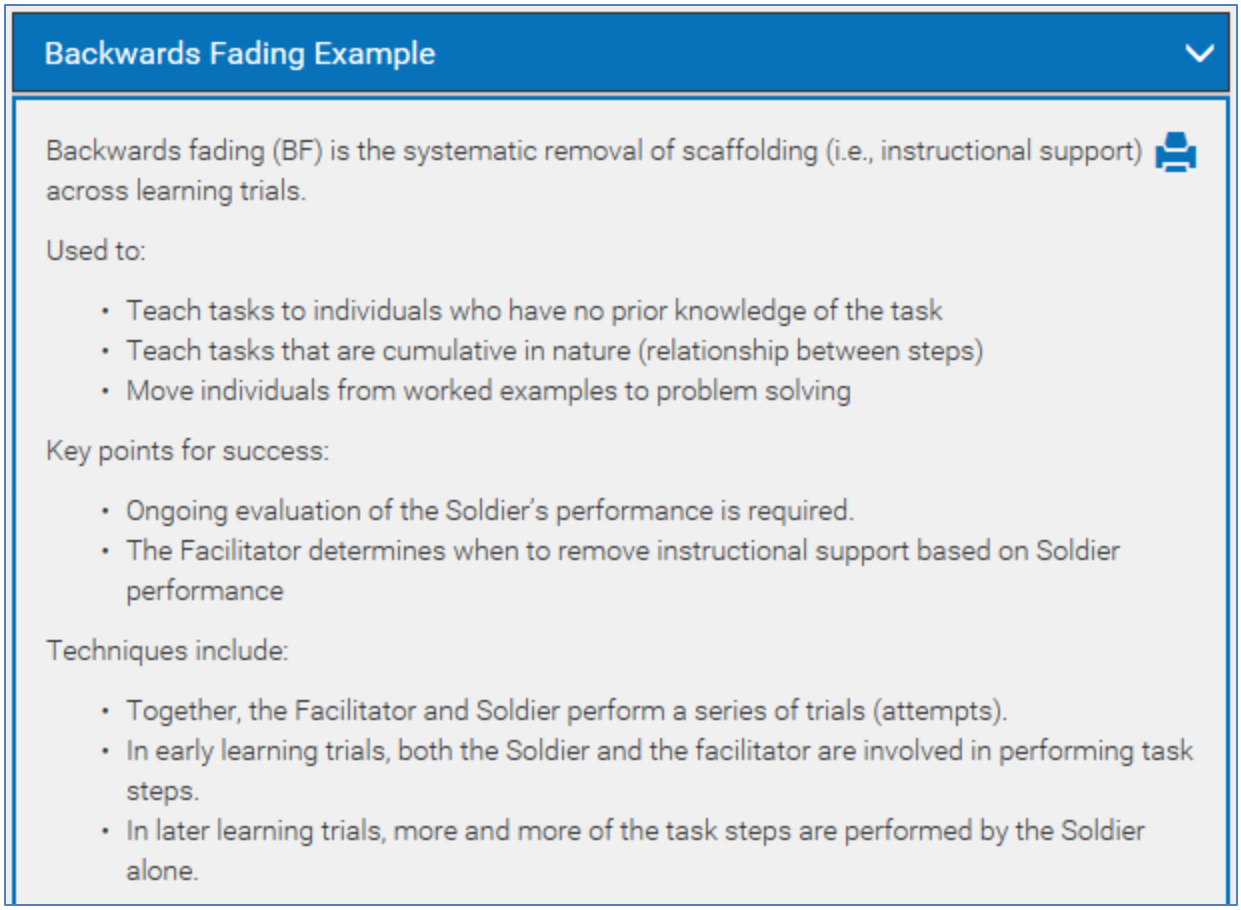


Figure 7. Example of information provided to the facilitator explaining the backwards fading method of instruction.

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.

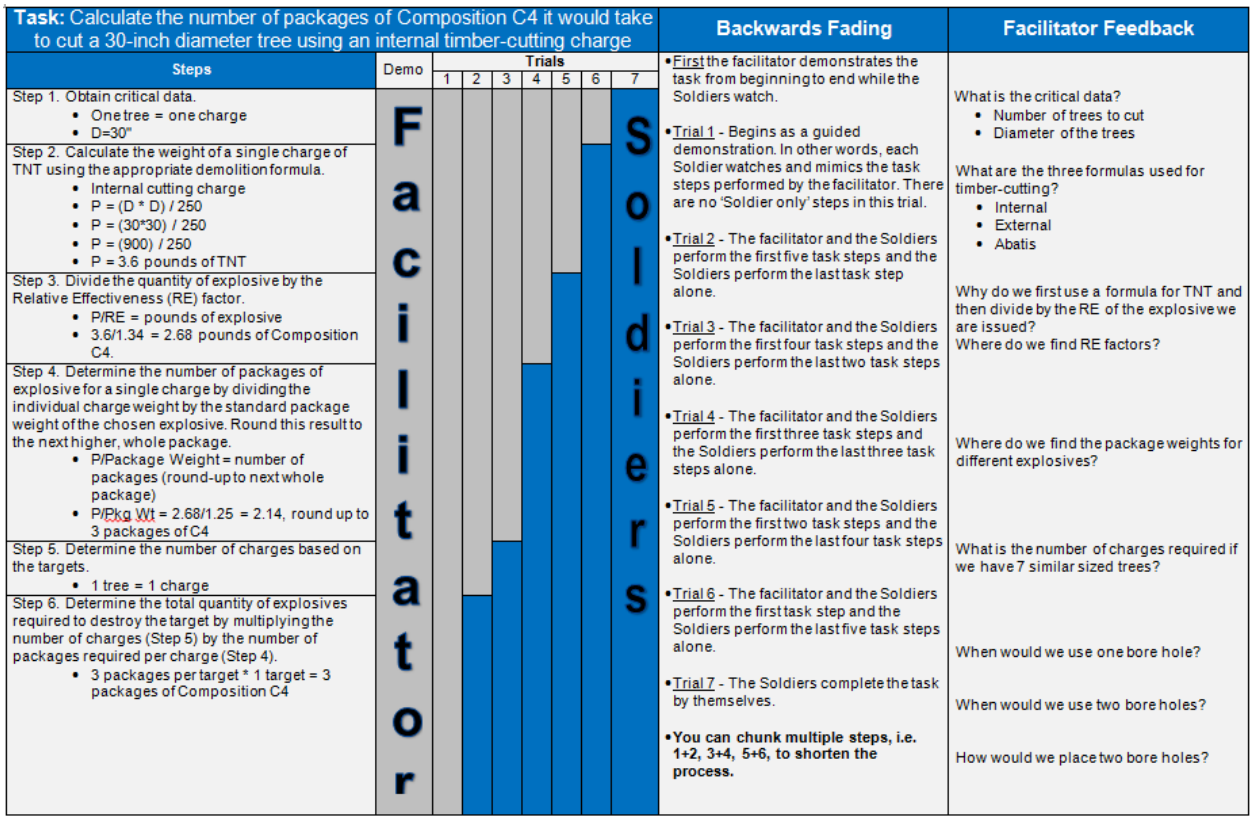


Figure 8. Example of backwards fading instructional method for "Calculate Timber-Cutting Charges".

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/.

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

[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.

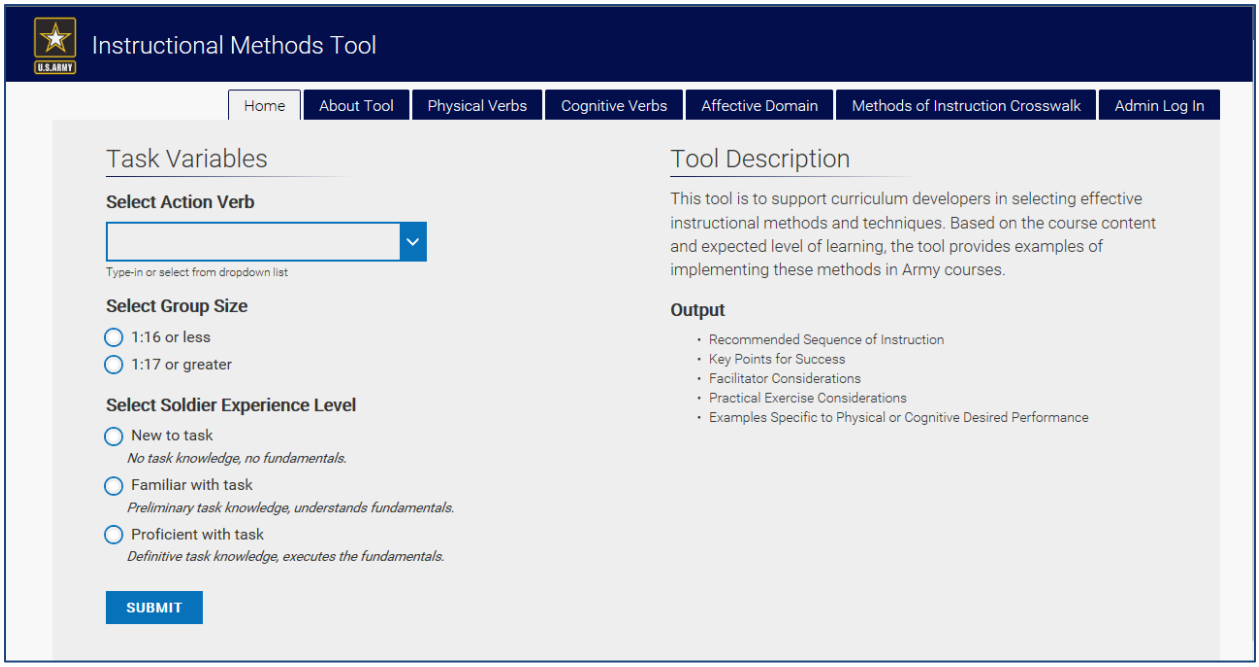


Figure 9. Example of the Instructional Methods Tool web-based application home page.

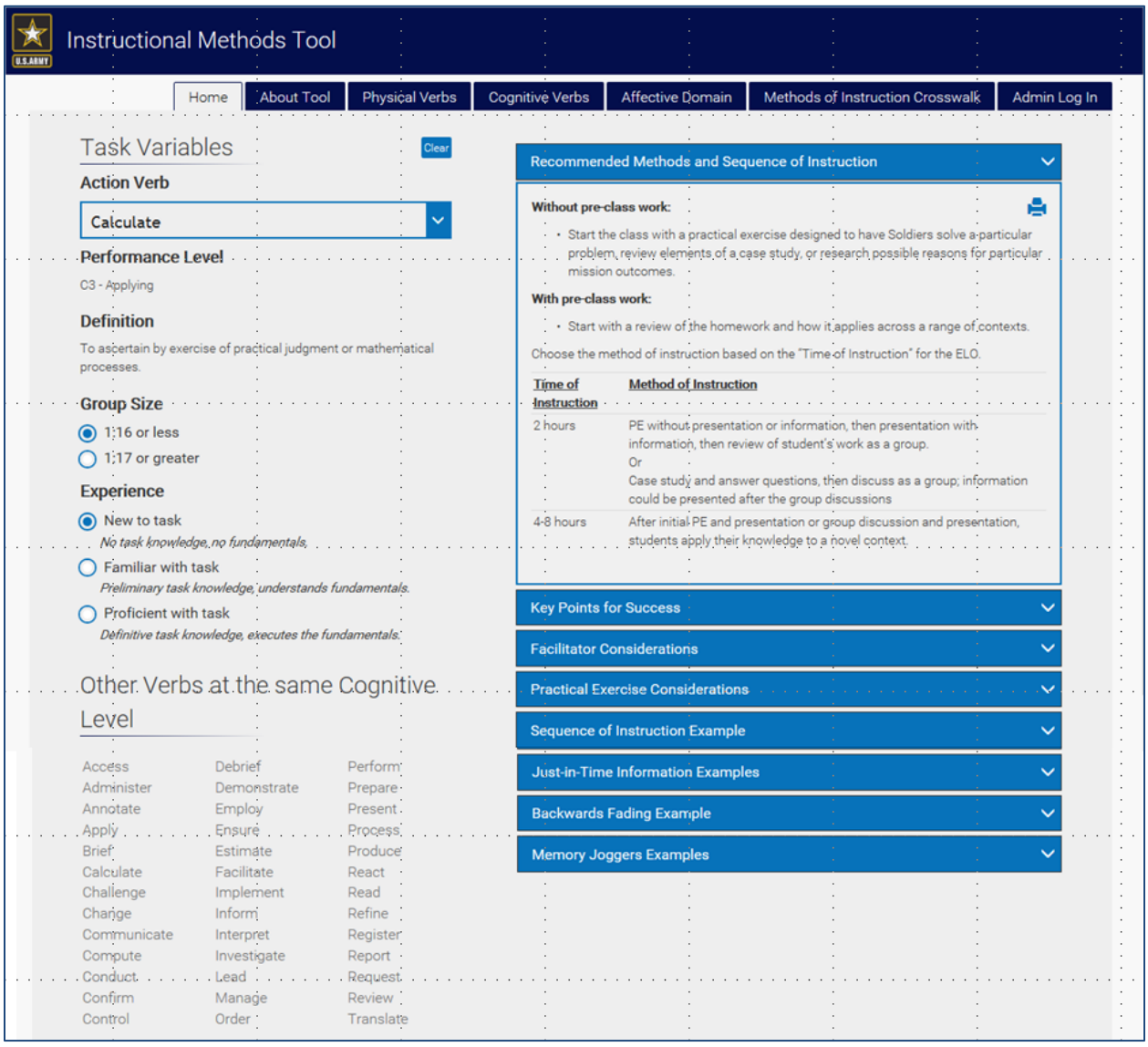


Figure 10. Example of the instructional methods section.

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.

[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.

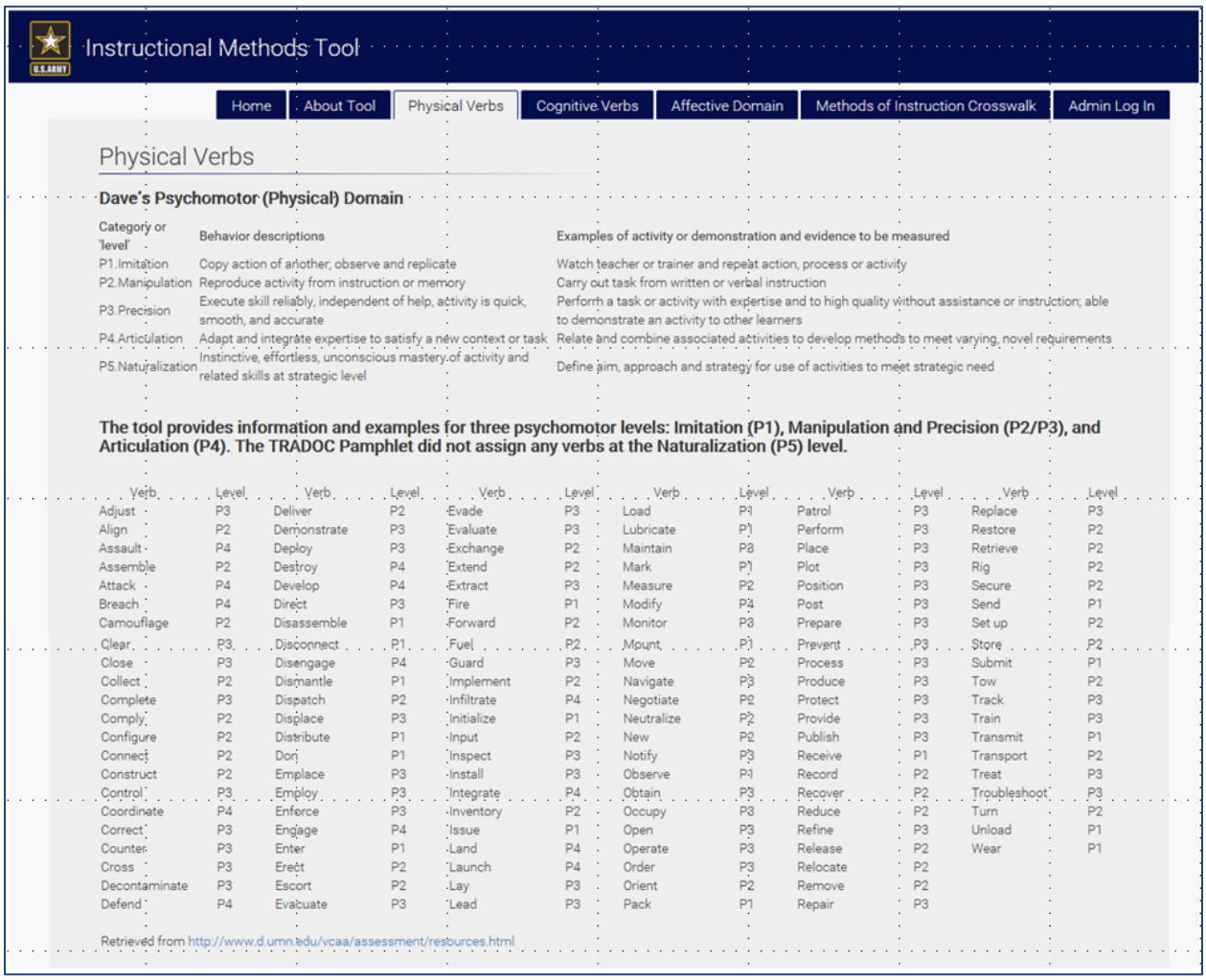


Figure 11. Example of the Physical Verb Tab.

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.

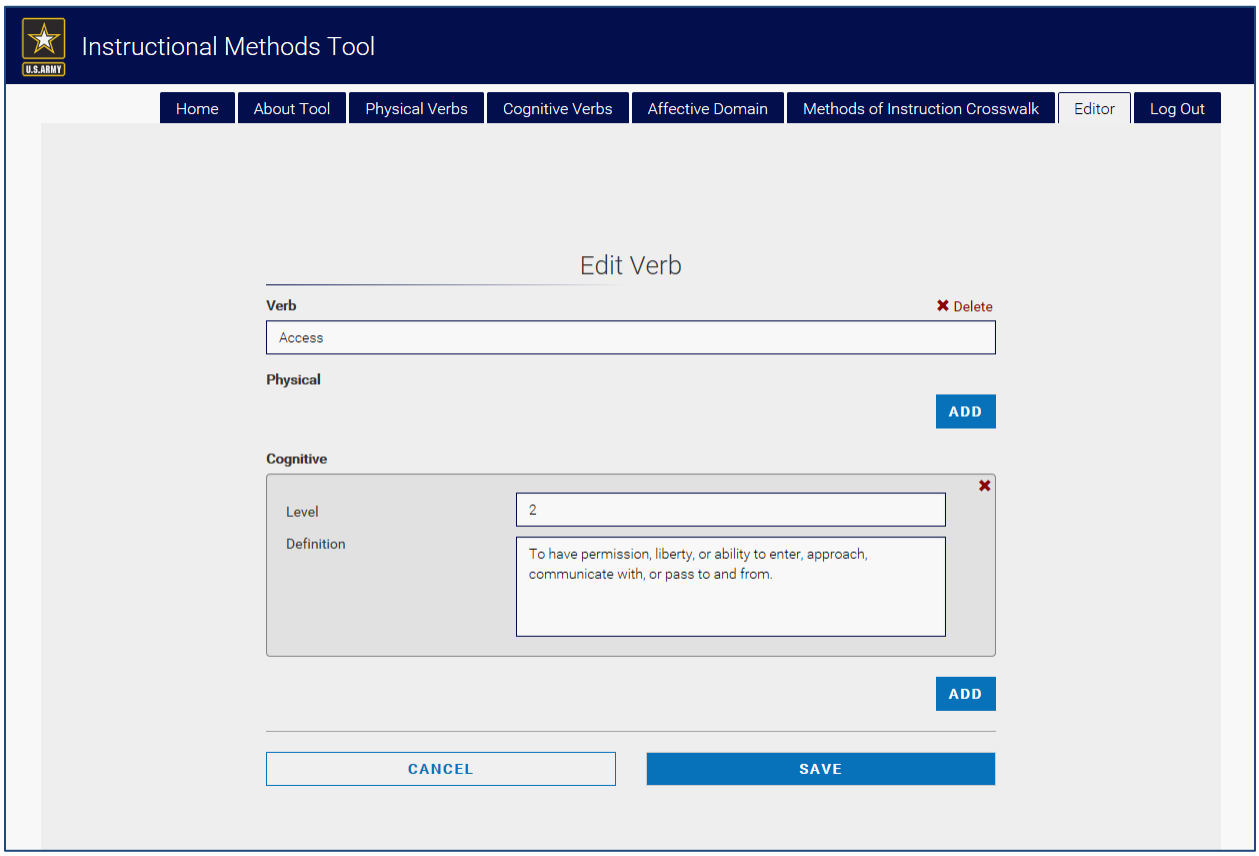


Figure 12. Example of the Admin Log In/Editor Tab.

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

Alfieri, L., Brooks, P. J., Aldrich, N. J., & Tenenbaum, H. R. (2011). Does discovery-based instruction enhance learning? *Journal of Educational Psychology, 103*, 1-18.

Anderson, J. R., Fincham, J. M., & Douglass, S. (1997). The role of examples and rules in the acquisition of a cognitive skill. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 23*, 932-945.

Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of Problem-Based Learning: A Meta-Analysis. *Learning And Instruction, 13*(5), 533-68.

Dyer, J. L., Singh, H., & Clark, T.L. (2005). *Computer-based approaches for training interactive digital map displays.* (ARI Research Report 1842) Arlington, VA. U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC No. ADA 440 171)

Haydon, T., Mancil, G. R., Kroeger, S. D., McLeskey, J., & Lin, W. Y. J. (2011). A review of the effectiveness of guided notes for students who struggle learning academic content. *Preventing School Failure: Alternative Education for Children and Youth*, *55*(4), 226-231.

Headquarters, Department of the Army (2009). *Information Management: Information Assurance* (Department of the Army Regulation 25-2). Washington, D.C.: Author.

Headquarters, Department of the Army (2013). *Information Management: Army Information Technology* (Department of the Army Regulation 25-1). Washington, D.C.: Author.

Headquarters, Department of the Army (2014). *Information Management: Management of Subdisciplines: Army Information Technology Implementation Instructions* (Department of the Army Pamphlet 25-1-1). Washington, D.C.: Author.

Headquarters, Department of the Army (2016). *U.S. Army Formal Schools Catalog* (Department of the Army Pamphlet 351-4). Washington, D.C.: Author.

Headquarters, U.S. Army Training and Doctrine Command (2010). *The Army School System* (TRADOC Regulation 350-18). Fort Monroe, VA.: Author.

Headquarters, U.S. Army Training and Doctrine Command (2011). *The U.S. Army Learning Concept for 2015*. TRADOC Pamphlet 525-8-2. Department of the Army, Ft Monroe, VA.: Author.

Headquarters, U.S. Army Training and Doctrine Command (2012). *Training development in support of the operational domain* (TRADOC Pamphlet 350-70-1). Fort Eustis, VA.: Author.

Headquarters, U.S. Army Training and Doctrine Command (2015). *Training and education development in support of the institutional domain* (TRADOC Pamphlet 350-70-14). Fort Eustis, VA.: Author.

Headquarters, U.S. Army Training and Doctrine Command (2017). *U.S. Army Learning Concept for Training and Education* (TRADOC Pamphlet 525-8-2). Fort Eustis, VA: Author.

Hemlo-Silver, C. E., Duncan, R. G., & Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning: A response to Kirschner, Sweller, and Clark (2006). *Educational Psychologist, 42,* 99-107.

Hockey, G. R. J., Sauer, J., & Wastell, D. G. (2007). Adaptability of training in simulated process control: Knowledge- versus rule-based guidance under task changes and environmental stress. *Human Factors, 49*, 158-174.

Hoffman, R., & Feltovich, P. (2010). *Accelerated proficiency and facilitated retention: Recommendations based on an integration of research and findings from a working meeting.* (Technical Report 2011-0001). Pensacola FL: Florida Institute for Human and Machine Cognition. (DTIC No. ADA 536-308)

Huba, M. E., & Freed, J. E. (2000). *Learner-centered assessment on college campuses*. Boston: Allyn and Bacon.

Huitt, W. (2003). The psychomotor domain. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University. Retrieved 2 Jun 17, from http://www.edpsycinteractive.org/topics/behavior/psymtr.html

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist, 41*, 75-86.

Kalaian, S. A., & Kasim, R. M. (2014). A Meta-Analytic Review of Studies of the Effectiveness of Small-Group Learning Methods on Statistics Achievement. *Journal of Statistics Education*, *22* (1), 1-20.

Klahr, D., & Nigam, M. (2004). The equivalence of learning paths in early science instruction: Effects of direct instruction and discovery learning. *Psychological Science, 15*,661-667.

Kozlowski, S. W. J., & DeShon, R. P. (2005). *Enhancing learning, performance, and adaptability for complex tasks.* (Technical Report 05-0183). Arlington, VA: Air Force Office of Scientific Research. (DTIC No. ADA 433 264)

Krathwohl, D. R. (2002). A revision of Bloom's Taxonomy: An overview. *Theory Into Practice, 41*, 212-218.

Kyndt, E., Raes, E., Lismont, B., Timmers, F., Cascallar, E., & Dochy, F. (2013). A meta-analysis of the effects of face-to-face cooperative learning. Do recent studies falsify or verify earlier findings? *Educational Research Review, 10,* 133-149.

Magliaro, S. G., Lockee, B. B., & Burton, J. K. (2005). Direct instruction revisited: A key model for instructional technology. *ETR&D, 53,* 41-55.

Matlen, B. J., & Klahr, D., (2013). Sequential effects of high and low instructional guidance on children's acquisition of experimentation skills: Is it all in the timing? *Instructional Science, 41,* 621-634.

Merrill, M. D. (2002). First principles of instruction. *Educational Technology Research and Development, 50(3),* 43-59.

Merrill, M. D. (2006). Hypothesized performance on complex tasks as a function of scaled instructional strategies. In J. Elen & D.E. Clark (Eds.), *Handling complexity in learning environments: Theory and research (Advances in learning and instruction* (pp. 265-281).Oxford: Elsevier.

Montague, W. E., & Knirk, F. G. (1993). *What works in adult instruction: The management, design, and delivery of instruction.* (Navy Personnel Research and Development Center Report, NPRDC-TR-93-6). San Diego, CA: Navy Personnel Research and Development Center.

Ning, H. K., & Downing, K. (2012). Influence of student learning experience on academic performance: The mediator and moderator effects of self-regulation and motivation. *British Educational Research Journal, 38,* 219-237.

Proctor, R. W., & Dutta, A. (1995). Skill acquisition and human performance. Thousand Oaks, CA: Sage.

Resnick, L. B. (2010). Nested learning systems for the thinking curriculum. *Educational Researcher, 39,* 183-197.

Rosen, M. A., Salas, E., Pavlas, D., Jensen, R., Fu, D., & Lampton, D. (2010). Demonstration-based training: A review of instructional features. *Human Factors, 52,* 596-609.

Schaefer, P. S. & Dyer, J. L. (2013). *Defining tailored training approaches for Army institutional training* (RR 1965). Ft. Belvoir, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (DTIC No.ADA 578 565)

Schaefer, P. S., Irvin, C. R., Blankenbeckler, P. N., & Brogdon, J. C. (2013). Backwards fading to speed task learning. (ARI Research Report 1968). Fort Belvoir, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Schwartz, D. L., & Arena, D. (2013). *Measuring what matters most.* Cambridge, MA: The MIT Press.

Schwartz, D. L, Chase, C. C., Oppezzo, M. A., & Chin, D. B. (2011). Practicing versus inventing with contrasting cases: The effects of telling first on learning and transfer. *Journal of Educational Psychology, 103,* pp. 759-775.

Strand-Cary, M., & Klahr, D. (2008). Developing elementary science skills: Instructional effectiveness and path independence. *Cognitive Development,* 23, 488-511.

Sweller, J., van Merrienboer, J. J. G., & Paas, F. G. W. C. (1998). Cognitive architecture and instructional design. *Educational Psychology Review, 10,* 251-296.

Tomcho, T. J., & Foels, R. (2012). Meta-Analysis of Group Learning Activities: Empirically Based Teaching Recommendations. *Teaching of Psychology, 39*(3), 159-169.

van Merriënboer, J. J. G., Kirschner, P. A., & Kester, L. (2003). Taking the load off a learner's mind: Instructional design for complex learning. *Educational Psychologist, 38,* 5-13.

Vogler, K. E. (2008). Asking Good Questions. *Educational Leadership.* 65. http://www.ascd.org/publications/educationalleadership/summer08/vol65/num09/Asking-Good-Questions.aspx

Walker, A., & Leary, H. (2009). A problem-based learning meta-analysis: Differences across problem-types, implementation types, disciplines, and assessment levels. *Interdisciplinary Journal of Problem-based Learning, 3,* 12-43.

Zbylut, M. L., Brunner, J. M., Vowels, C. L., & Kim, J. M. (2007). *Case method instruction: 25 minutes of discussion can make a difference.* (ARI Technical Report 1203). Fort Belvoir, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.

Acronyms and Abbreviations

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

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) _____

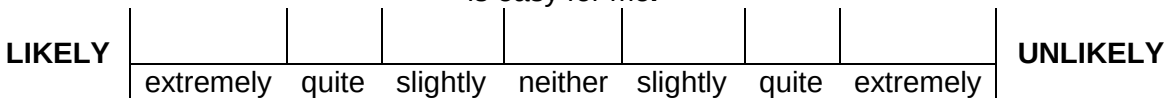
To find the operating system version, right click on the computer icon [on your desktop] and left click on "Properties".

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

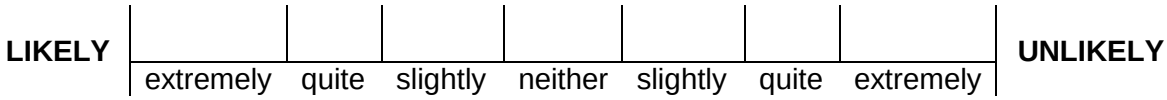
    If you marked "b" or "c", what changes would you recommend?

To answer the questions below, left-click in the appropriate box and type an "X"

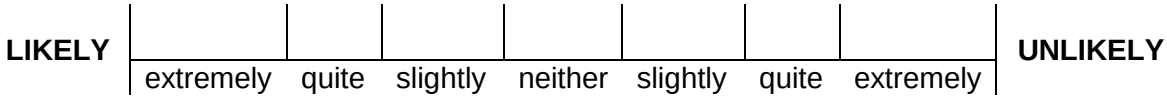
Learning to operate THE INSTRUCTIONAL METHODS TOOL is easy for me**.**



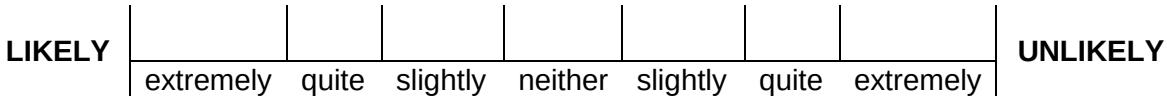
I find it easy to get THE INSTRUCTIONAL METHODS TOOL to do what I want it to do.



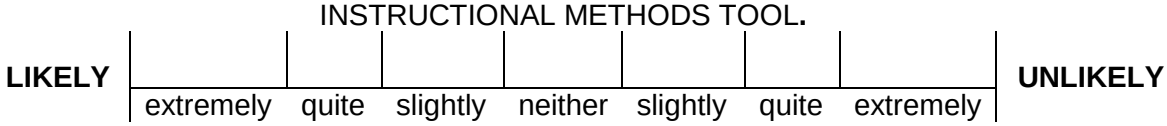
My interaction with THE INSTRUCTIONAL METHODS TOOL is clear and understandable.



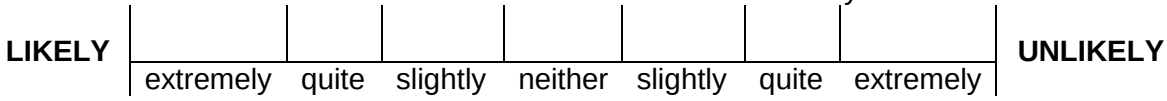
I find THE INSTRUCTIONAL METHODS TOOL to be flexible to interact with.



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



I find THE INSTRUCTIONAL METHODS TOOL easy to use.



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.

LIKELY								**UNLIKELY**
	extremely	quite	slightly	neither	slightly	quite	extremely	

Using THE INSTRUCTIONAL METHODS TOOL would improve my job performance.

LIKELY								**UNLIKELY**
	extremely	quite	slightly	neither	slightly	quite	extremely	

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

LIKELY								**UNLIKELY**
	extremely	quite	slightly	neither	slightly	quite	extremely	

Using THE INSTRUCTIONAL METHODS TOOL would enhance my effectiveness on the job.

LIKELY								**UNLIKELY**
	extremely	quite	slightly	neither	slightly	quite	extremely	

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

LIKELY								**UNLIKELY**
	extremely	quite	slightly	neither	slightly	quite	extremely	

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

LIKELY								**UNLIKELY**
	extremely	quite	slightly	neither	slightly	quite	extremely	

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.

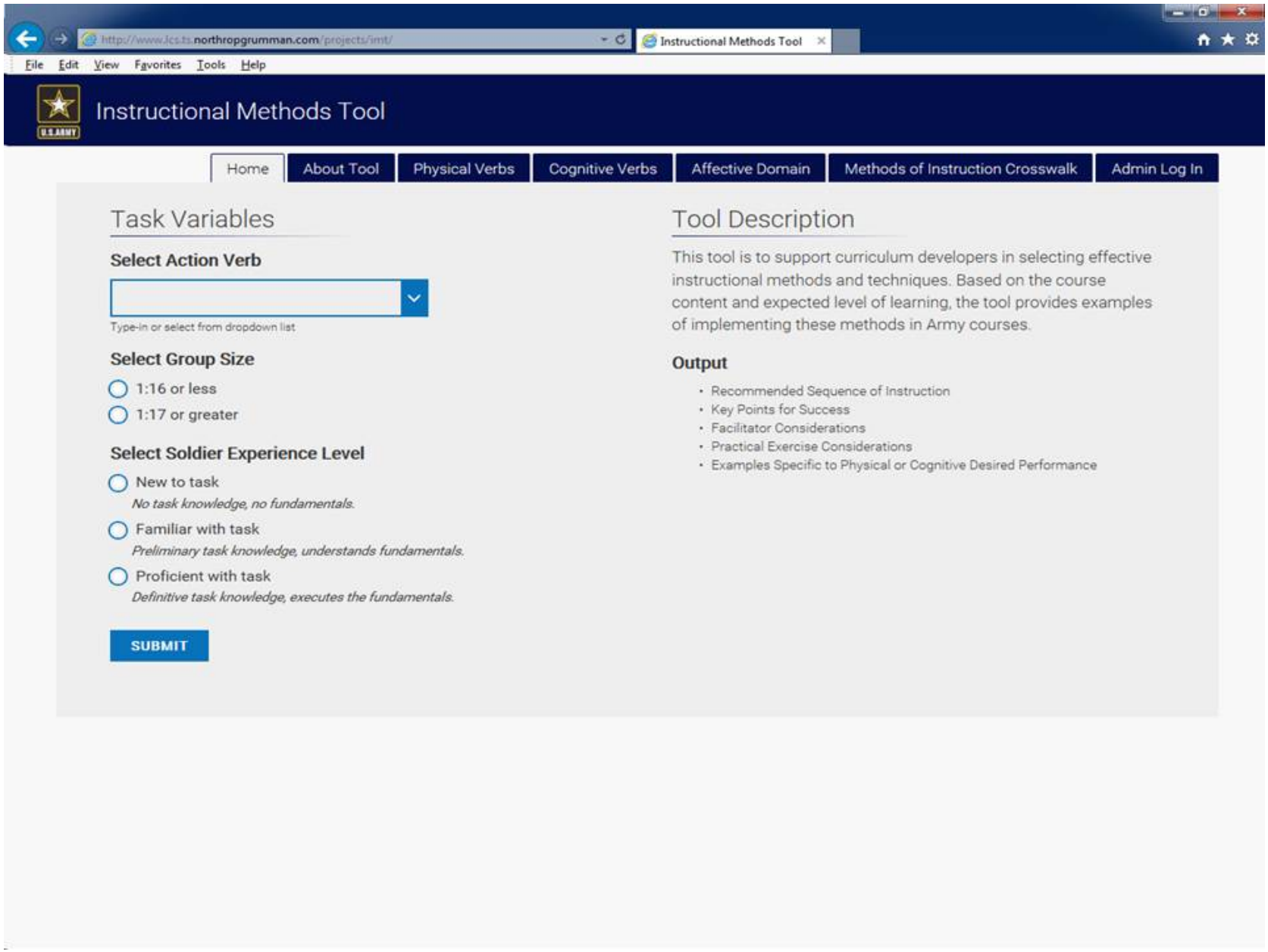
1. Does the administrator page provide sufficient information to determine how to modify the verb list?
    a. ____ Sufficient information
    b. ____ Incomplete information
    c. ____ Confusing information

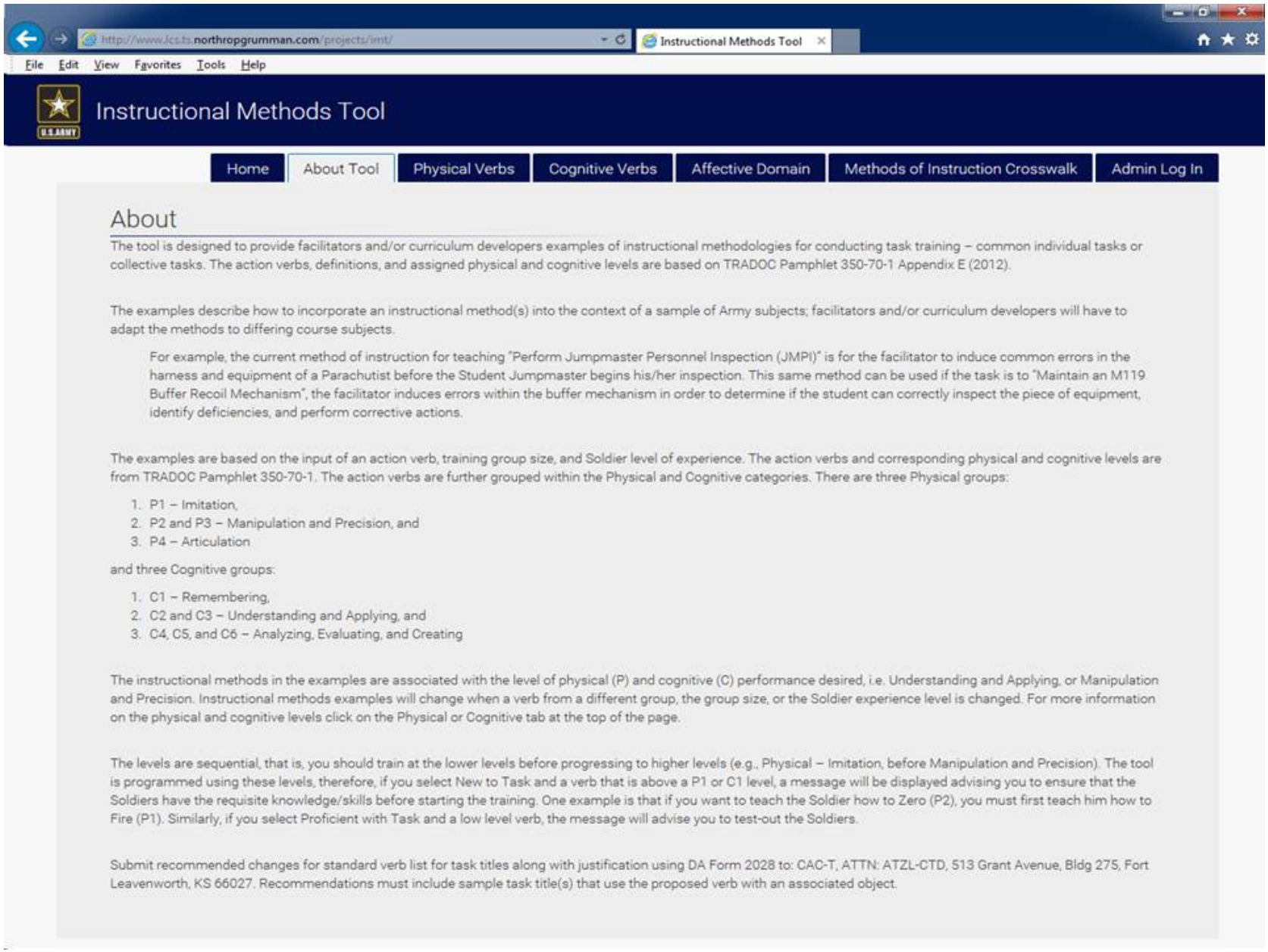
    If you marked “b” or “c”, what changes would you recommend?

2. What other administrator functions should be provided?

Appendix B

Instructional Methods Tool
Home Pages


http://www.jcs.ts.northropgrumman.com/projects/imt/
Instructional Methods Tool
File Edit View Favorites Tools Help
Instructional Methods Tool
Home
About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Select Action Verb
Type-in or select from dropdown list
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


http://www.jcs.ts.northropgrumman.com/projects/imt/
Instructional Methods Tool
File Edit View Favorites Tools Help
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About Tool
Physical Verbs
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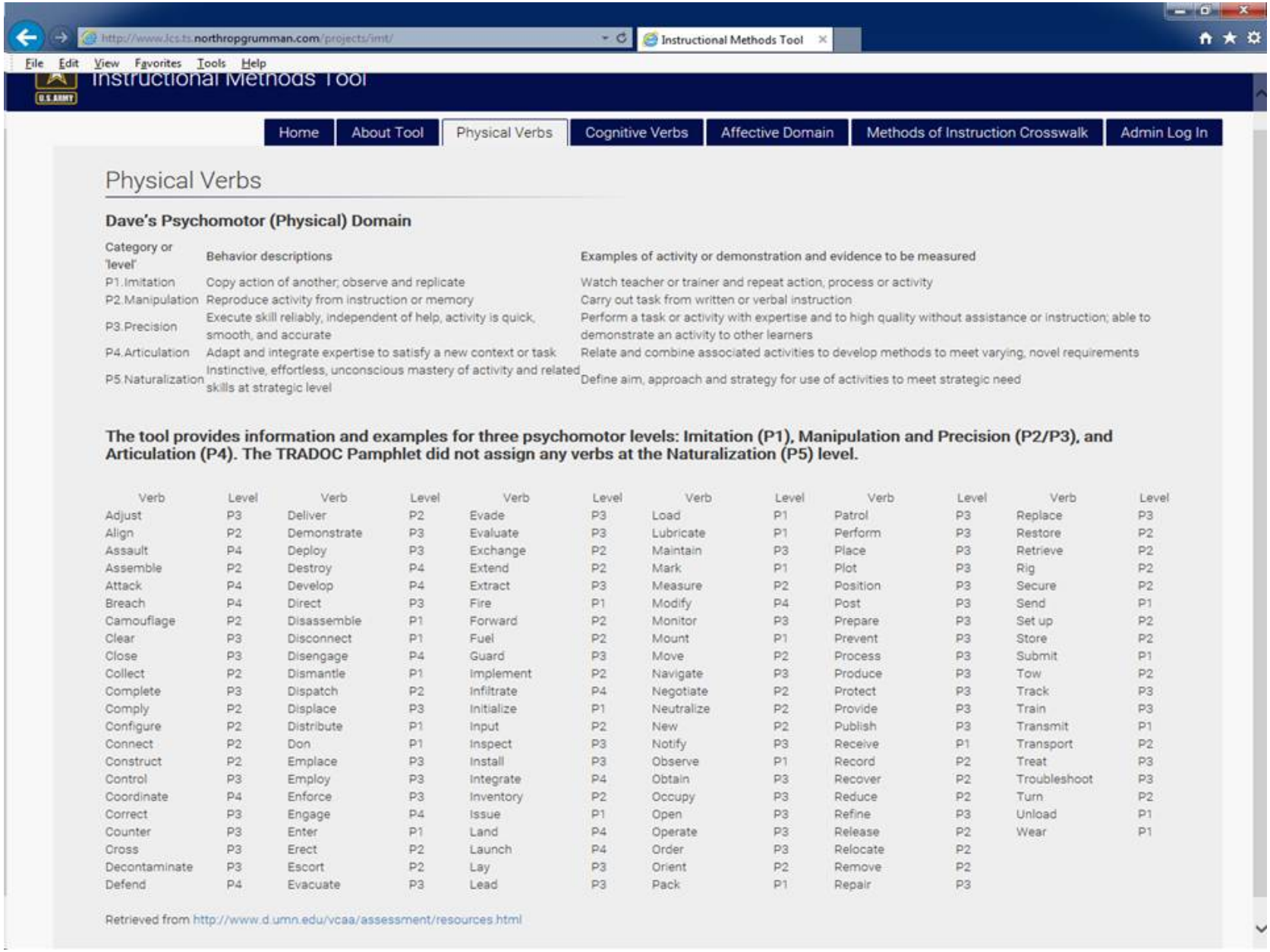
Admin Log In
About
The tool is designed to provide facilitators and/or curriculum developers examples of instructional methodologies for conducting task training – common individual tasks or collective tasks. The action verbs, definitions, and assigned physical and cognitive levels are based on TRADOC Pamphlet 350-70-1 Appendix E (2012).
The examples describe how to incorporate an instructional method(s) 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 350-70-1. 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: CAC-T, ATTN: ATZL-CTD, 513 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

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

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.

Verb	Level	Verb	Level	Verb	Level	Verb	Level	Verb	Level	Verb	Level
Adjust	P3	Deliver	P2	Evade	P3	Load	P1	Patrol	P3	Replace	P3
Align	P2	Demonstrate	P3	Evaluate	P3	Lubricate	P1	Perform	P3	Restore	P2
Assault	P4	Deploy	P3	Exchange	P2	Maintain	P3	Place	P3	Retrieve	P2
Assemble	P2	Destroy	P4	Extend	P2	Mark	P1	Plot	P3	Rig	P2
Attack	P4	Develop	P4	Extract	P3	Measure	P2	Position	P3	Secure	P2
Breach	P4	Direct	P3	Fire	P1	Modify	P4	Post	P3	Send	P1
Camouflage	P2	Disassemble	P1	Forward	P2	Monitor	P3	Prepare	P3	Set up	P2
Clear	P3	Disconnect	P1	Fuel	P2	Mount	P1	Prevent	P3	Store	P2
Close	P3	Disengage	P4	Guard	P3	Move	P2	Process	P3	Submit	P1
Collect	P2	Dismantle	P1	Implement	P2	Navigate	P3	Produce	P3	Tow	P2
Complete	P3	Dispatch	P2	Infiltrate	P4	Negotiate	P2	Protect	P3	Track	P3
Comply	P2	Displace	P3	Initialize	P1	Neutralize	P2	Provide	P3	Train	P3
Configure	P2	Distribute	P1	Input	P2	New	P2	Publish	P3	Transmit	P1
Connect	P2	Don	P1	Inspect	P3	Notify	P3	Receive	P1	Transport	P2
Construct	P2	Emplace	P3	Install	P3	Observe	P1	Record	P2	Treat	P3
Control	P3	Employ	P3	Integrate	P4	Obtain	P3	Recover	P2	Troubleshoot	P3
Coordinate	P4	Enforce	P3	Inventory	P2	Occupy	P3	Reduce	P2	Turn	P2
Correct	P3	Engage	P4	Issue	P1	Open	P3	Refine	P3	Unload	P1
Counter	P3	Enter	P1	Land	P4	Operate	P3	Release	P2	Wear	P1
Cross	P3	Erect	P2	Launch	P4	Order	P3	Relocate	P2		
Decontaminate	P3	Escort	P2	Lay	P3	Orient	P2	Remove	P2		
Defend	P4	Evacuate	P3	Lead	P3	Pack	P1	Repair	P3		

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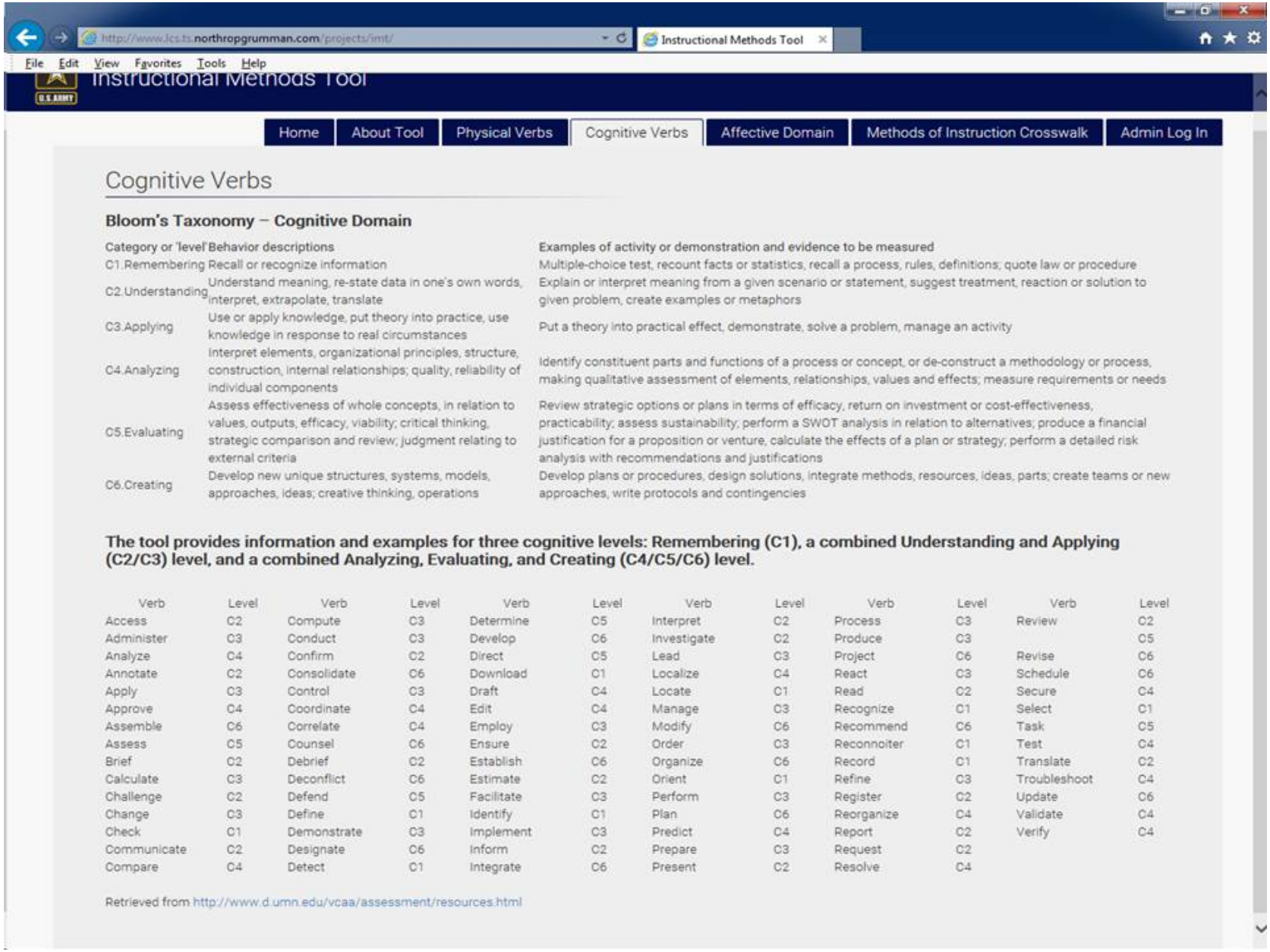


Cognitive Verbs

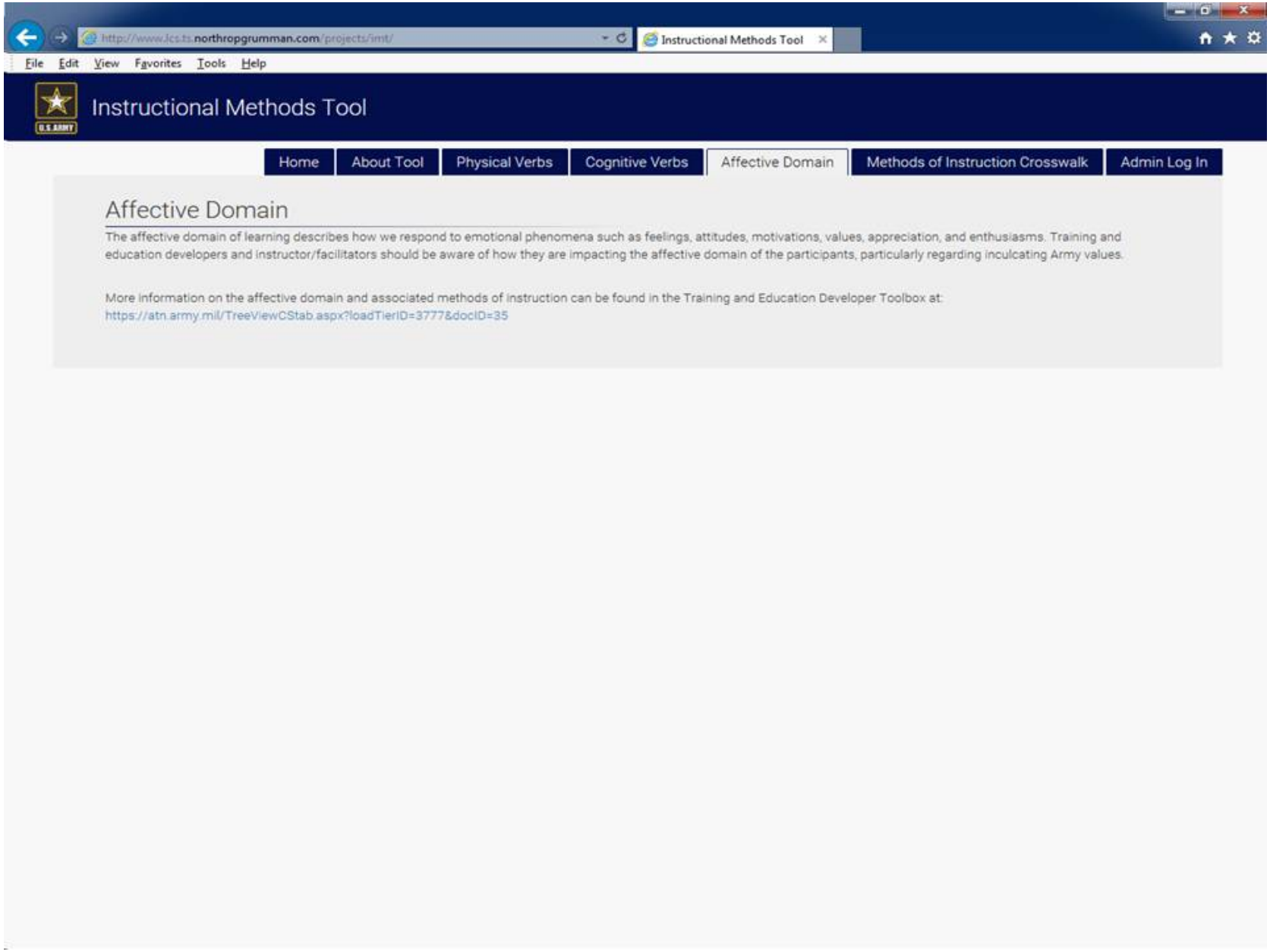
Bloom's Taxonomy – Cognitive Domain

Category or 'level'	Behavior descriptions	Examples of activity or demonstration and evidence to be measured
C1.Remembering	Recall or recognize information	Multiple-choice test, recount facts or statistics, recall a process, rules, definitions; quote law or procedure
C2.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
C3.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
C4.Analyzing	Interpret elements, organizational principles, structure, construction, internal relationships; quality, reliability of individual components	Identify constituent parts and functions of a process or concept, or de-construct a methodology or process, making qualitative assessment of elements, relationships, values and effects; measure requirements or needs
C5.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, practicability; 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
C6.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.

Verb	Level	Verb	Level	Verb	Level	Verb	Level	Verb	Level	Verb	Level
Access	C2	Compute	C3	Determine	C5	Interpret	C2	Process	C3	Review	C2
Administer	C3	Conduct	C3	Develop	C6	Investigate	C2	Produce	C3		C5
Analyze	C4	Confirm	C2	Direct	C5	Lead	C3	Project	C6	Revise	C6
Annotate	C2	Consolidate	C6	Download	C1	Localize	C4	React	C3	Schedule	C6
Apply	C3	Control	C3	Draft	C4	Locate	C1	Read	C2	Secure	C4
Approve	C4	Coordinate	C4	Edit	C4	Manage	C3	Recognize	C1	Select	C1
Assemble	C6	Correlate	C4	Employ	C3	Modify	C6	Recommend	C6	Task	C5
Assess	C5	Counsel	C6	Ensure	C2	Order	C3	Reconnoiter	C1	Test	C4
Brief	C2	Debrief	C2	Establish	C6	Organize	C6	Record	C1	Translate	C2
Calculate	C3	Deconflict	C6	Estimate	C2	Orient	C1	Refine	C3	Troubleshoot	C4
Challenge	C2	Defend	C5	Facilitate	C3	Perform	C3	Register	C2	Update	C6
Change	C3	Define	C1	Identify	C1	Plan	C6	Reorganize	C4	Validate	C4
Check	C1	Demonstrate	C3	Implement	C3	Predict	C4	Report	C2	Verify	C4
Communicate	C2	Designate	C6	Inform	C2	Prepare	C3	Request	C2		
Compare	C4	Detect	C1	Integrate	C6	Present	C2	Resolve	C4		

Retrieved from http://www.d.umn.edu/vcaa/assessment/resources.html


http://www.jcs.ts.northropgrumman.com/projects/imt/
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File Edit View Favorites Tools Help
Instructional Methods Tool
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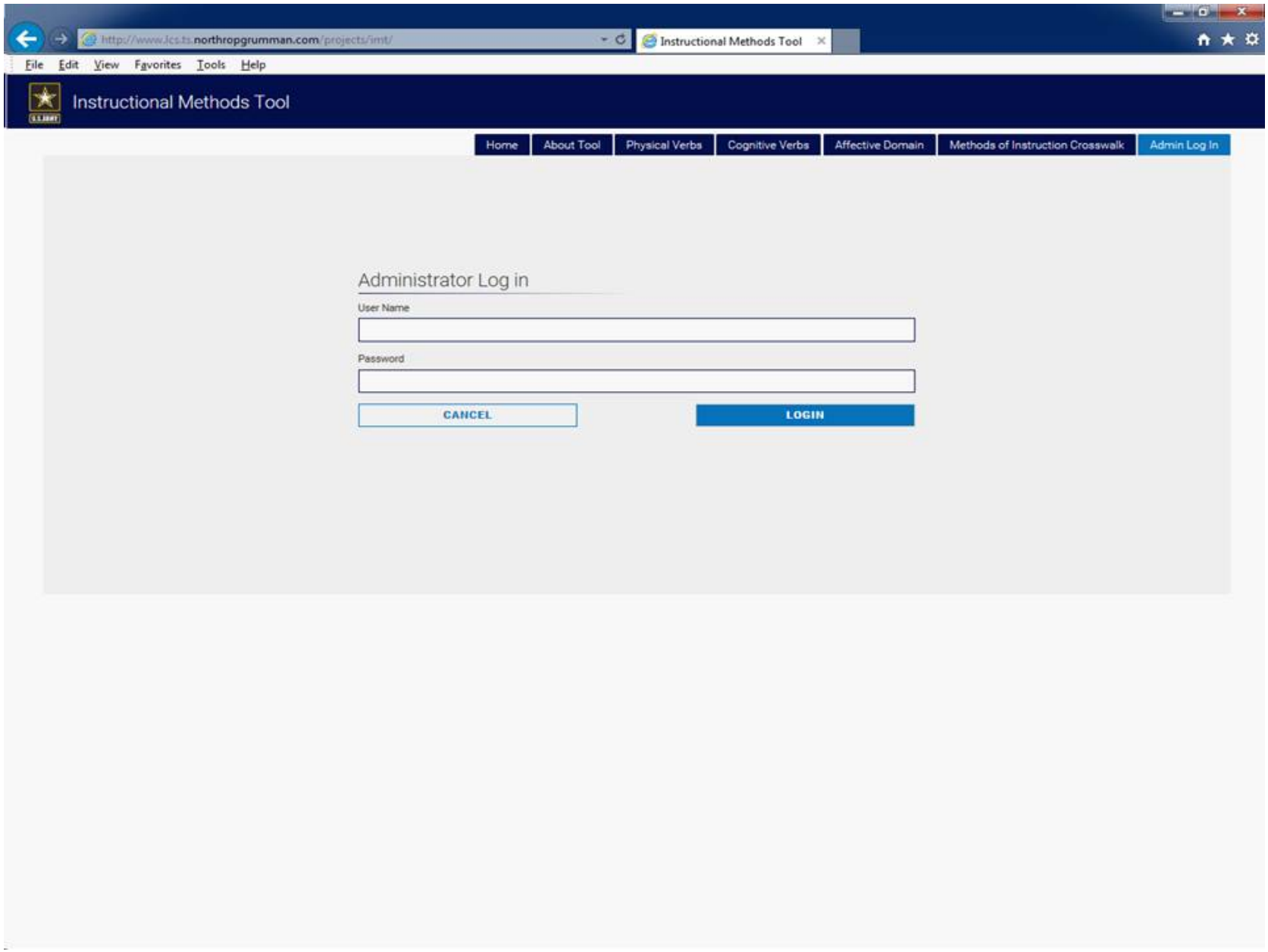
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Affective Domain
The affective domain of learning describes how we respond to emotional phenomena such as feelings, attitudes, motivations, values, appreciation, and enthusiasms. Training and education developers and instructor/facilitators should be aware of how they are impacting the affective domain of the participants, particularly regarding inculcating 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://atn.army.mil/TreeViewCStab.aspx?loadTierID=3777&docID=35

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 TRADOC Pamphlet 350-70-14 (horizontal list).

	AP	BR	CAC	CE	CLG	CS	DAP	DE	DEB	DM	DSL	FO	FT	GNI	GRT	IMI	IN	LE	MB	PE	PP	PPN	PS	RD	RP	SE	SIM	SO	WA
Advanced Organizers														X	X	X		X								X	X	X	
Backwards Chaining PE	X						X									X				X								X	
Backwards Fading PE	X						X									X				X								X	
Case Studies	X		X	X	X	X		X	X		X			X	X		X			X	X	X	X	X	X	X			X
Compare and Contrast	X	X	X	X	X	X		X	X		X			X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Debates	X	X	X	X	X	X		X	X		X			X			X			X	X	X	X	X	X	X		X	
Demonstration			X	X			X			X				X		X		X										X	
Experiential Learning	X	X	X	X	X	X		X	X		X	X	X	X		X	X		X	X	X	X	X	X	X	X	X		X
Forwards Chaining PE	X						X									X				X								X	
Group Work	X	X	X	X	X	X	X	X	X		X			X	X		X			X	X	X	X	X	X	X	X		X
Guided Notes							X			X				X	X			X										X	
Homework	X		X		X	X	X	X						X	X	X	X		X	X		X	X			X		X	X
IMI	X		X	X	X	X	X	X		X				X		X				X						X	X	X	
Just-in-time procedural information	X		X							X				X	X	X	X			X			X			X	X	X	
Lecture				X			X			X	X				X			X					X						
Memory Joggers	X		X				X			X					X	X				X			X				X	X	
On-the-job	X			X									X	X			X			X		X	X						X
Peer-toPeer Learning	X	X	X	X	X	X		X	X		X	X		X	X		X			X		X	X	X	X	X			X
Practical Exercise	X		X	X	X	X	X	X	X			X	X	X	X	X	X		X	X		X	X	X	X	X	X		X
Probing Questions	X	X	X	X		X		X	X		X			X	X		X	X		X	X	X	X	X		X			X
Problem Solving	X	X	X	X	X	X		X						X			X			X	X	X	X			X	X		X
Research Assignments	X		X	X	X	X		X	X		X			X	X		X			X	X	X	X	X	X	X			X
Role Playing	X		X	X	X			X	X					X						X		X	X		X	X	X		
Simulation	X		X	X			X	X						X		X				X	X	X	X	X	X	X	X		
Troubleshooting	X		X	X	X			X						X		X				X		X	X				X		
Varied Contexts/Experience & Situated Learning	X		X	X	X	X		X			X	X	X	X		X	X		X	X	X	X	X	X	X	X	X		X

Legend									
AP	ELM -Apply	DAP	Drill and Practice	FT	Field Trip/Site Visit	MB	Model Building	RP	Role Playing
BR	Brainstorming	DE	ELM -Develop	GNI	ELM -Generalize New Information	PE	Practical Exercise	SE	Seminar
CAC	Compare/Contrast	DEB	Debates	GRT	Guided Reading and Thinking	PP	ELM -Publish and Process	SIM	Simulation
CE	ELM - Concrete Experience	DM	Demonstration	IMI	Interactive Multimedia Instruction	PPN	Peer Partner Learning	SO	Structured Overview
CLG	Cooperative Learning Groups	DSL	Discussion	IN	Inquiry	PS	Problem Solving	WA	Writing Assignments
CS	Case Study	FO	Field Observations	LE	Lecture	RD	Reflective Discussion		


http://www.jcs.ts.northropgrumman.com/projects/imt/
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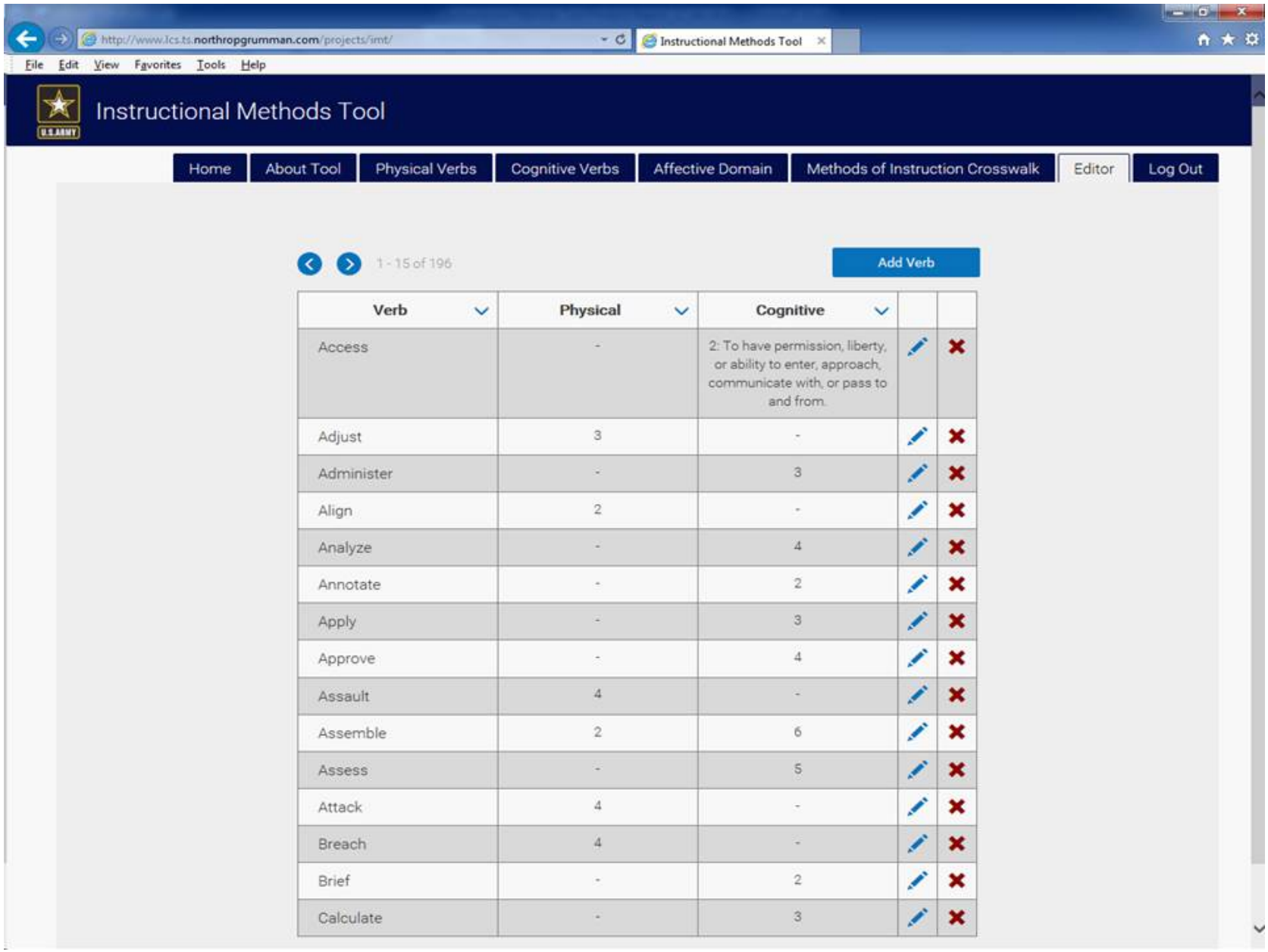
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Administrator Log in
User Name
Password
CANCEL
LOGIN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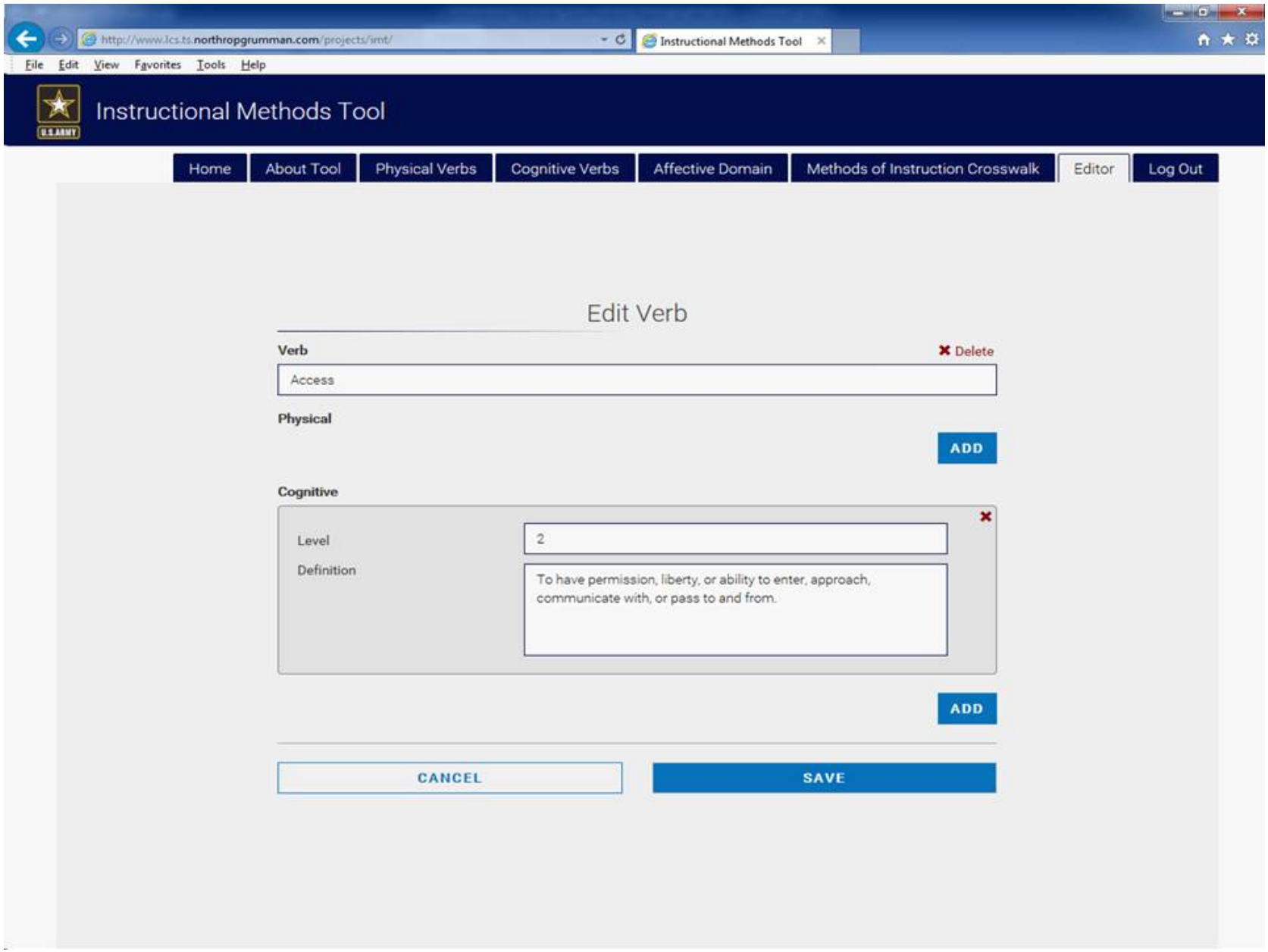
Editor
Log Out
1 - 15 of 196
Add Verb
Verb
Physical
Cognitive
Access - 2: To have permission, liberty, or ability to enter, approach, communicate with, or pass to and from.
Adjust 3 -
Administer - 3
Align 2 -
Analyze - 4
Annotate - 2
Apply - 3
Approve - 4
Assault 4 -
Assemble 2 6
Assess - 5
Attack 4 -
Breach 4 -
Brief - 2
Calculate - 3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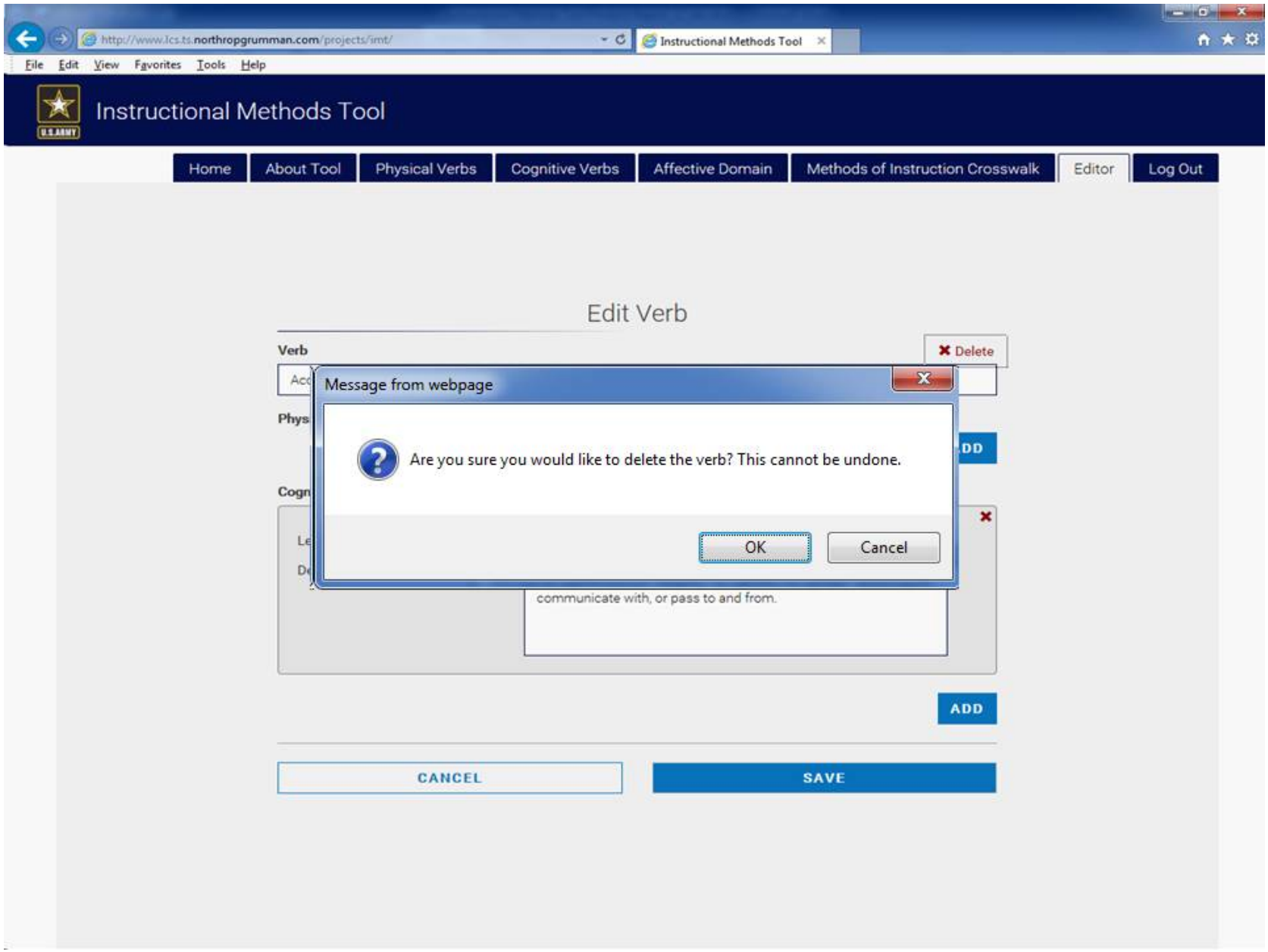
Editor
Log Out
Edit Verb
Verb
Delete
Access
Physical
ADD
Cognitive
Level
2
Definition
To have permission, liberty, or ability to enter, approach, communicate with, or pass to and from.
ADD
CANCEL
SAVE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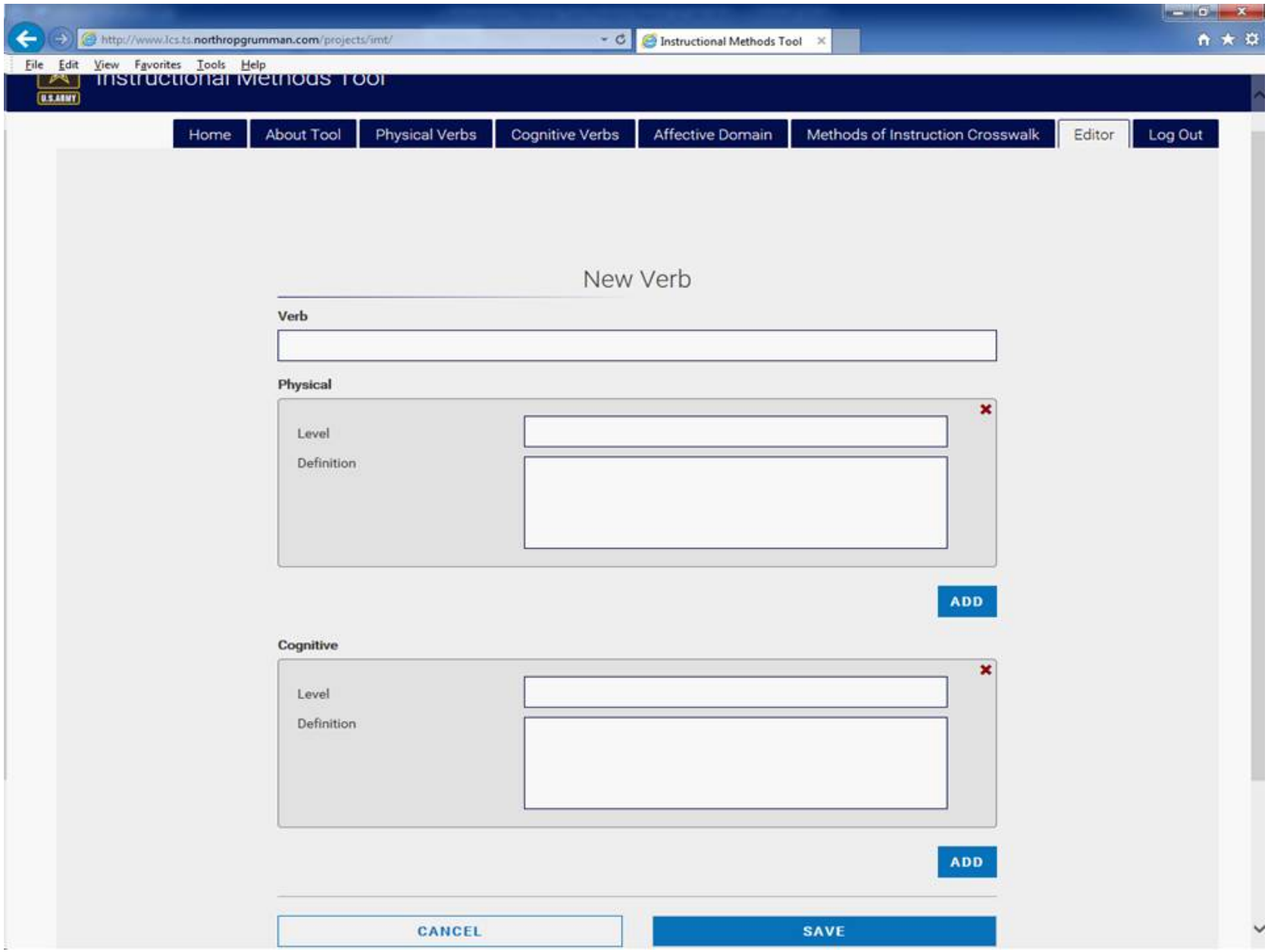
Editor
Log Out
Edit Verb
Verb
Delete
Message from webpage
Are you sure you would like to delete the verb? This cannot be undone.
OK
Cancel
communicate with, or pass to and from.
ADD
CANCEL
SAVE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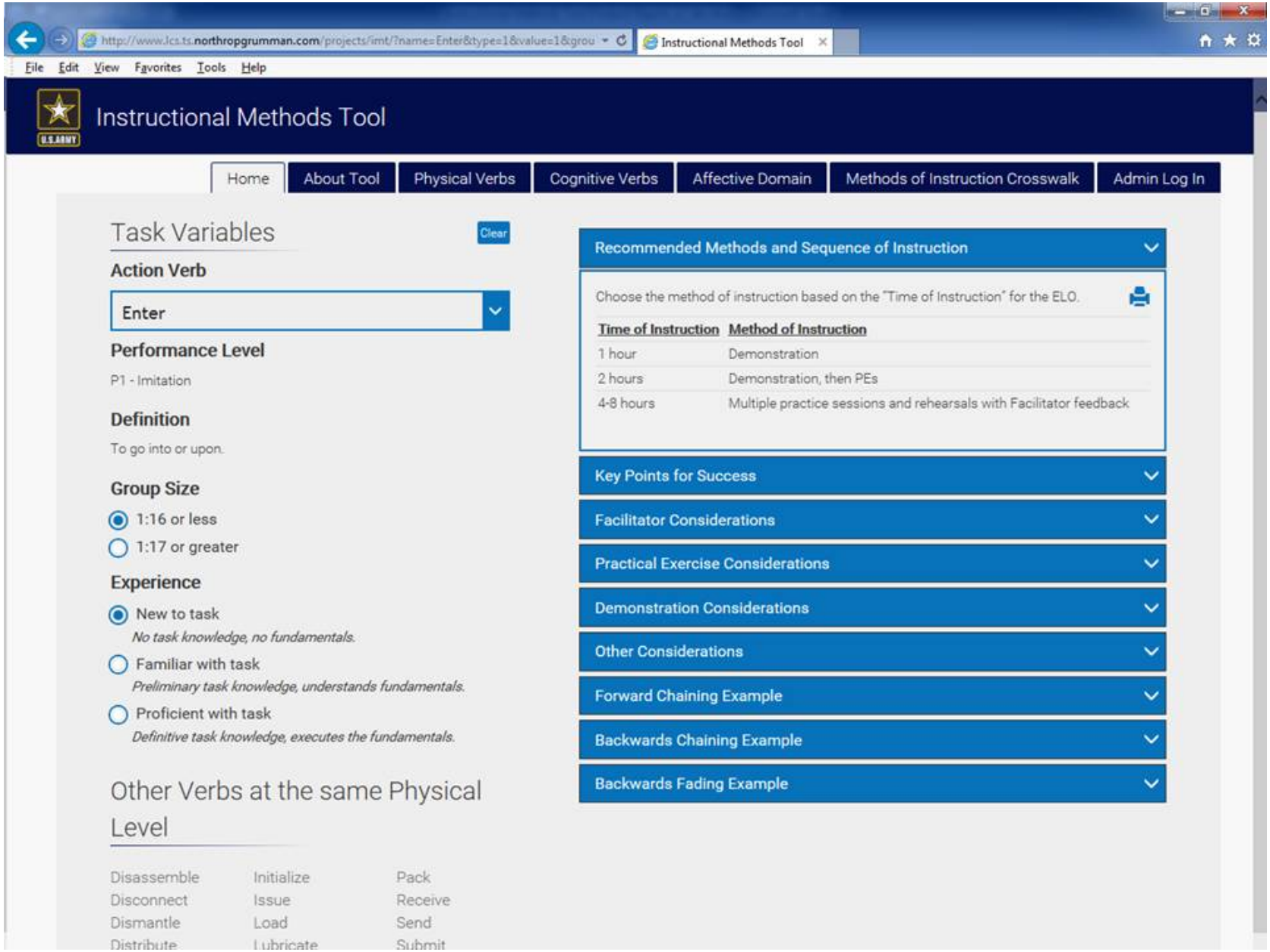
Log Out
New Verb
Verb
Physical
Level
Definition
ADD
Cognitive
Level
Definition
ADD
CANCEL
SAVE

Appendix C

Military Task Examples
P1-Imitation / Small Group / New to Task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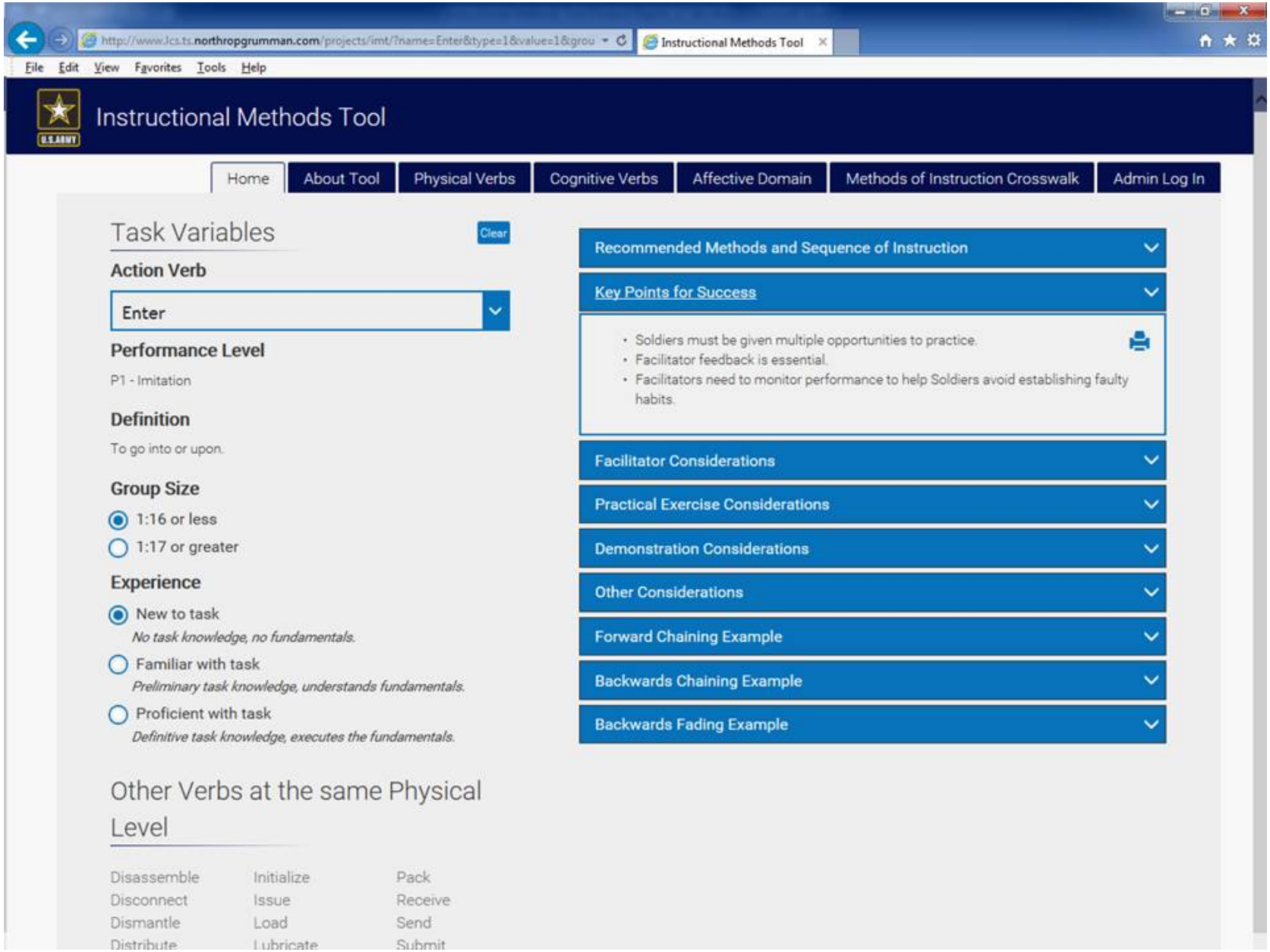
Instructional Methods Tool
File Edit View Favorites Tools Help
Instructional Methods Tool
Home
About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Enter
Performance Level
P1 - Imitation
Definition
To go into or upon.
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
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
1 hour
Demonstration
2 hours
Demonstration, then 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
Forward Chaining Example
Backwards Chaining Example
Backwards Fading Example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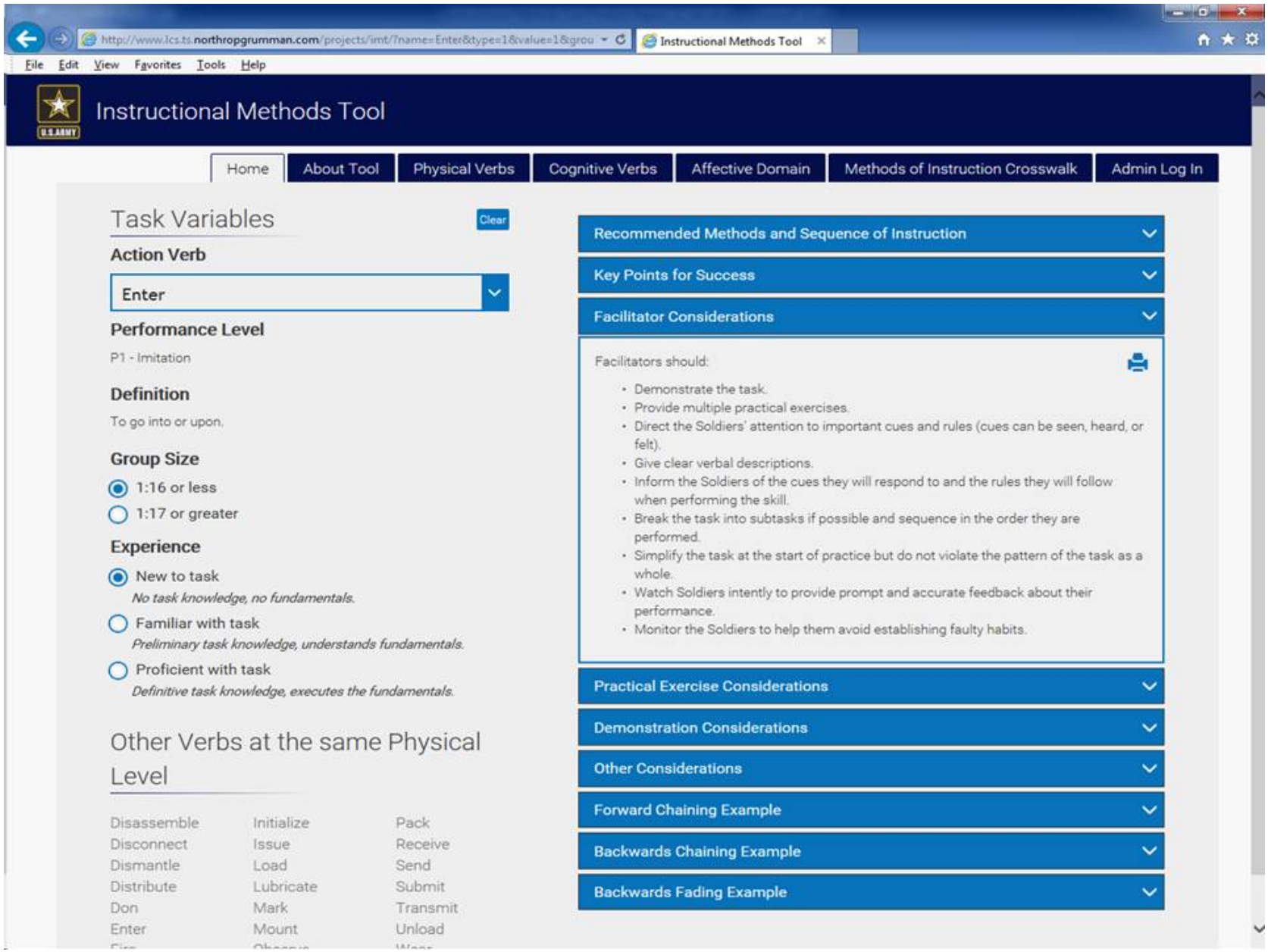
Recommended Methods and Sequence of Instruction
Key Points for Success
Soldiers must be given multiple opportunities to practice.
Facilitator feedback is essential.
Facilitators need to monitor performance to help Soldiers avoid establishing faulty habits.
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
Forward Chaining Example
Backwards Chaining Example
Backwards Fading Example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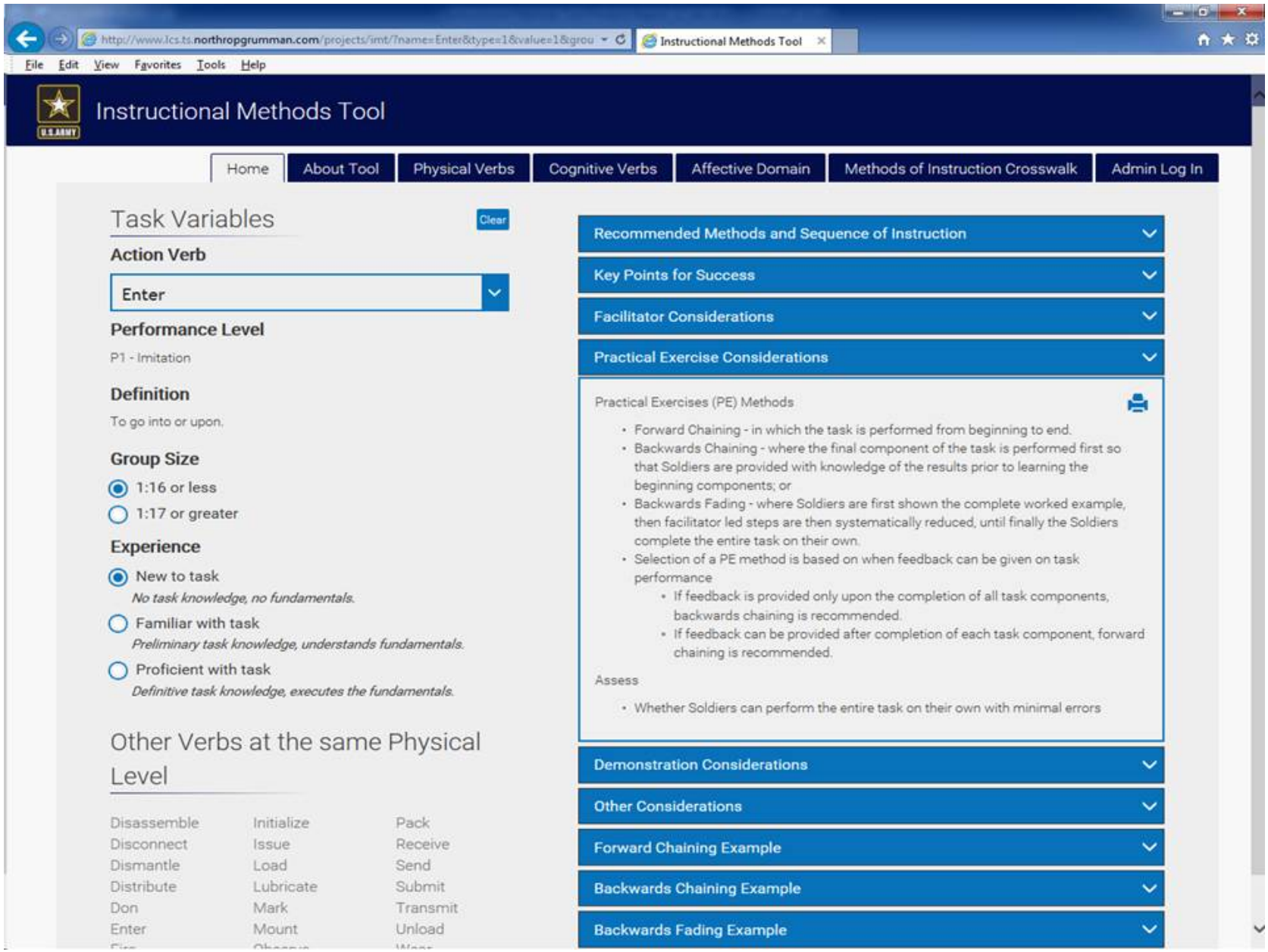
Key Points for Success
Facilitator Considerations
Facilitators should:
Demonstrate the task.
Provide multiple practical exercises.
Direct the Soldiers' attention to important cues and rules (cues can be seen, heard, or felt).
Give clear verbal descriptions.
Inform the Soldiers of the cues they will respond to and the rules they will follow when performing the skill.
Break the task into subtasks if possible and sequence in the order they are performed.
Simplify the task at the start of practice but do not violate the pattern of the task as a whole.
Watch Soldiers intently to provide prompt and accurate feedback about their performance.
Monitor the Soldiers to help them avoid establishing faulty habits.
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
Forward Chaining Example
Backwards Chaining Example
Backwards Fading Example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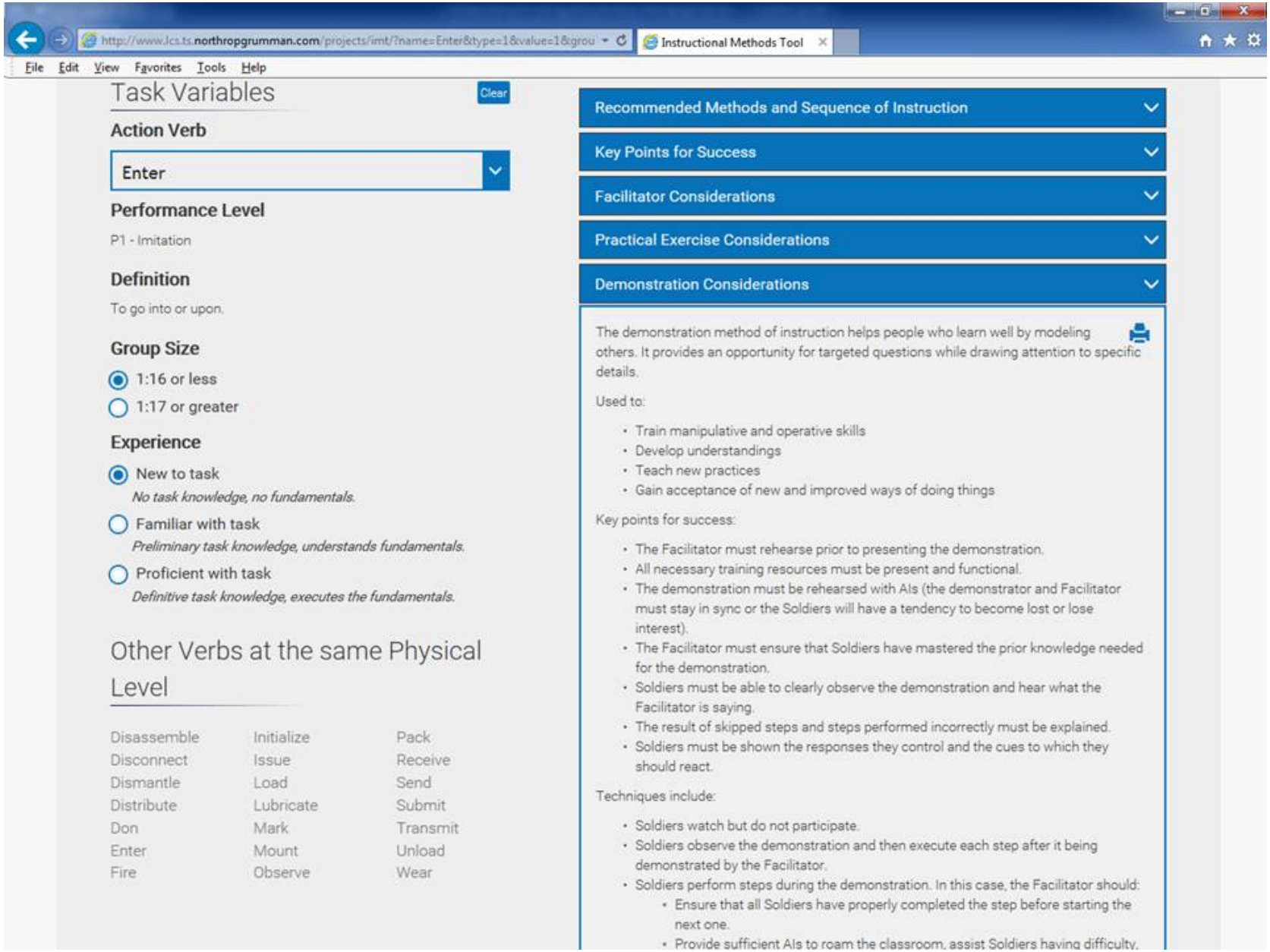
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Practical Exercises (PE) Methods
Forward Chaining - in which the task is performed from beginning to end.
Backwards Chaining - where the final component of the task is performed first so that Soldiers are provided with knowledge of the results prior to learning the beginning components; or
Backwards Fading - where Soldiers are first shown the complete worked example, then facilitator led steps are then systematically reduced, until finally the Soldiers complete the entire task on their own.
Selection of a PE method is based on when feedback can be given on task performance
If feedback is provided only upon the completion of all task components, backwards chaining is recommended.
If feedback can be provided after completion of each task component, forward chaining is recommended.
Assess
Whether Soldiers can perform the entire task on their own with minimal errors
Demonstration Considerations
Other Considerations
Forward Chaining Example
Backwards Chaining Example
Backwards Fading Example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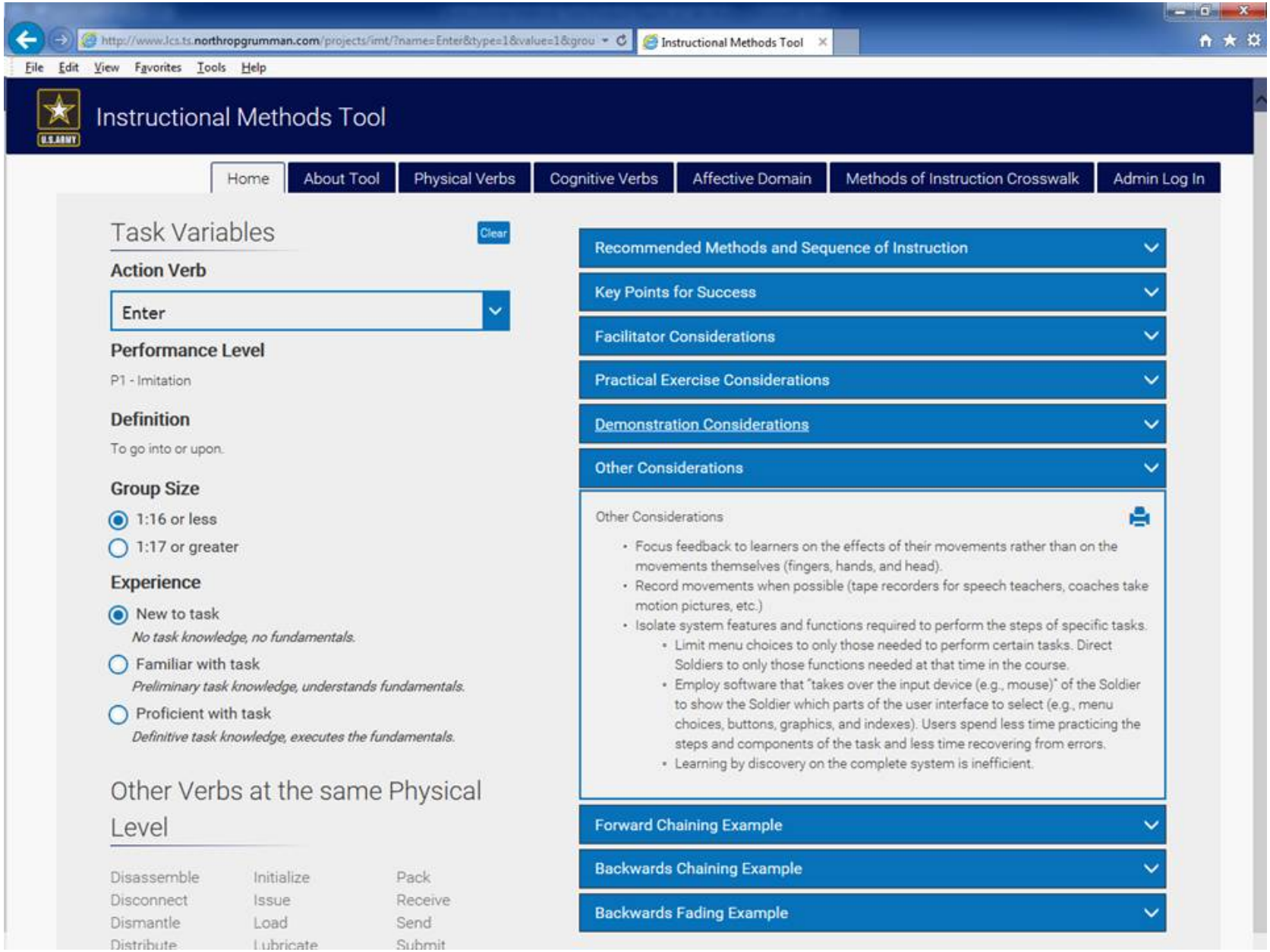
Unload
Wear
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted 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,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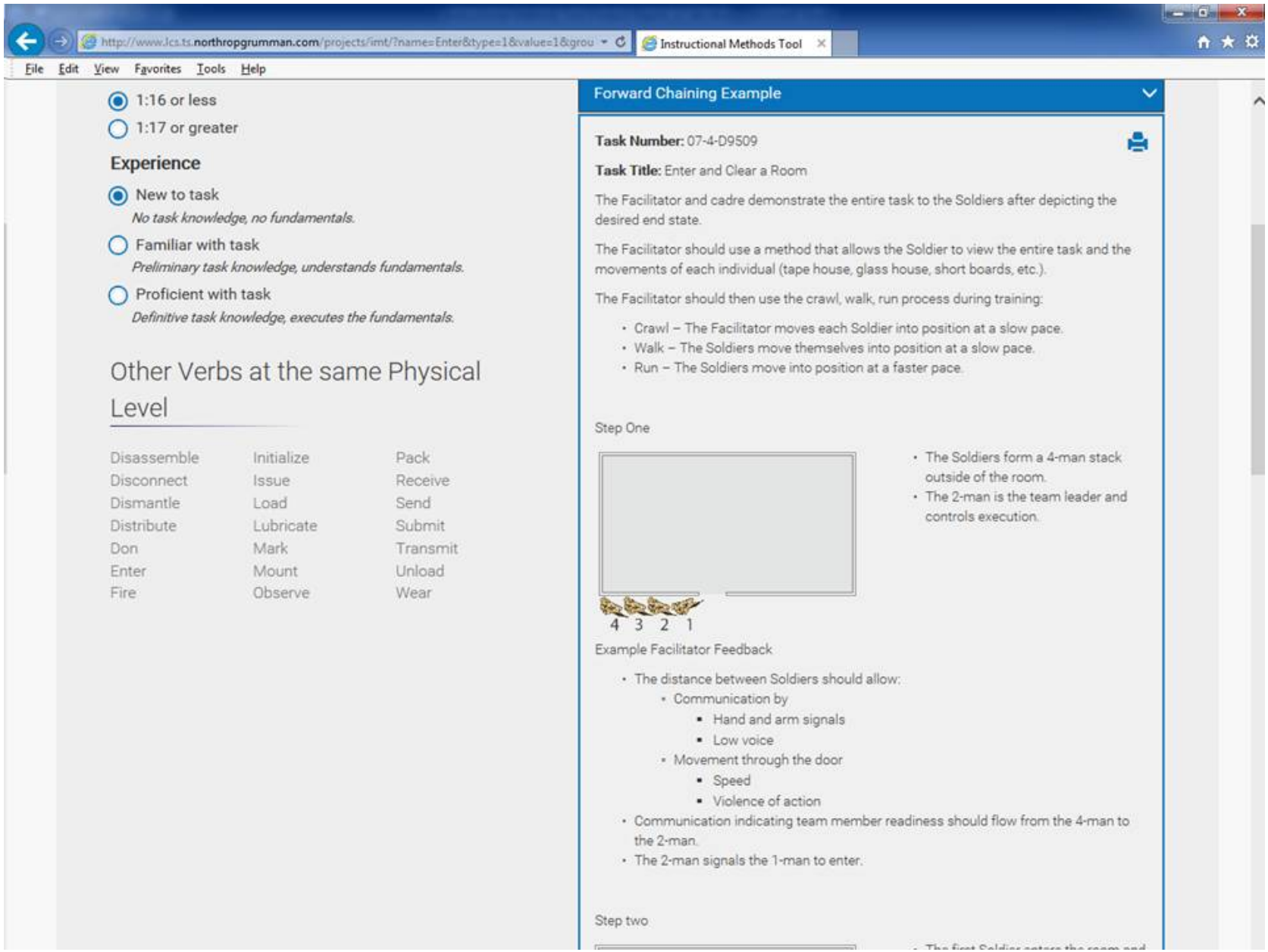
Submit
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
Other Considerations
• Focus feedback to learners on the effects of their movements rather than on the movements 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 Fading Example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Initialize
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Load
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Mount
Observe
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Receive
Send
Submit
Transmit
Unload
Wear
Forward Chaining Example
Task Number: 07-4-D9509
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.
4 3 2 1
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

- 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.

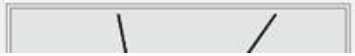
Step two

- 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

- 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
- Communication

Step four

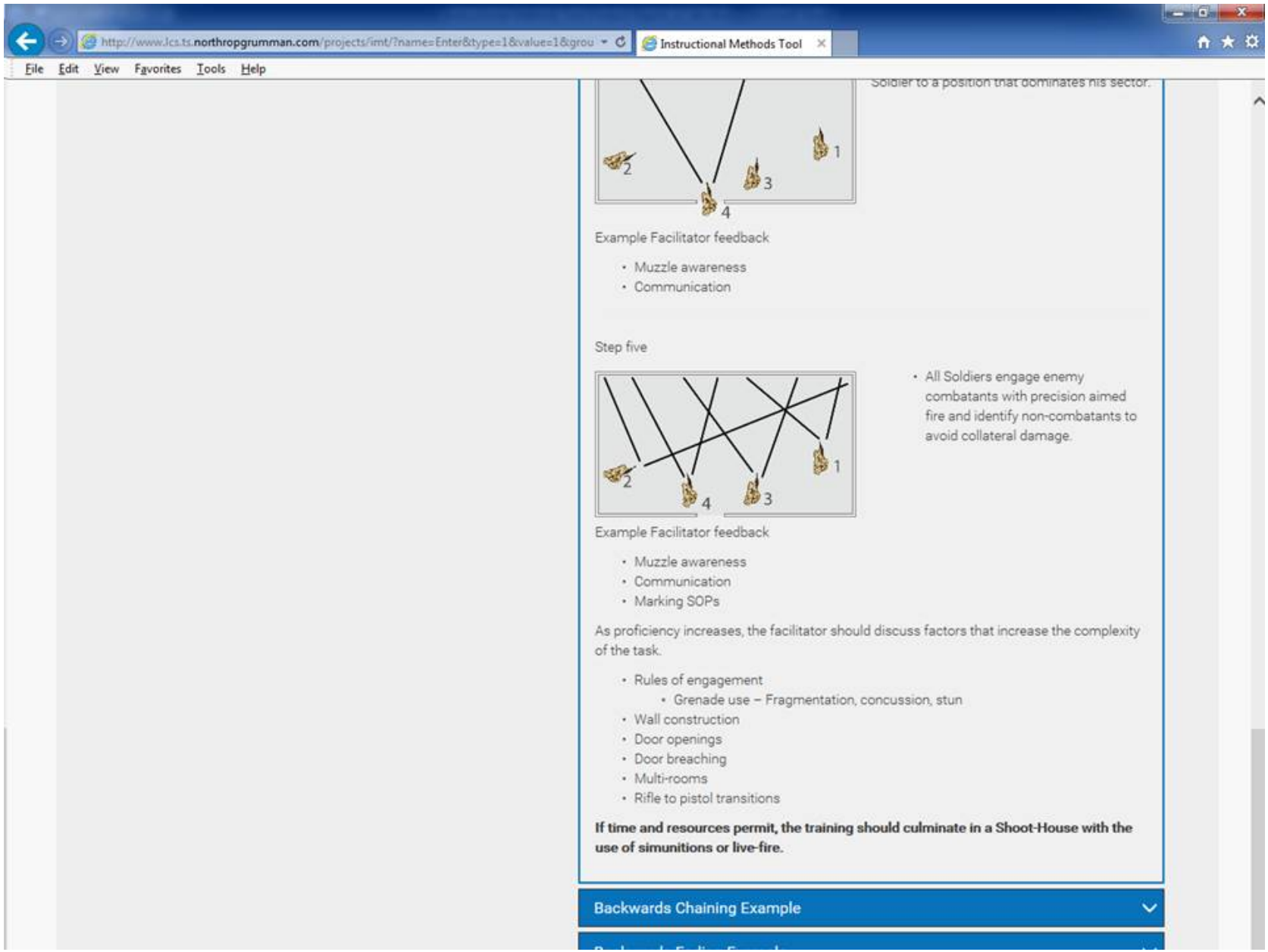
The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.

Example Facilitator feedback

- Muzzle awareness
- Communication

Step five

- All Soldiers engage enemy combatants with precision aimed fire and identify non-combatants to avoid collateral damage.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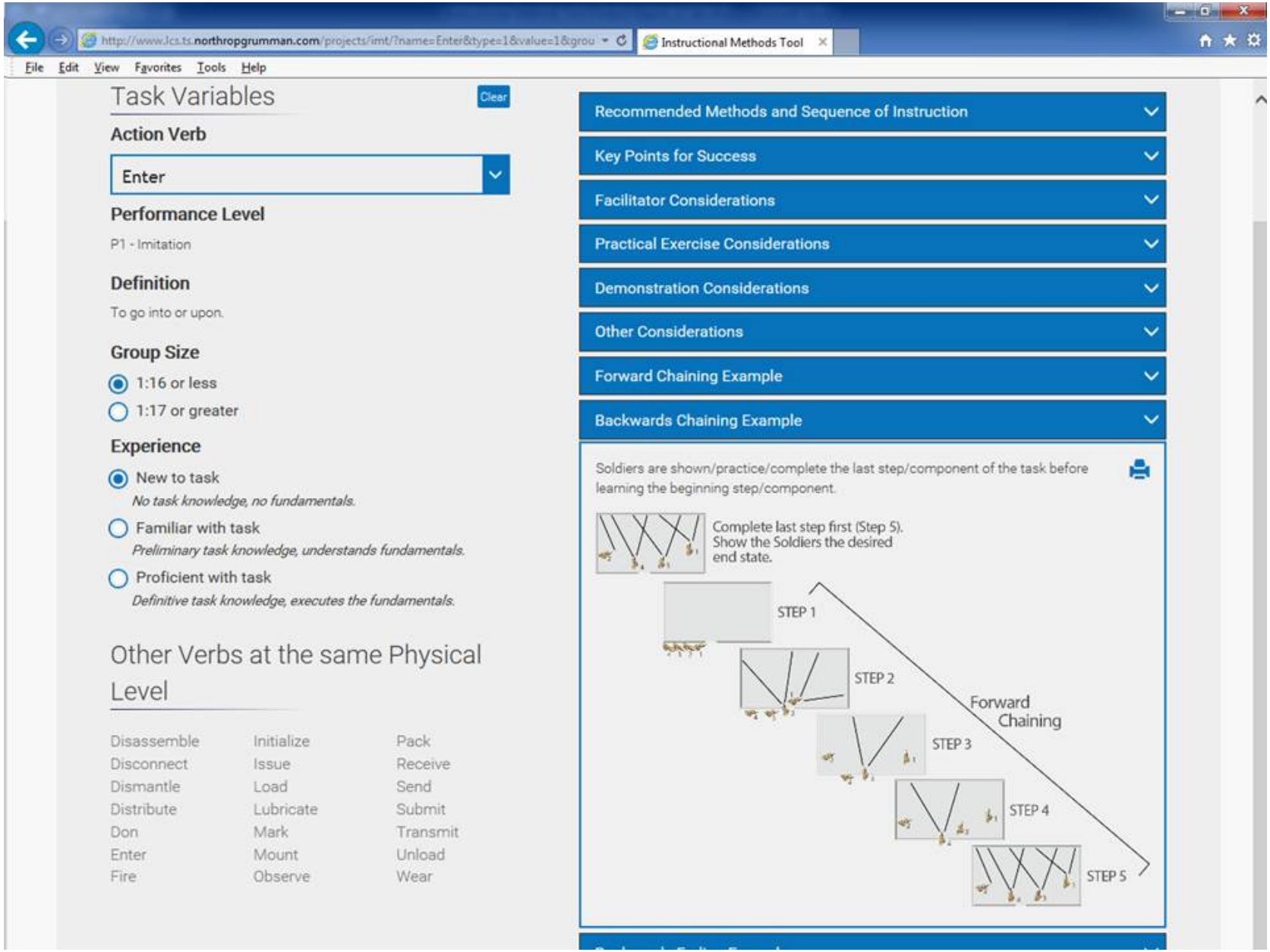
Soldier to a position that dominates his sector.
1
2
3
4
Example Facilitator feedback
• Muzzle awareness
• Communication
Step five
1
2
4
3
• All Soldiers engage enemy combatants with precision aimed fire and identify non-combatants to avoid collateral damage.
Example Facilitator feedback
• Muzzle awareness
• Communication
• Marking SOPs
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.
Backwards Chaining Example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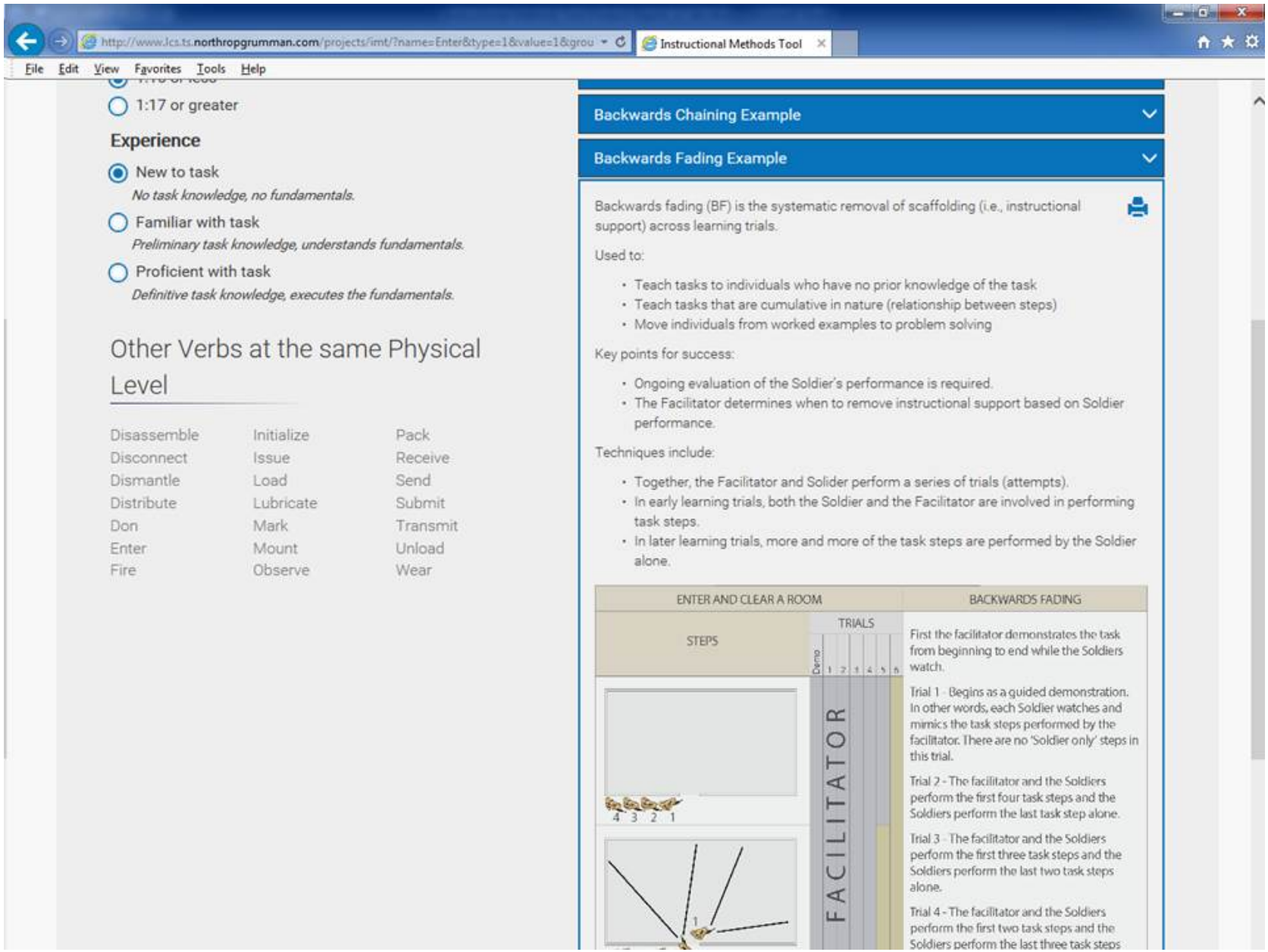
Transmit
Unload
Wear
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
Forward Chaining Example
Backwards Chaining Example
Soldiers are shown/practice/complete the last step/component of the task before learning the beginning step/component.
Complete last step first (Step 5). Show the Soldiers the desired end state.
STEP 1
STEP 2
STEP 3
STEP 4
STEP 5
Forward Chaining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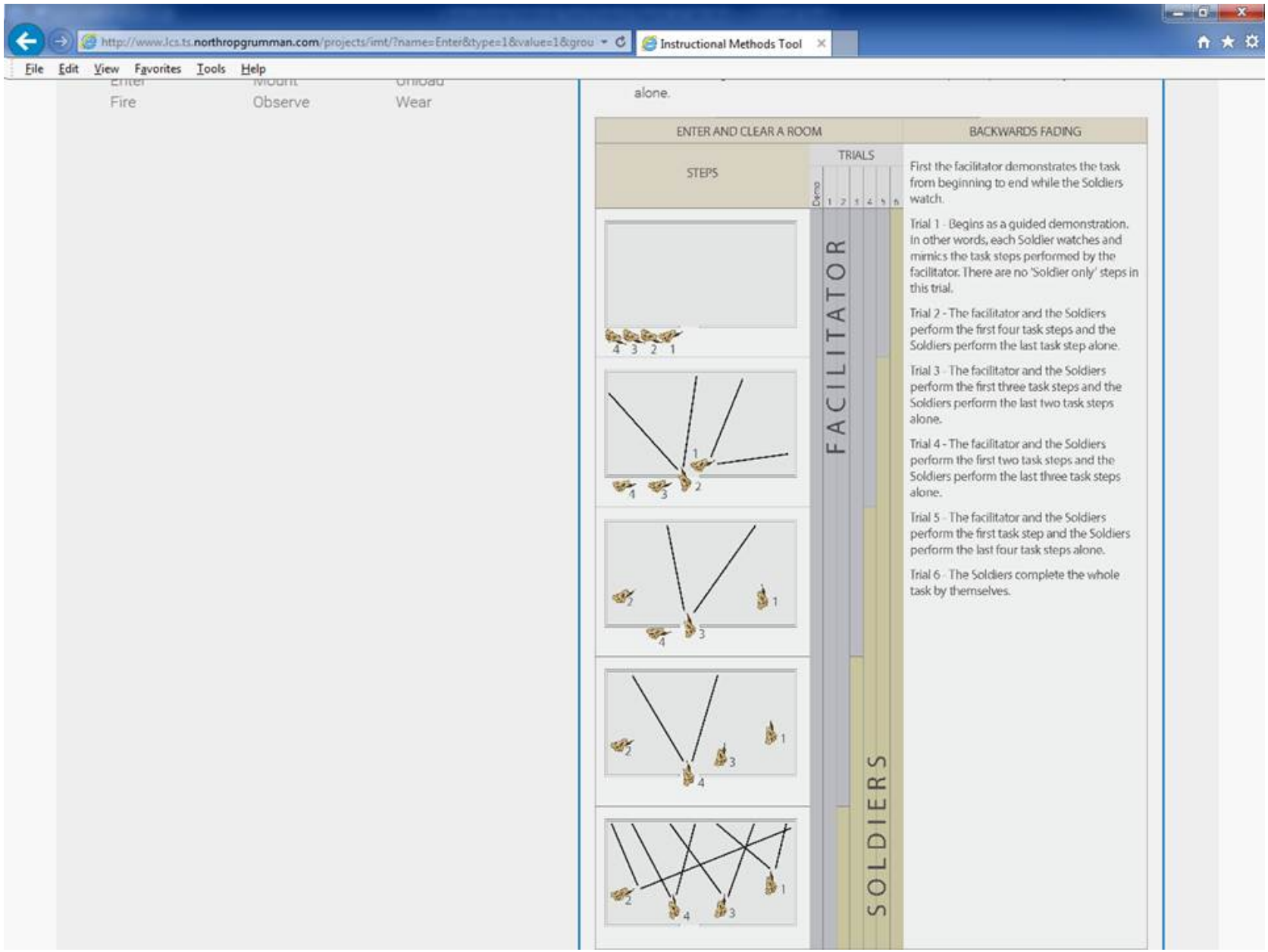
Backwards Chaining Example
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.
Used to:
• Teach tasks to individuals who have no prior knowledge of the task
• Teach tasks that are cumulative in nature (relationship 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 Solider 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.
ENTER AND CLEAR A ROOM
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
FACILITATOR
4 3 2 1
1
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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ENTER AND CLEAR A ROOM
BACKWARDS FADING
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Demo 1 2 3 4 5 6
FACILITATOR
SOLDIERS
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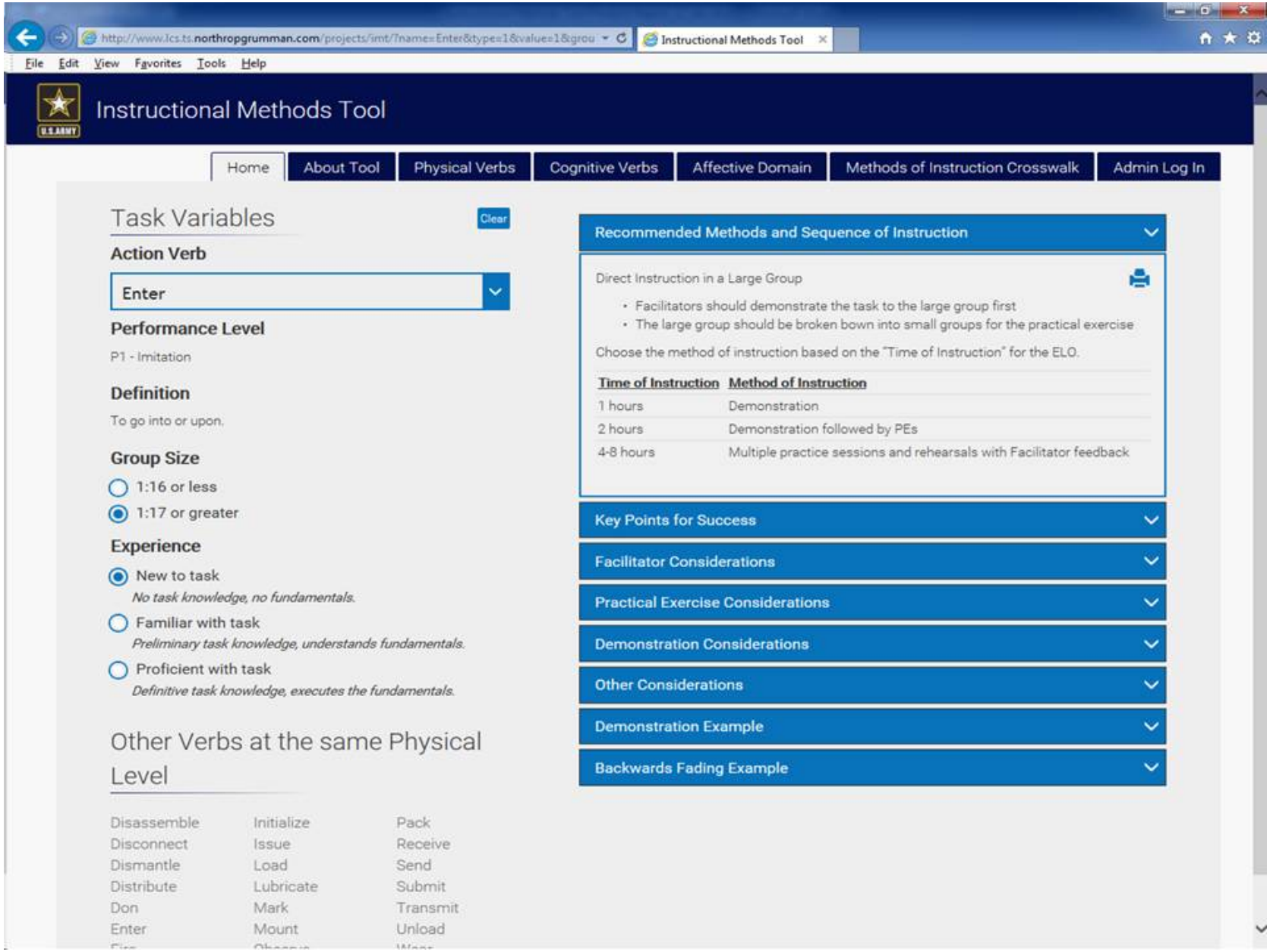
Trial 2 - The facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last task step alone.
Trial 3 - The facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last two task steps alone.
Trial 4 - The facilitator and the Soldiers 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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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 bown 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
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Demonstration
2 hours
Demonstration followed by PEs
4-8 hours
Multiple practice sessions and rehearsals with Facilitator feedback
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Demonstration Example
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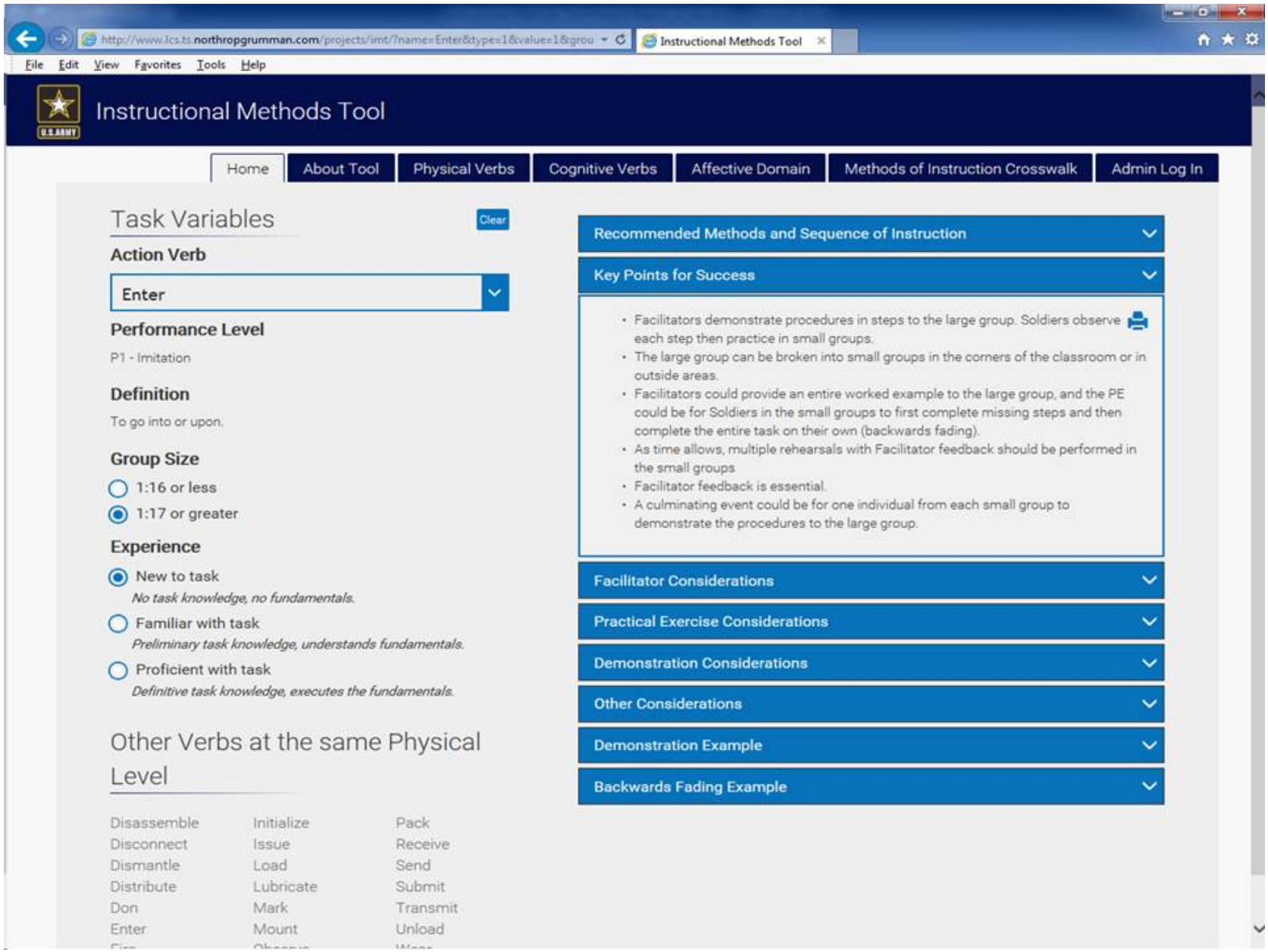
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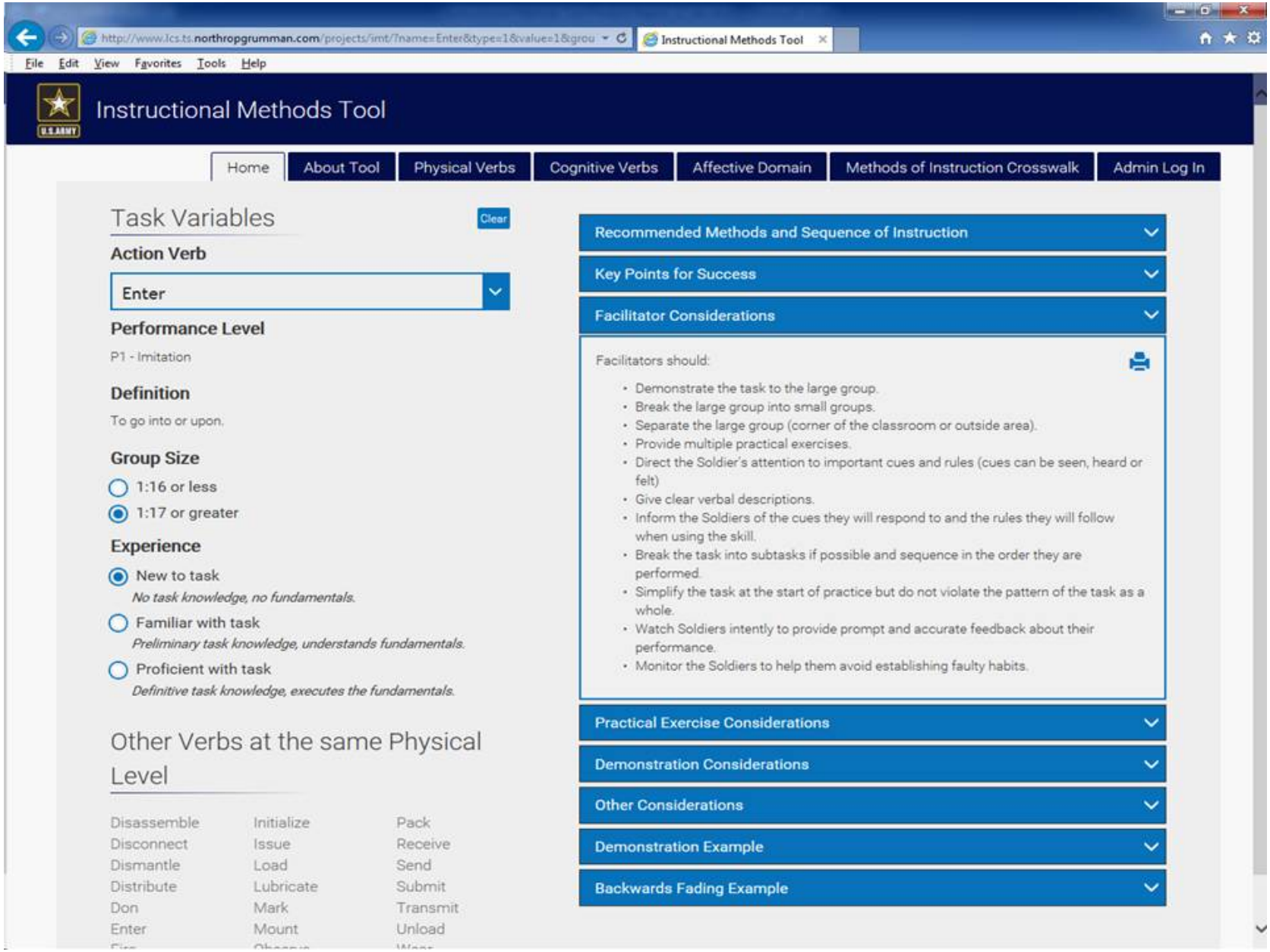
Disconnect
Dismantle
Distribute
Don
Enter
Initialize
Issue
Load
Lubricate
Mark
Mount
Pack
Receive
Send
Submit
Transmit
Unload
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitators demonstrate procedures in steps to the large group. Soldiers observe each step then practice in small groups.
The large group can be broken into small groups in the corners of the classroom or in outside areas.
Facilitators could provide an entire worked example to the large group, and the PE could be for Soldiers in the small groups to first complete missing steps and then complete the entire task on their own (backwards fading).
As time allows, multiple rehearsals with Facilitator feedback should be performed in the small groups
Facilitator feedback is essential.
A culminating event could be for one individual from each small group to demonstrate the procedures to the large group.
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
Demonstration Example
Backwards Fading Example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Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
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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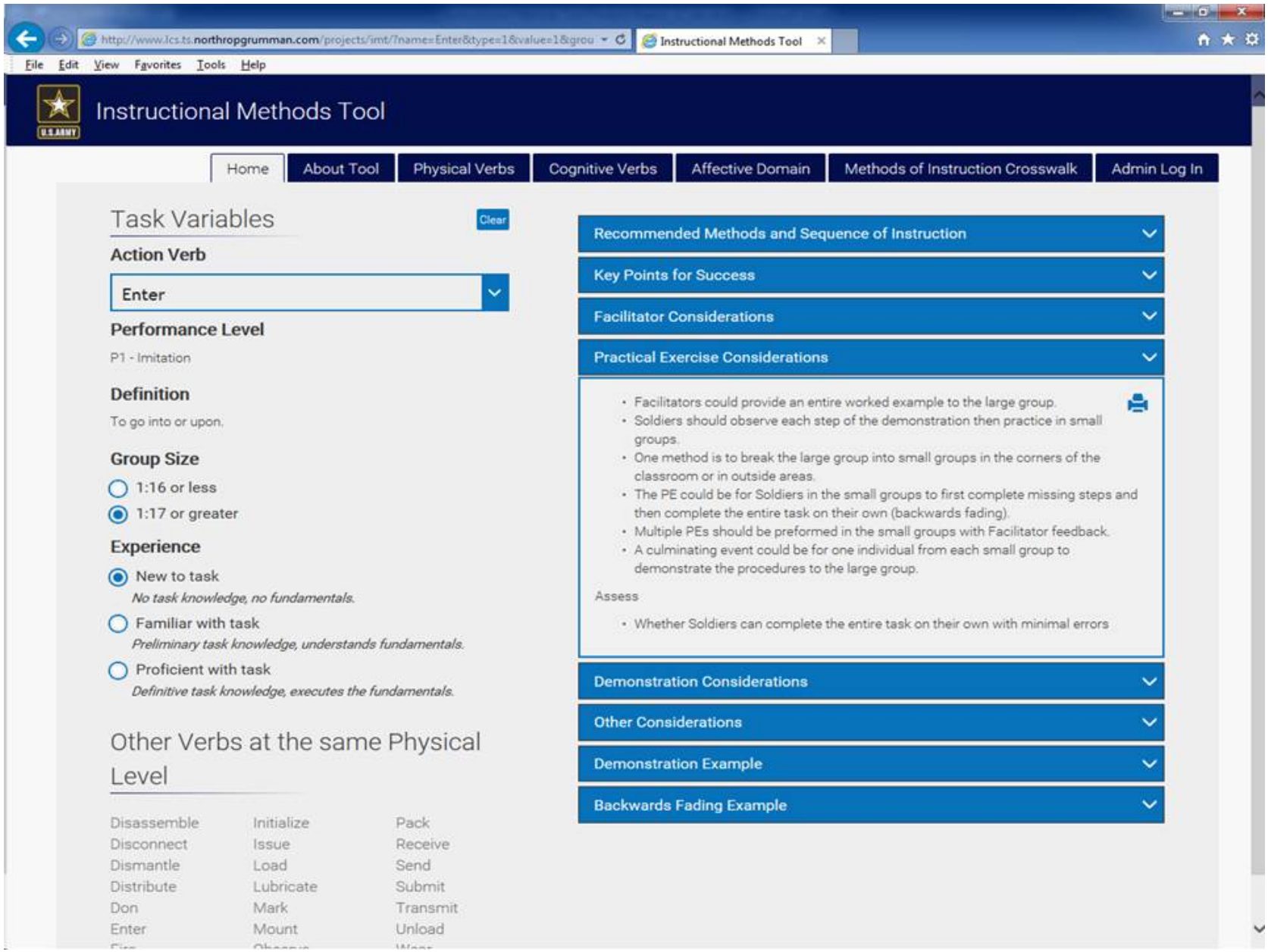
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Demonstrate the task to the large group.
Break the large group into small groups.
Separate the large group (corner of the classroom or outside area).
Provide multiple practical exercises.
Direct the Soldier's attention to important cues and rules (cues can be seen, heard or felt)
Give clear verbal descriptions.
Inform the Soldiers of the cues they will respond to and the rules they will follow when using the skill.
Break the task into subtasks if possible and sequence in the order they are performed.
Simplify the task at the start of practice but do not violate the pattern of the task as a whole.
Watch Soldiers intently to provide prompt and accurate feedback about their performance.
Monitor the Soldiers to help them avoid establishing faulty habits.
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
Demonstration Example
Backwards Fading Example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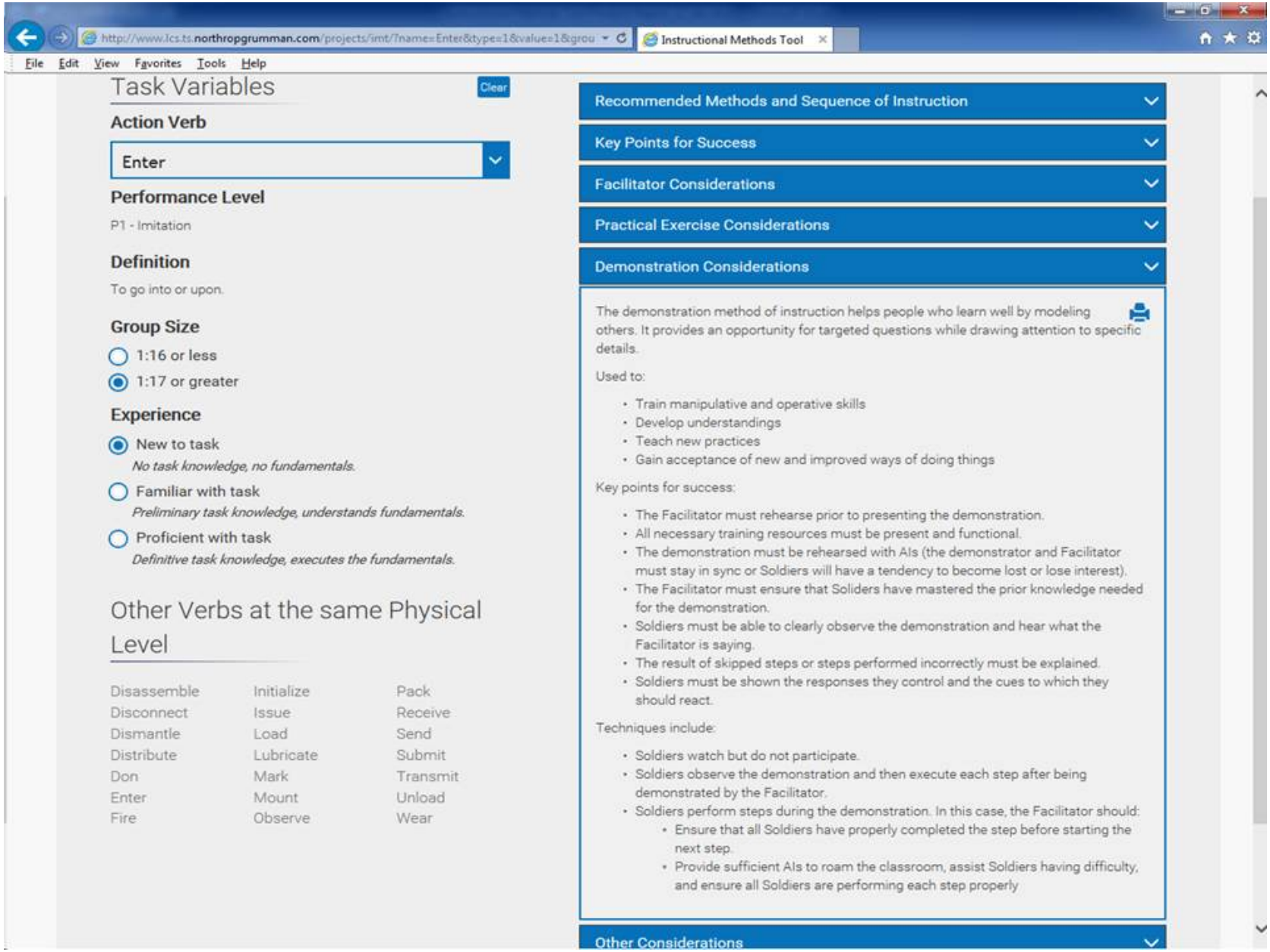
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Facilitators could provide an entire worked example to the large group.
Soldiers should observe each step of the demonstration then practice in small groups.
One method is to break the large group into small groups in the corners of the classroom or in outside areas.
The PE could be for Soldiers in the small groups to first complete missing steps and then complete the entire task on their own (backwards fading).
Multiple PEs should be preformed in the small groups with Facilitator feedback.
A culminating event could be for one individual from each small group to demonstrate the procedures to the large group.
Assess
Whether Soldiers can complete the entire task on their own with minimal errors
Demonstration Considerations
Other Considerations
Demonstration Example
Backwards Fading Example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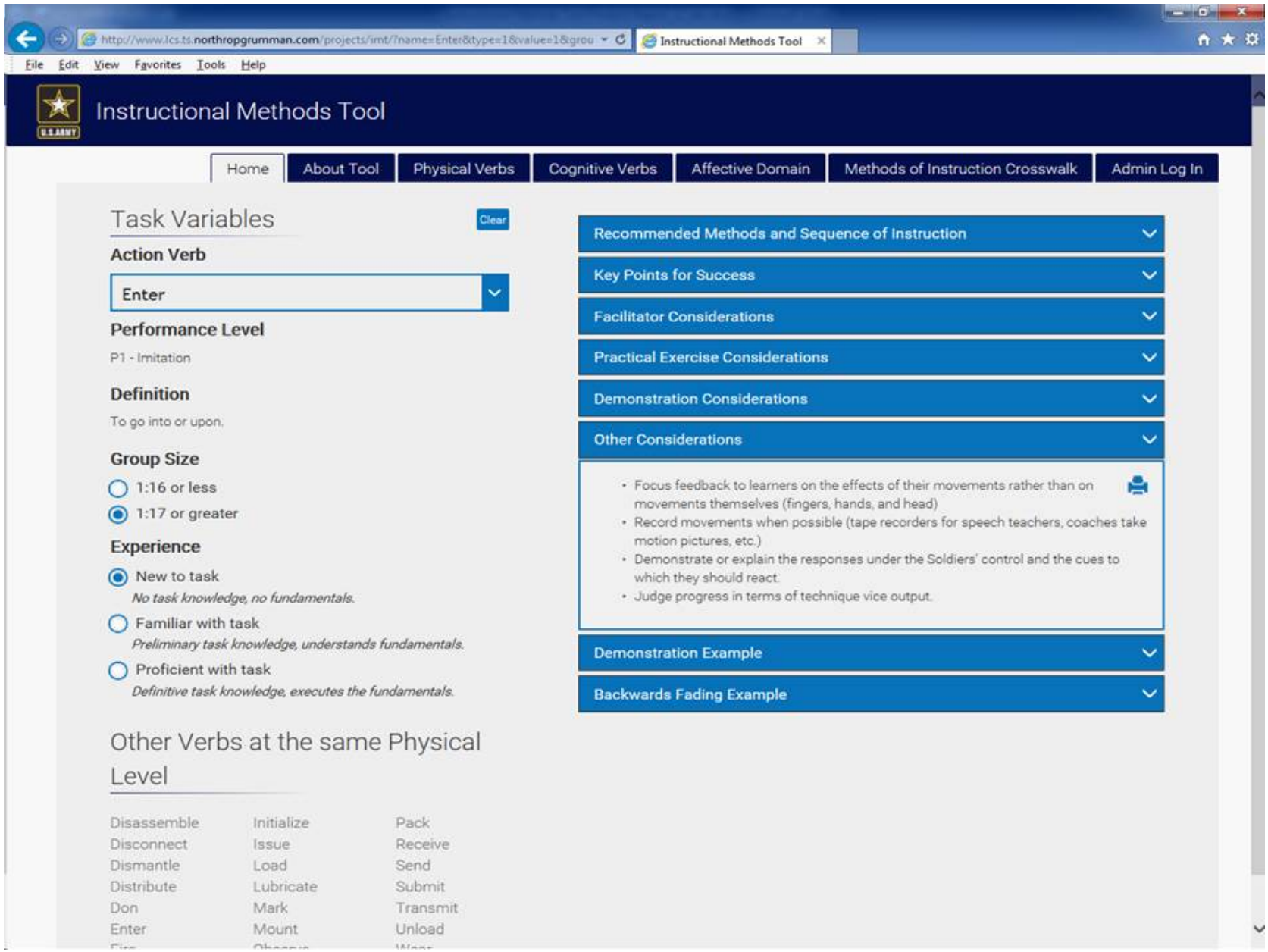
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while 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 Soliders 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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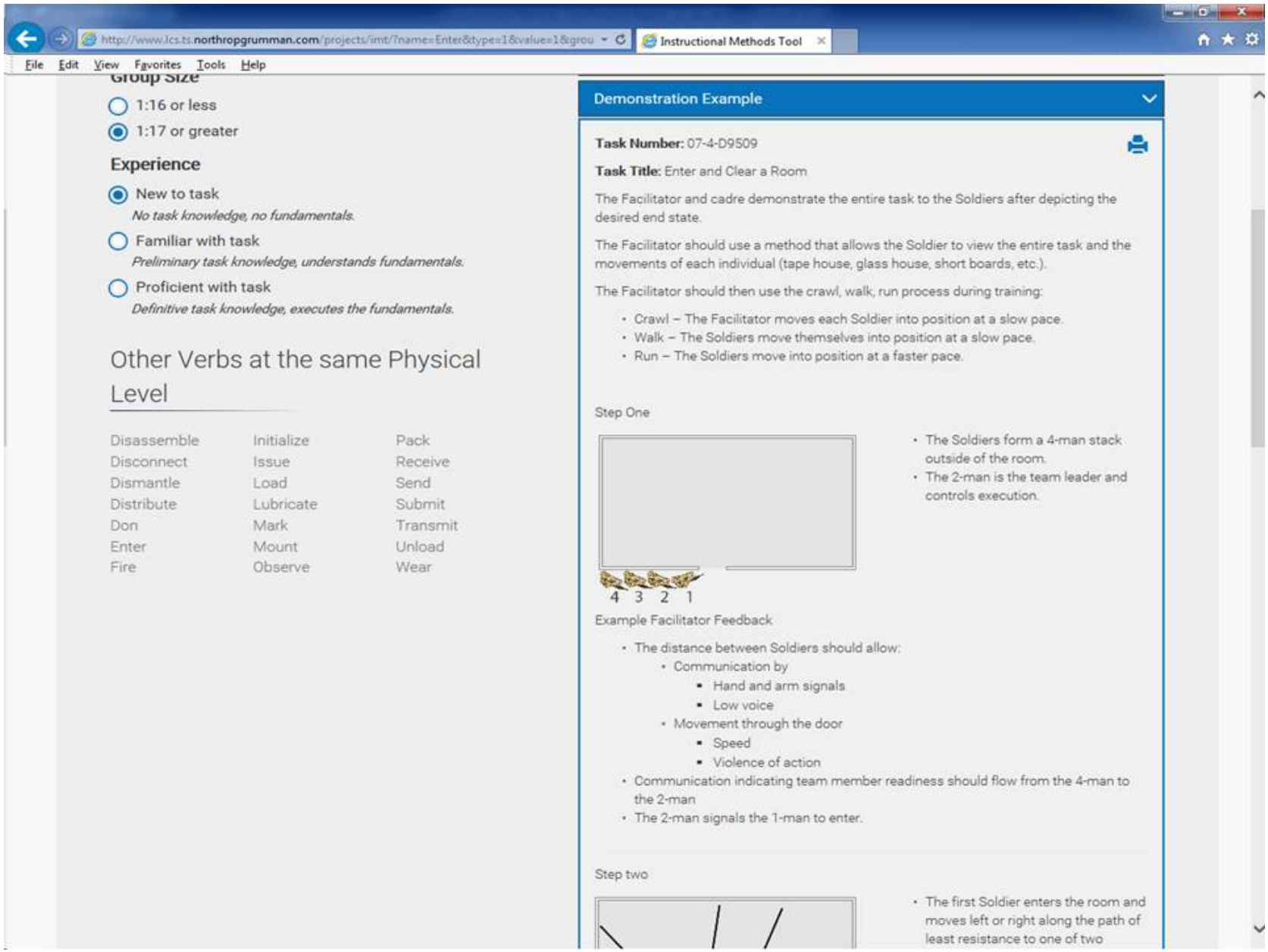
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
• Focus feedback to learners on the effects of their movements rather than on movements themselves (fingers, hands, and head)
• Record movements when possible (tape recorders for speech teachers, coaches take motion pictures, etc.)
• Demonstrate or explain the responses under the Soldiers' control and the cues to which they should react.
• Judge progress in terms of technique vice output.
Demonstration Example
Backwards Fading Example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Unload
Wear
Demonstration Example
Task Number: 07-4-D9509
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
4 3 2 1
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

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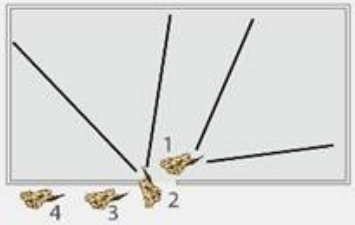
Step two



- 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

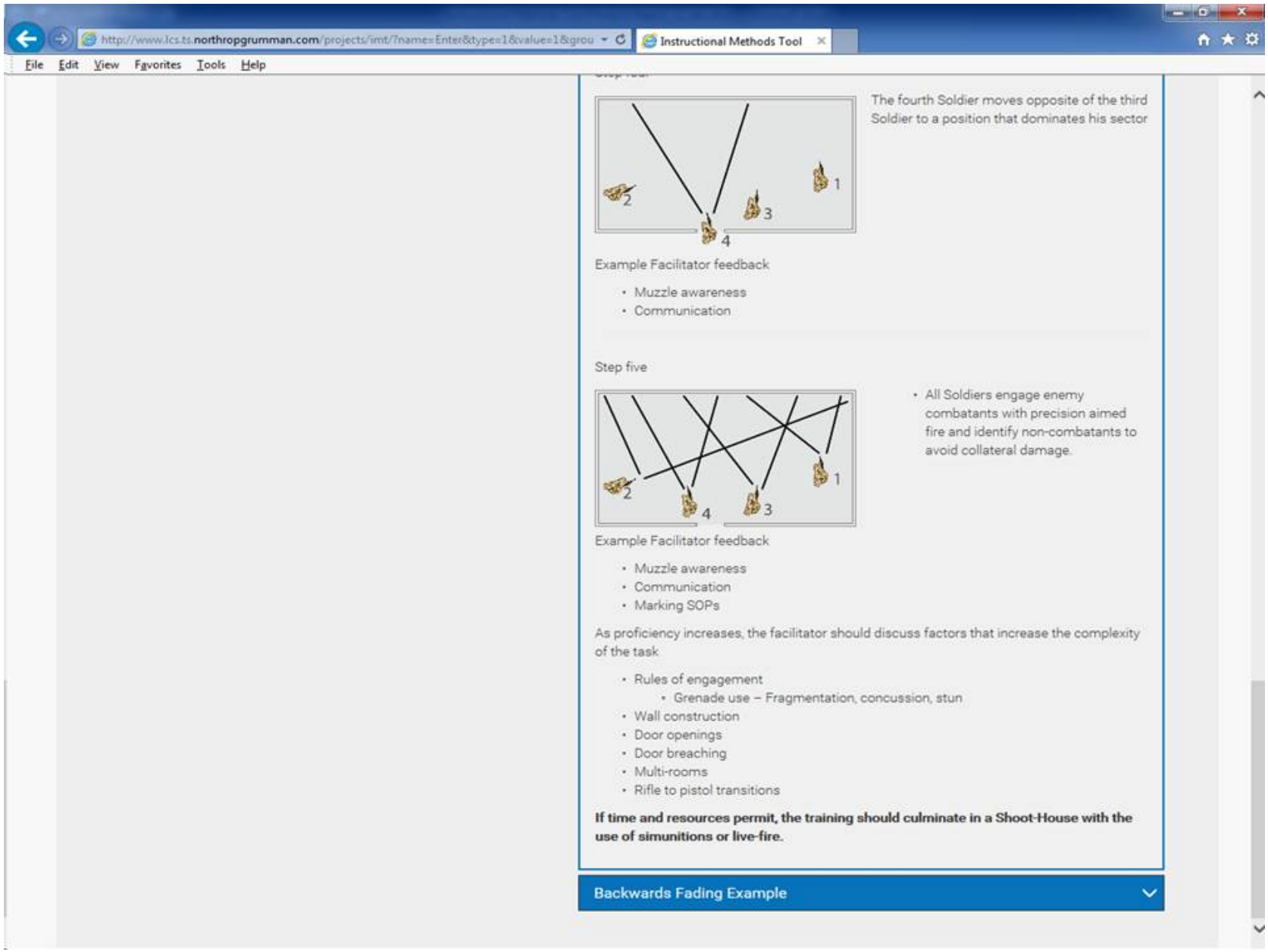
- Room entry
  - Body movement
    - Heel to toe
    - Stable upper body
    - Legs used as shock absorbers
  - Speed – "Slow is Smooth, Smooth is Fast"
  - Sectors of fire
  - Points of domination
- Actions on contact
- Focus on the hands of anyone in the room
  - Threat – Can clearly see hands containing 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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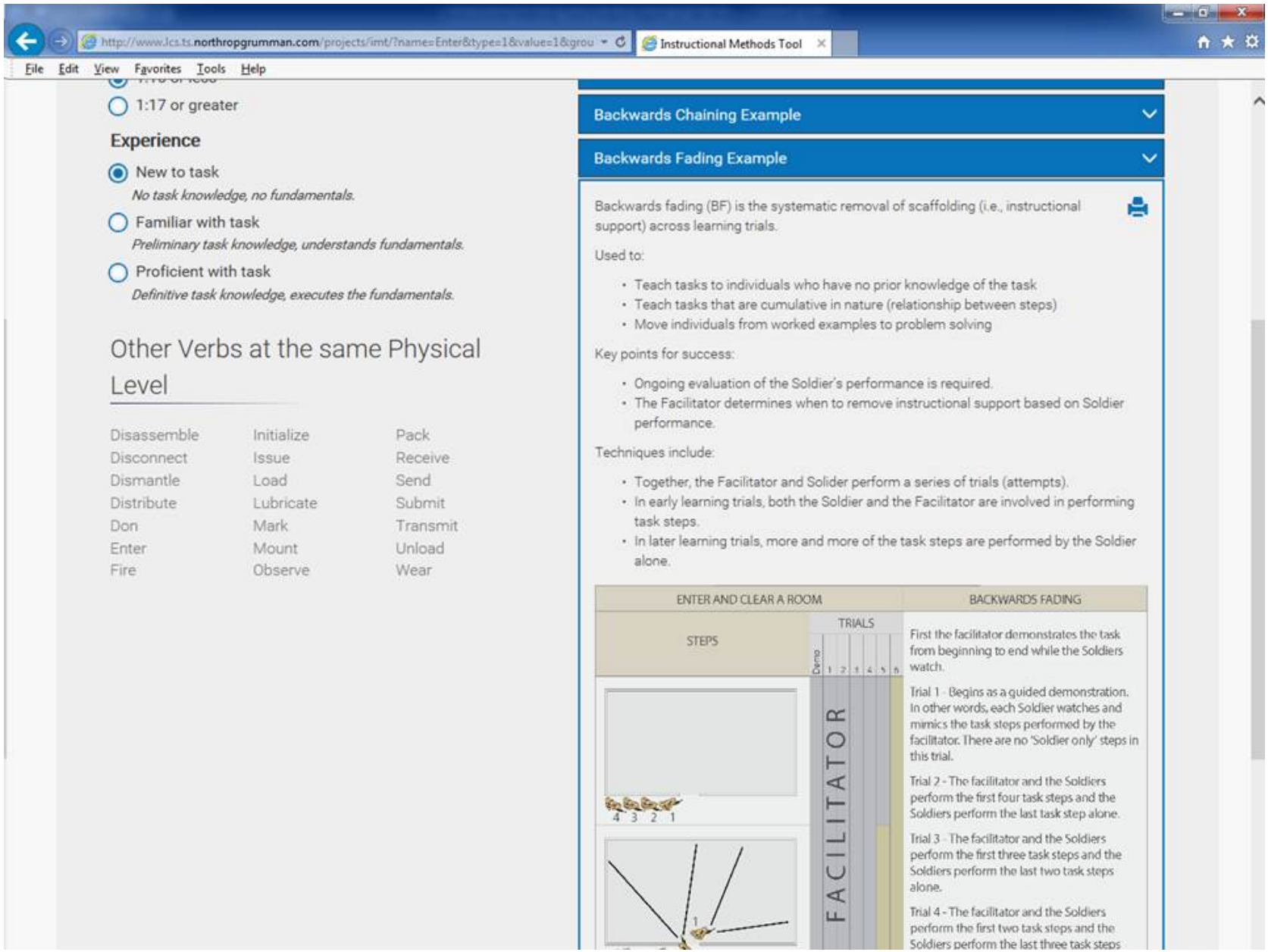
The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector
1
2
3
4
Example Facilitator feedback
• Muzzle awareness
• Communication
Step five
• All Soldiers engage enemy combatants with precision aimed fire and identify non-combatants to avoid collateral damage.
1
2
3
4
Example Facilitator feedback
• Muzzle awareness
• Communication
• Marking SOPs
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.
Backwards Fading Example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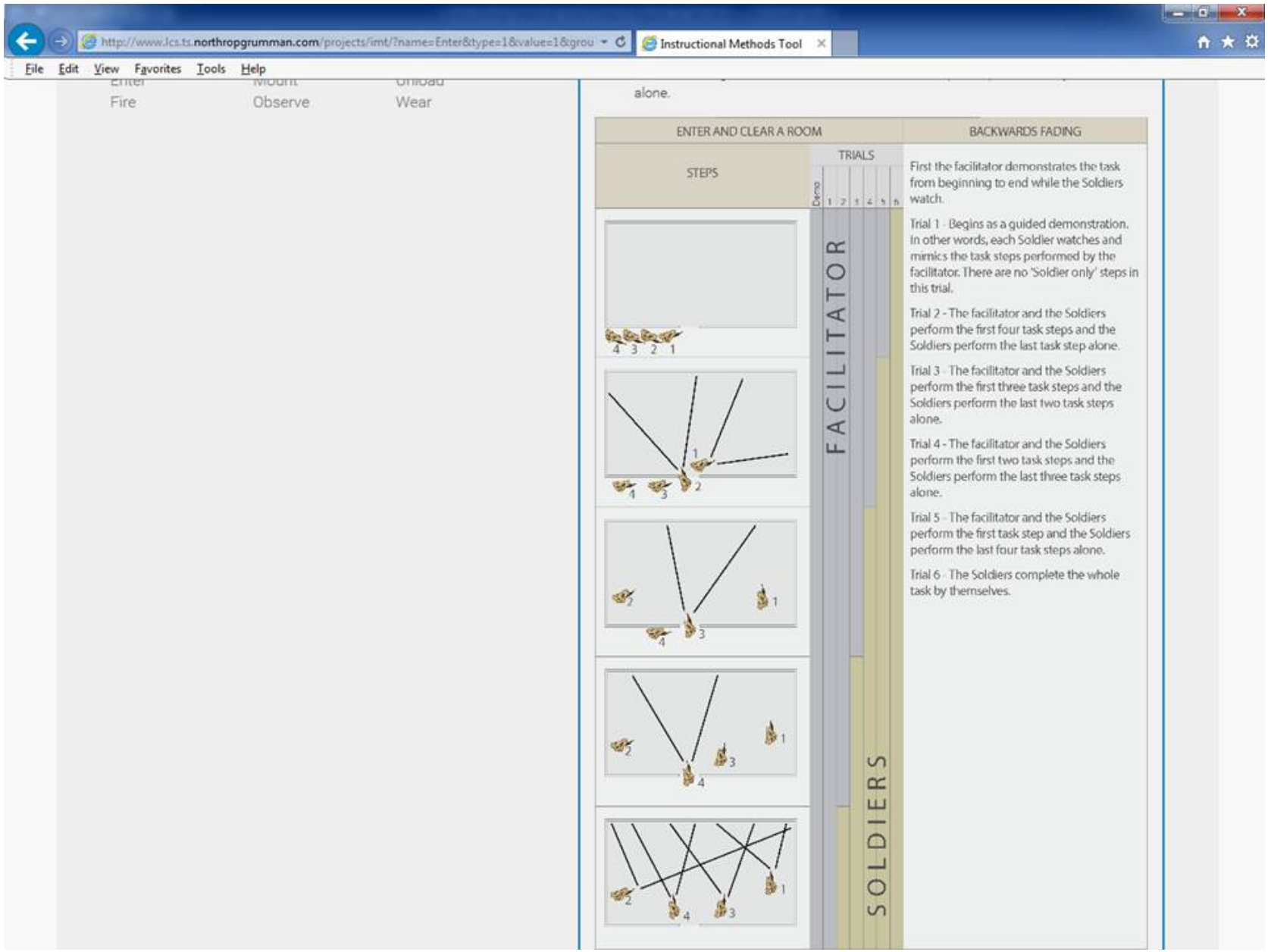
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Disassemble
Disconnect
Dismantle
Distribute
Don
Enter
Fire
Initialize
Issue
Load
Lubricate
Mark
Mount
Observe
Pack
Receive
Send
Submit
Transmit
Unload
Wear
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 Solider 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.
ENTER AND CLEAR A ROOM
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
FACILITATOR
4 3 2 1
1
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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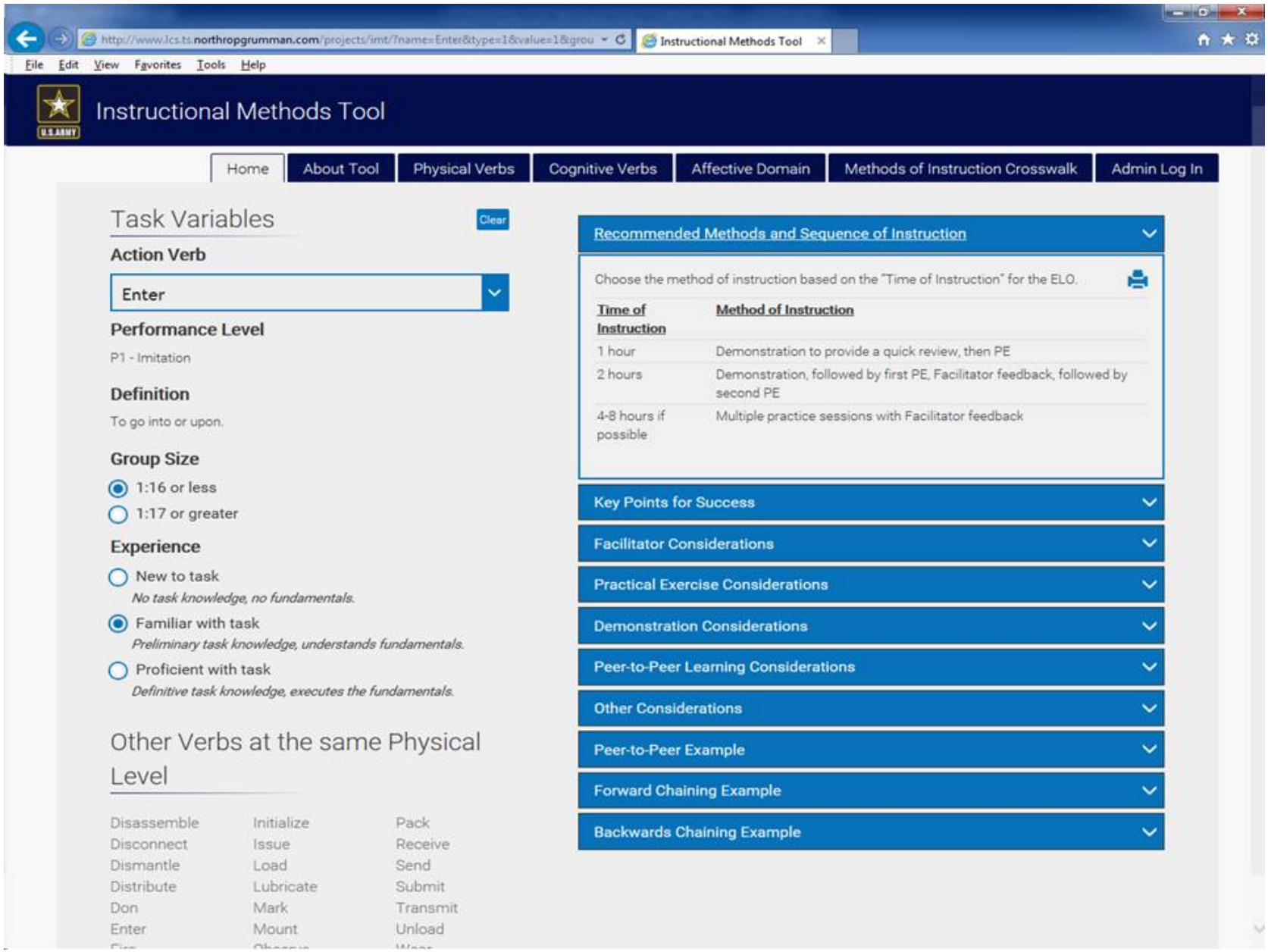
ENTER AND CLEAR A ROOM
STEPS
TRIALS
Demo 1 2 3 4 5 6
FACILITATOR
SOLDIERS
BACKWARDS FADING
First the facilitator demonstrates the task from beginning to end while the Soldiers watch.
Trial 1 - Begins as a guided demonstration. In other words, each Soldier watches and mimics the task steps performed by 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 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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Proficient with task
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Distribute
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Initialize
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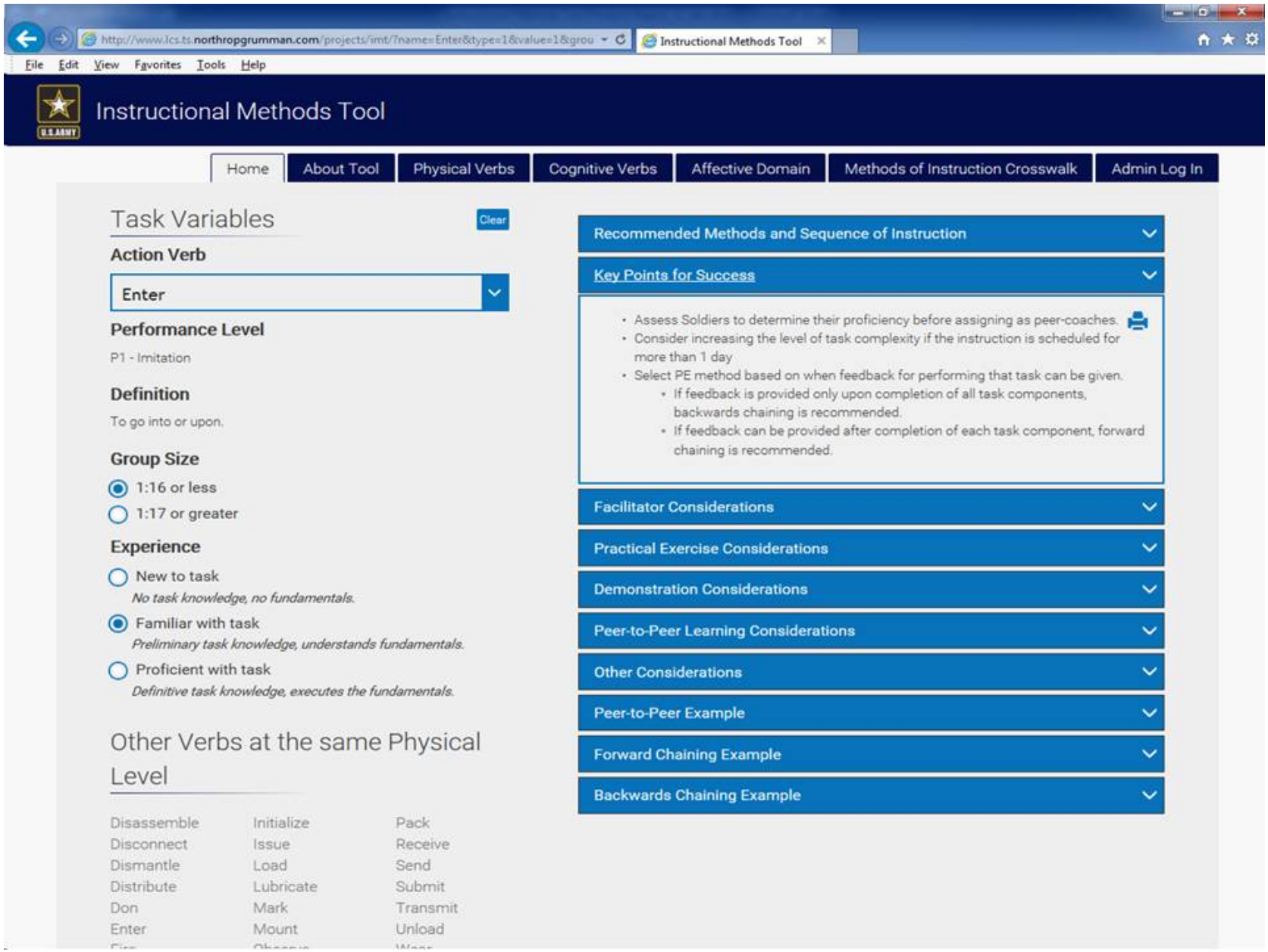
Unload
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
1 hour
Demonstration to provide a quick review, then PE
2 hours
Demonstration, followed by first PE, Facilitator feedback, followed by second PE
4-8 hours if possible
Multiple practice sessions with Facilitator feedback
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Peer-to-Peer Learning Considerations
Other Considerations
Peer-to-Peer Example
Forward Chaining Example
Backwards Chaining Example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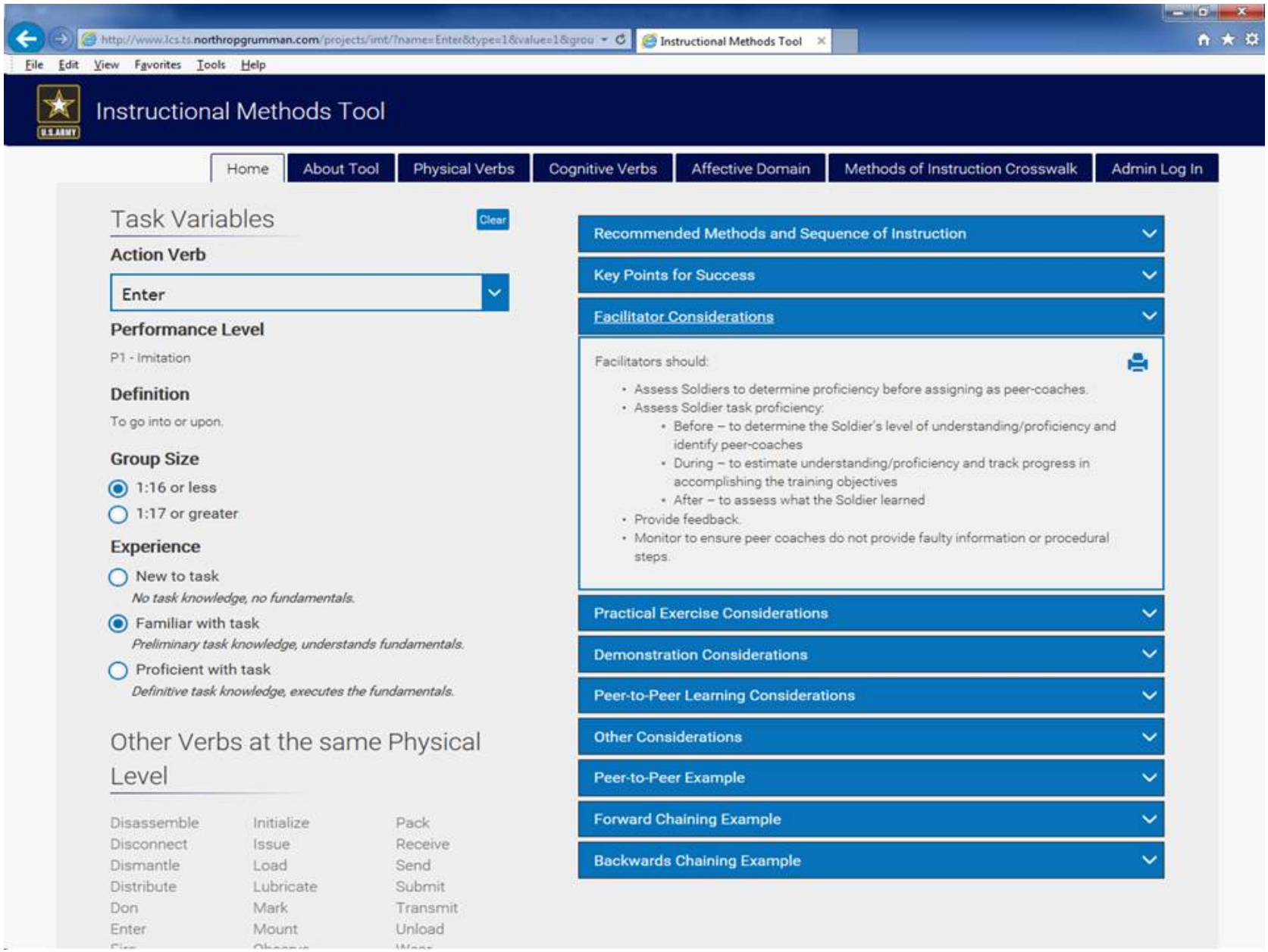
Recommended Methods and Sequence of Instruction
Key Points for Success
Assess Soldiers to determine their proficiency before assigning as peer-coaches.
Consider increasing the level of task complexity if the instruction is scheduled for more than 1 day
Select PE method based on when feedback for performing that task can be given.
If feedback is provided only upon completion of all task components, backwards chaining is recommended.
If feedback can be provided after completion of each task component, forward chaining is recommended.
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Peer-to-Peer Learning Considerations
Other Considerations
Peer-to-Peer Example
Forward Chaining Example
Backwards Chaining Example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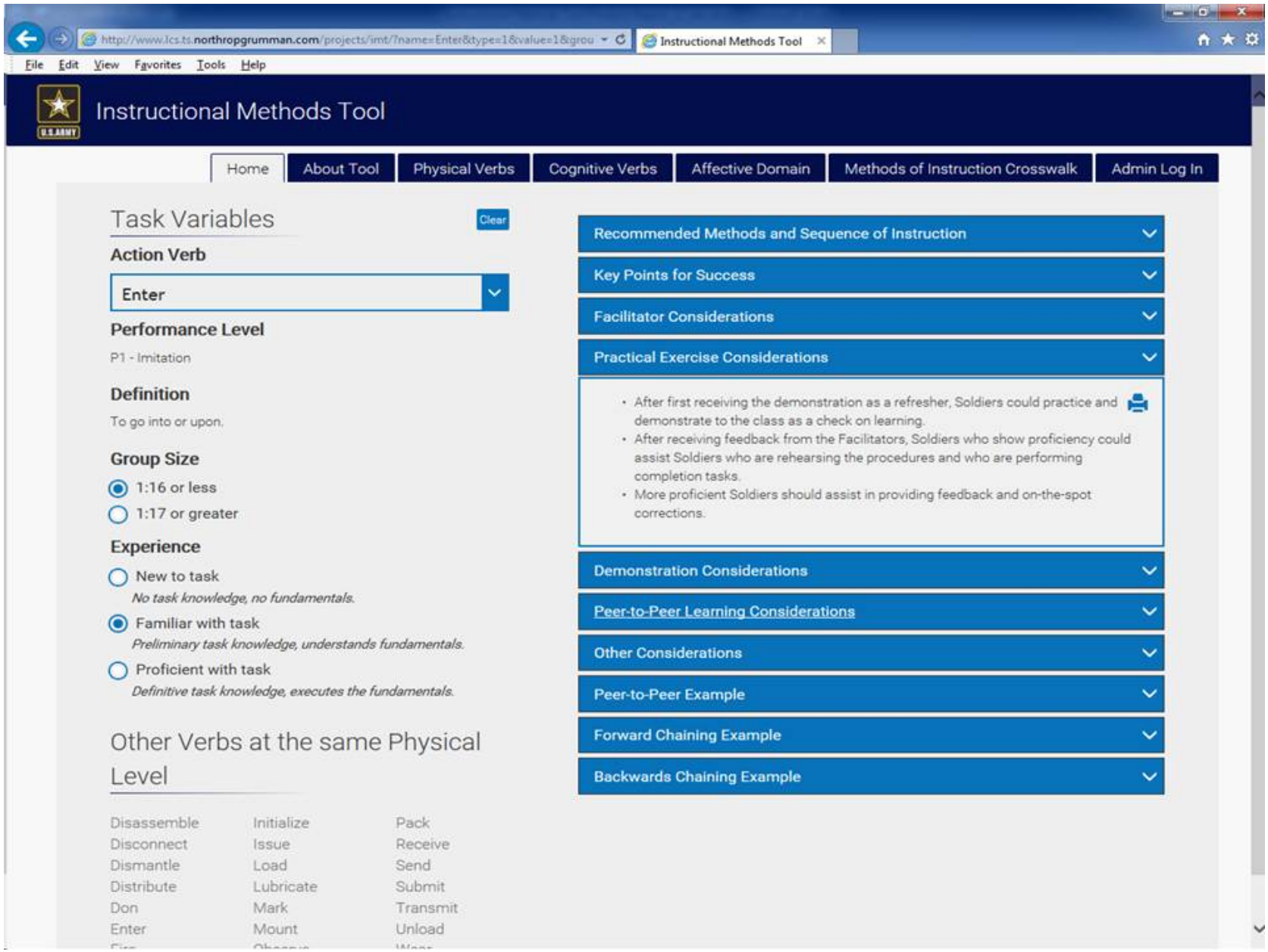
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
• Assess Soldiers to determine proficiency before assigning as peer-coaches.
• Assess Soldier task proficiency:
• Before – to determine the Soldier's level of understanding/proficiency and identify peer-coaches
• During – to estimate understanding/proficiency and track progress in accomplishing the training objectives
• After – to assess what the Soldier learned
• Provide feedback.
• Monitor to ensure peer coaches do not provide faulty information or procedural steps.
Practical Exercise Considerations
Demonstration Considerations
Peer-to-Peer Learning Considerations
Other Considerations
Peer-to-Peer Example
Forward Chaining Example
Backwards Chaining Example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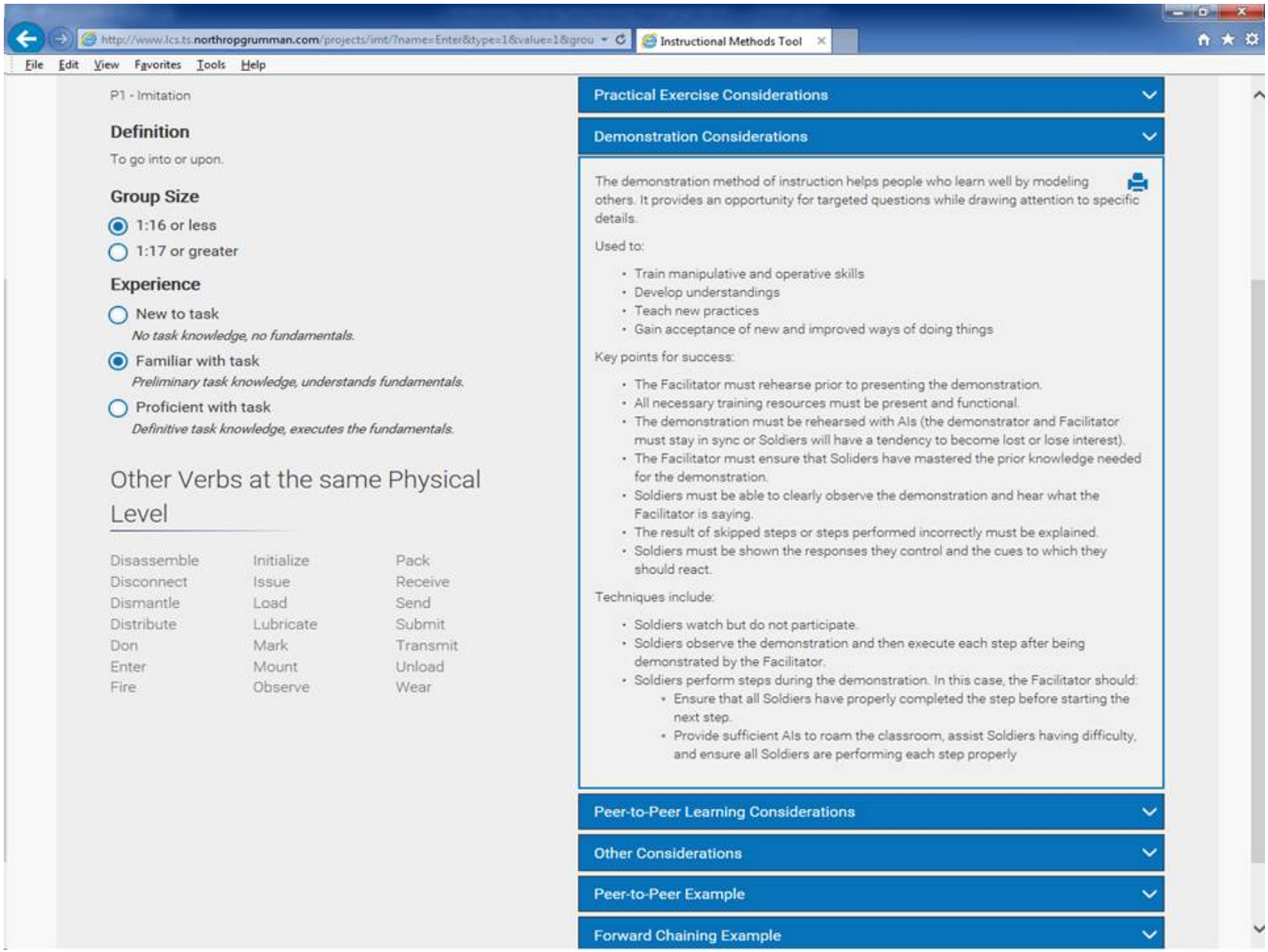
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
After first receiving the demonstration as a refresher, Soldiers could practice and demonstrate to the class as a check on learning.
After receiving feedback from the Facilitators, Soldiers who show proficiency could assist Soldiers who are rehearsing the procedures and who are performing completion tasks.
More proficient Soldiers should assist in providing feedback and on-the-spot corrections.
Demonstration Considerations
Peer-to-Peer Learning Considerations
Other Considerations
Peer-to-Peer Example
Forward Chaining Example
Backwards Chaining Example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Instructional Methods Tool
File Edit View Favorites Tools Help
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
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Other Verbs at the same Physical Level
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Distribute
Don
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Fire
Initialize
Issue
Load
Lubricate
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Observe
Pack
Receive
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Practical Exercise Considerations
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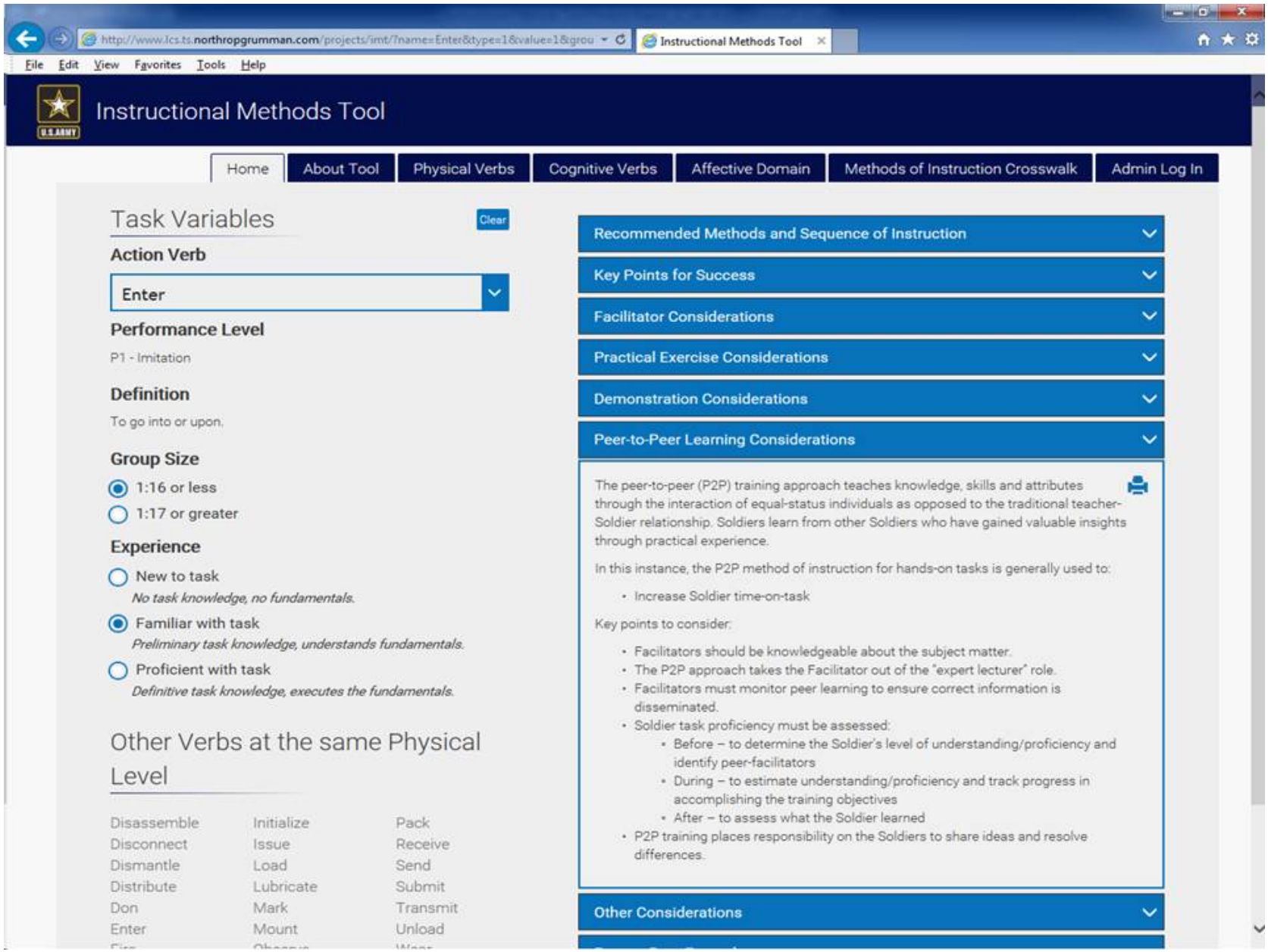
Other Considerations
Peer-to-Peer Example
Forward Chaining Example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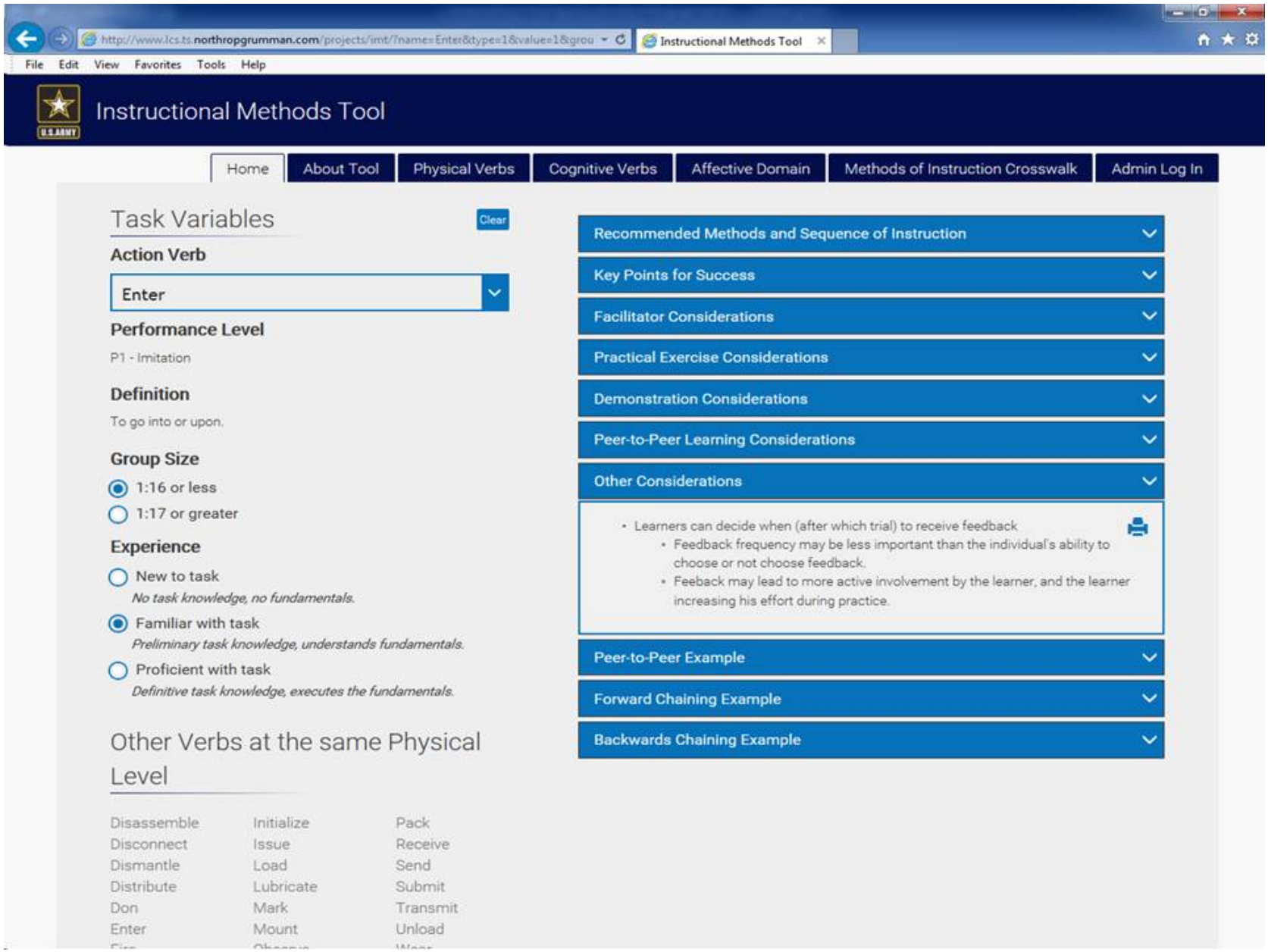
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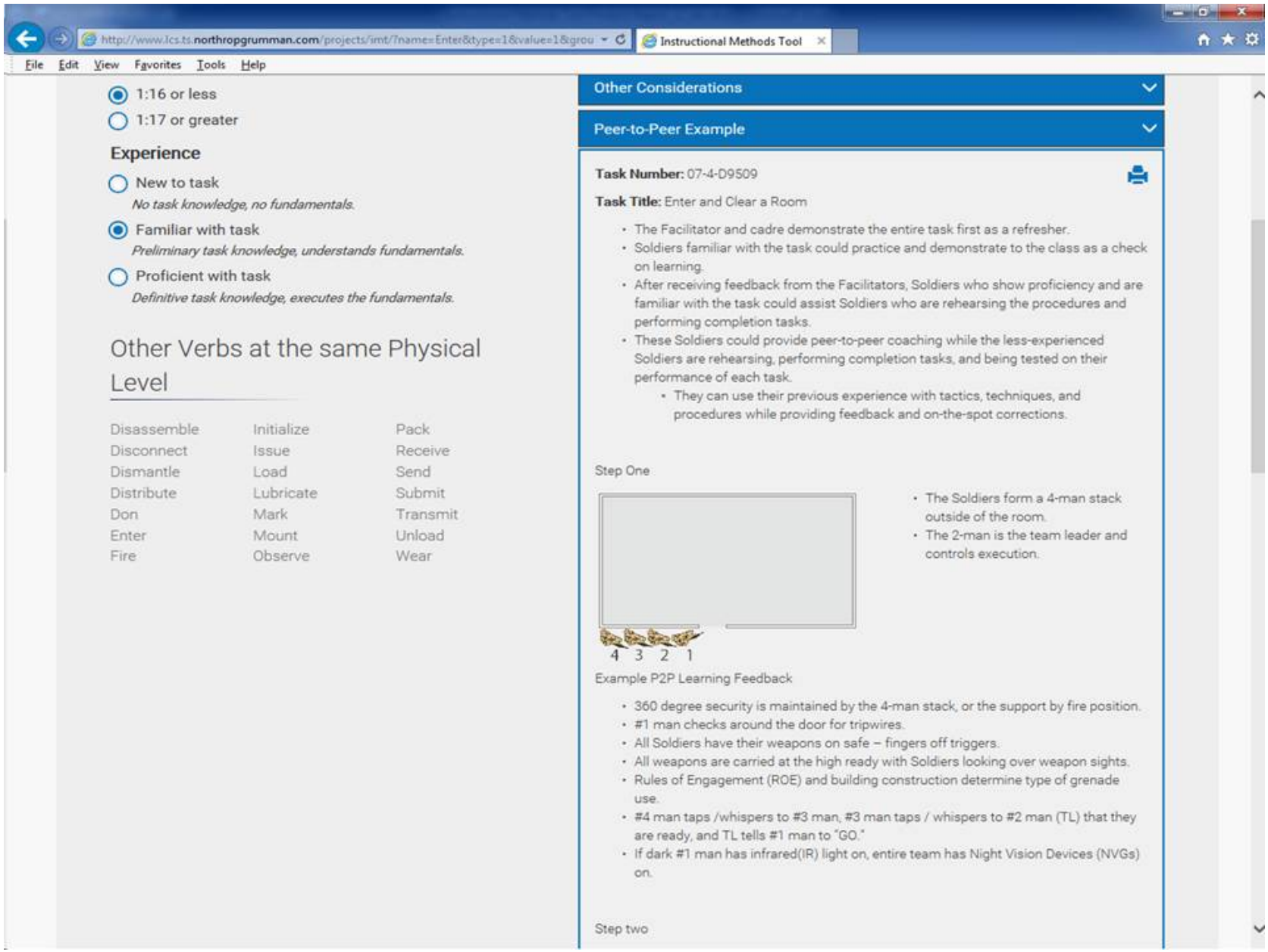
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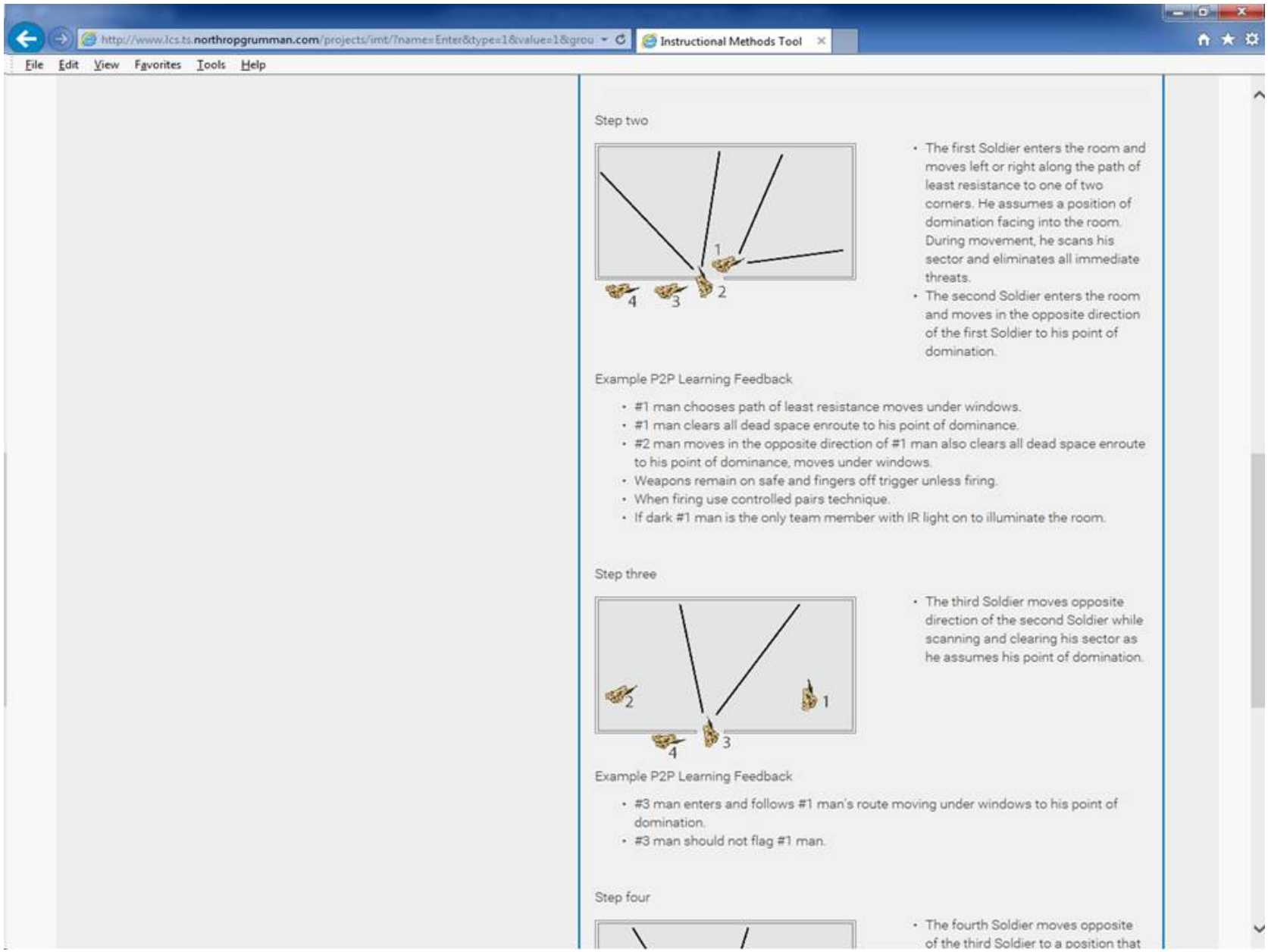
Other Considerations
Peer-to-Peer Example
Task Number: 07-4-D9509
Task Title: Enter and Clear a Room
The Facilitator and cadre demonstrate the entire task first as a refresher.
Soldiers familiar with the task could practice and demonstrate to the class as a check on learning.
After receiving feedback from the Facilitators, Soldiers who show proficiency and are familiar with the task could assist Soldiers who are rehearsing the procedures and performing completion tasks.
These Soldiers could provide peer-to-peer coaching while the less-experienced Soldiers are rehearsing, performing completion tasks, and being tested on their performance of each task.
They can use their previous experience with tactics, techniques, and procedures while providing feedback and on-the-spot corrections.
Step One
4 3 2 1
The Soldiers form a 4-man stack outside of the room.
The 2-man is the team leader and controls execution.
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 two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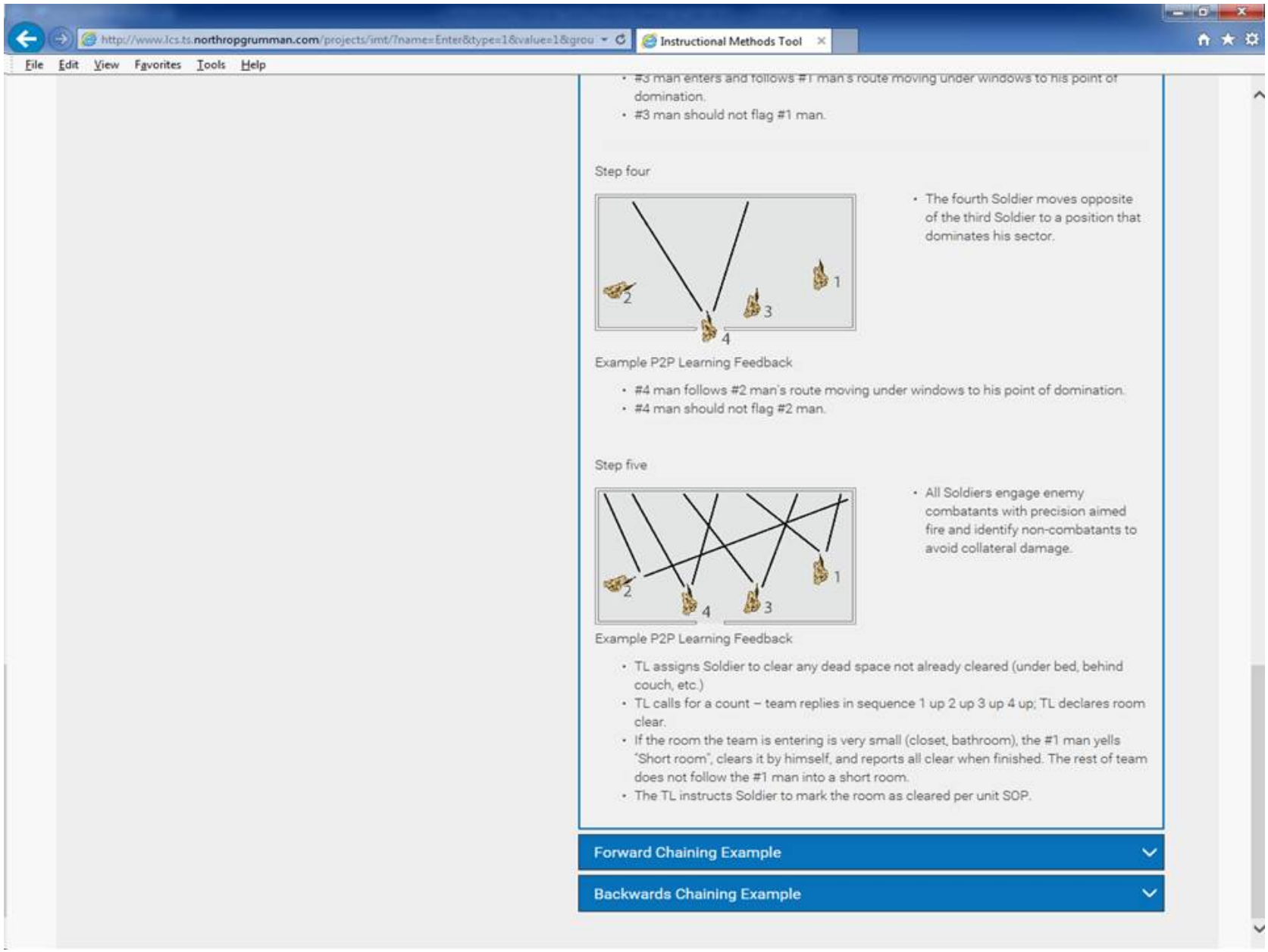
Step two
1
2
3
4
The first Soldier enters the room and moves left or right along the path of least resistance to one of two corners. He assumes a position of domination facing into the room. During movement, he scans his sector and eliminates all immediate threats.
The second Soldier enters the room 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
2
1
3
4
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
The fourth Soldier moves opposite of the third Soldier to a position that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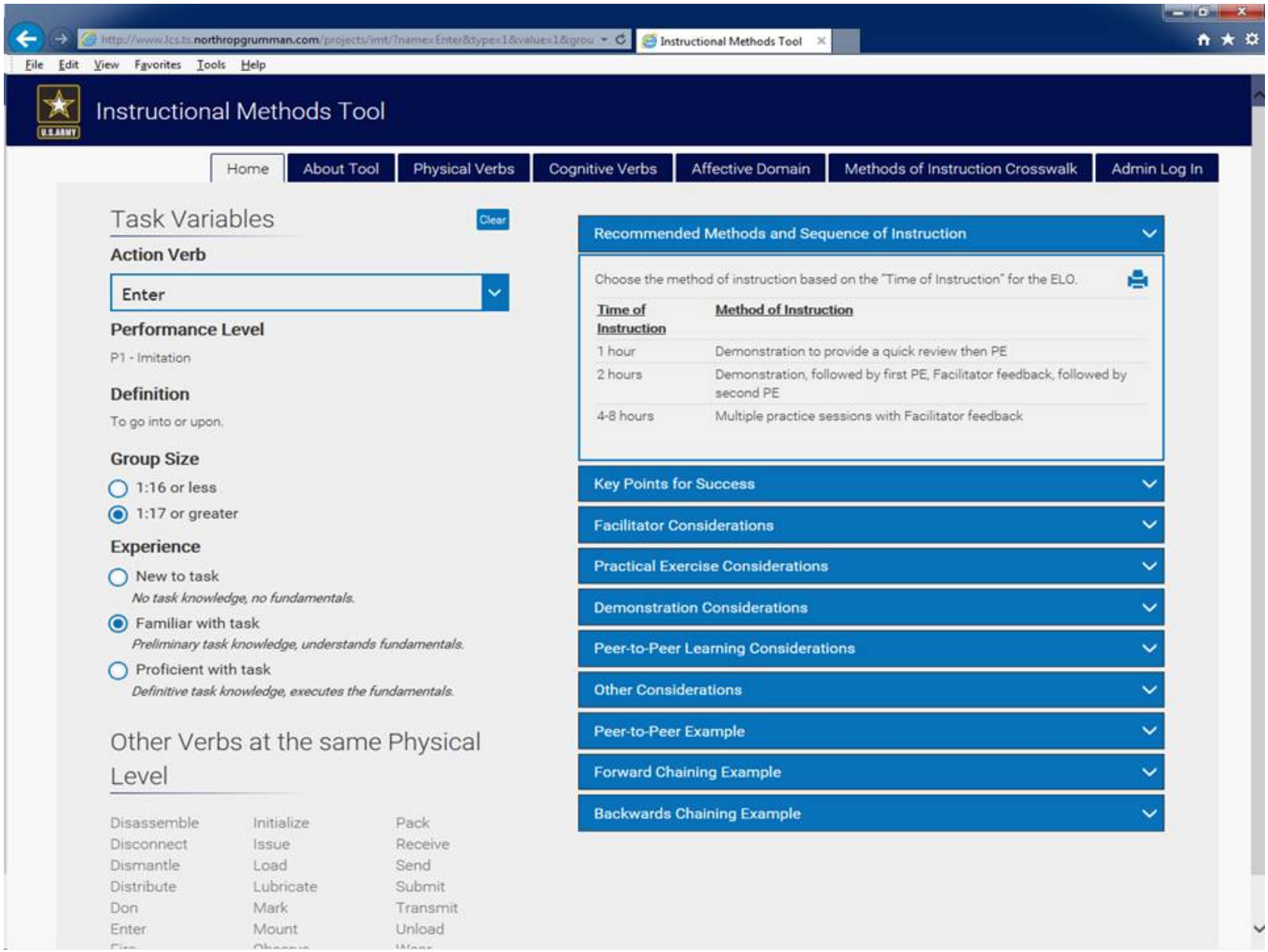
• #3 man enters and follows #1 man's route moving under windows to his point of domination.
• #3 man should not flag #1 man.
Step four
1
2
3
4
• The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.
Example P2P Learning Feedback
• #4 man follows #2 man's route moving under windows to his point of domination.
• #4 man should not flag #2 man.
Step five
1
2
4
3
• All Soldiers engage enemy combatants with precision aimed 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

Appendix F

Military Task Examples
P1-Imitation / Large Group / Familiar with Task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Unload
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
1 hour
Demonstration to provide a quick review then PE
2 hours
Demonstration, followed by first PE, Facilitator feedback, followed by second PE
4-8 hours
Multiple practice sessions with Facilitator feedback
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Peer-to-Peer Learning Considerations
Other Considerations
Peer-to-Peer Example
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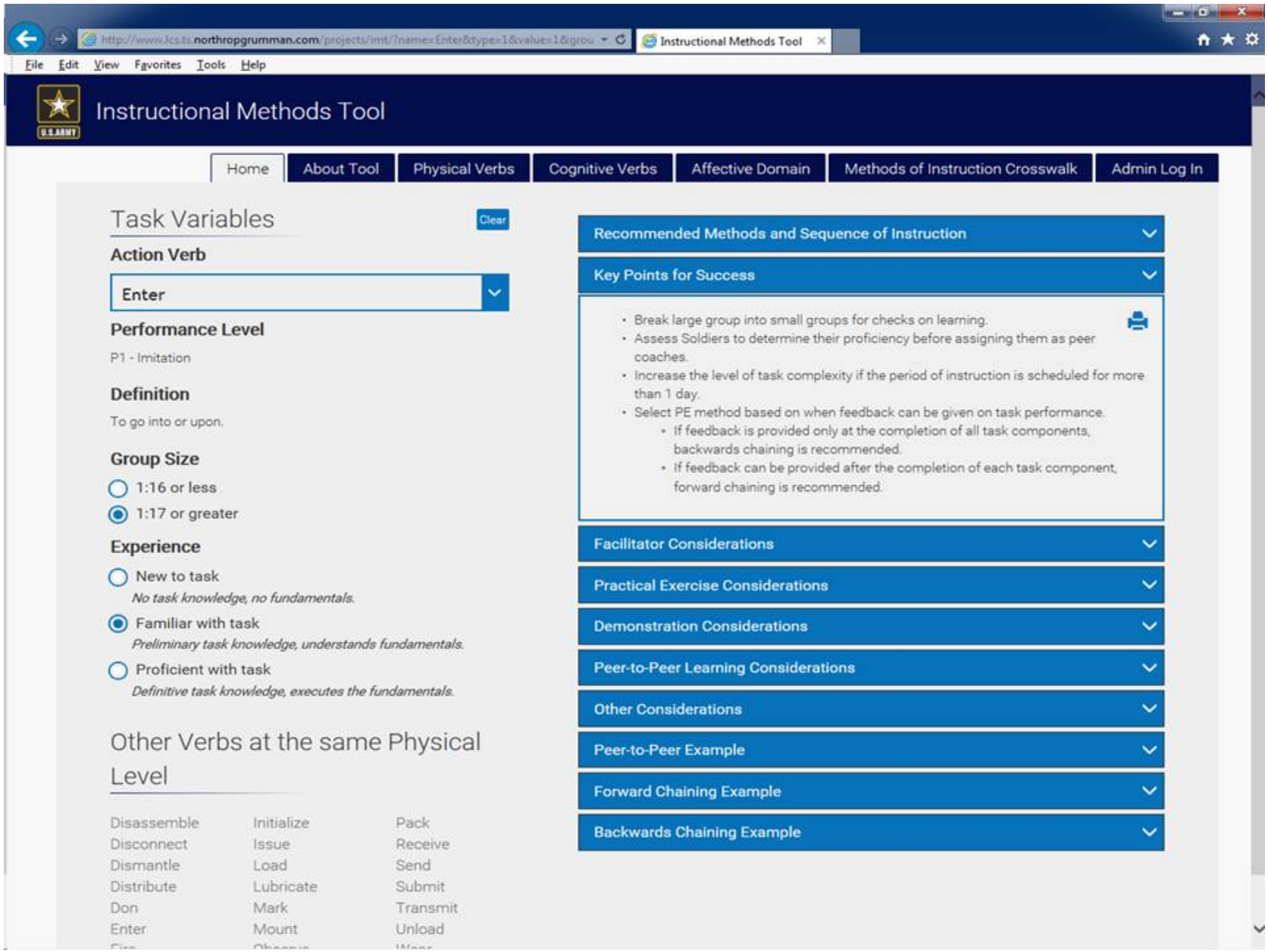
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Recommended Methods and Sequence of Instruction
Key Points for Success
Break large group into small groups for checks on learning.
Assess Soldiers to determine their proficiency before assigning them as peer coaches.
Increase the level of task complexity if the period of instruction is scheduled for more than 1 day.
Select PE method based on when feedback can be given on task performance.
If feedback is provided only at the completion of all task components, backwards chaining is recommended.
If feedback can be provided after the completion of each task component, forward chaining is recommended.
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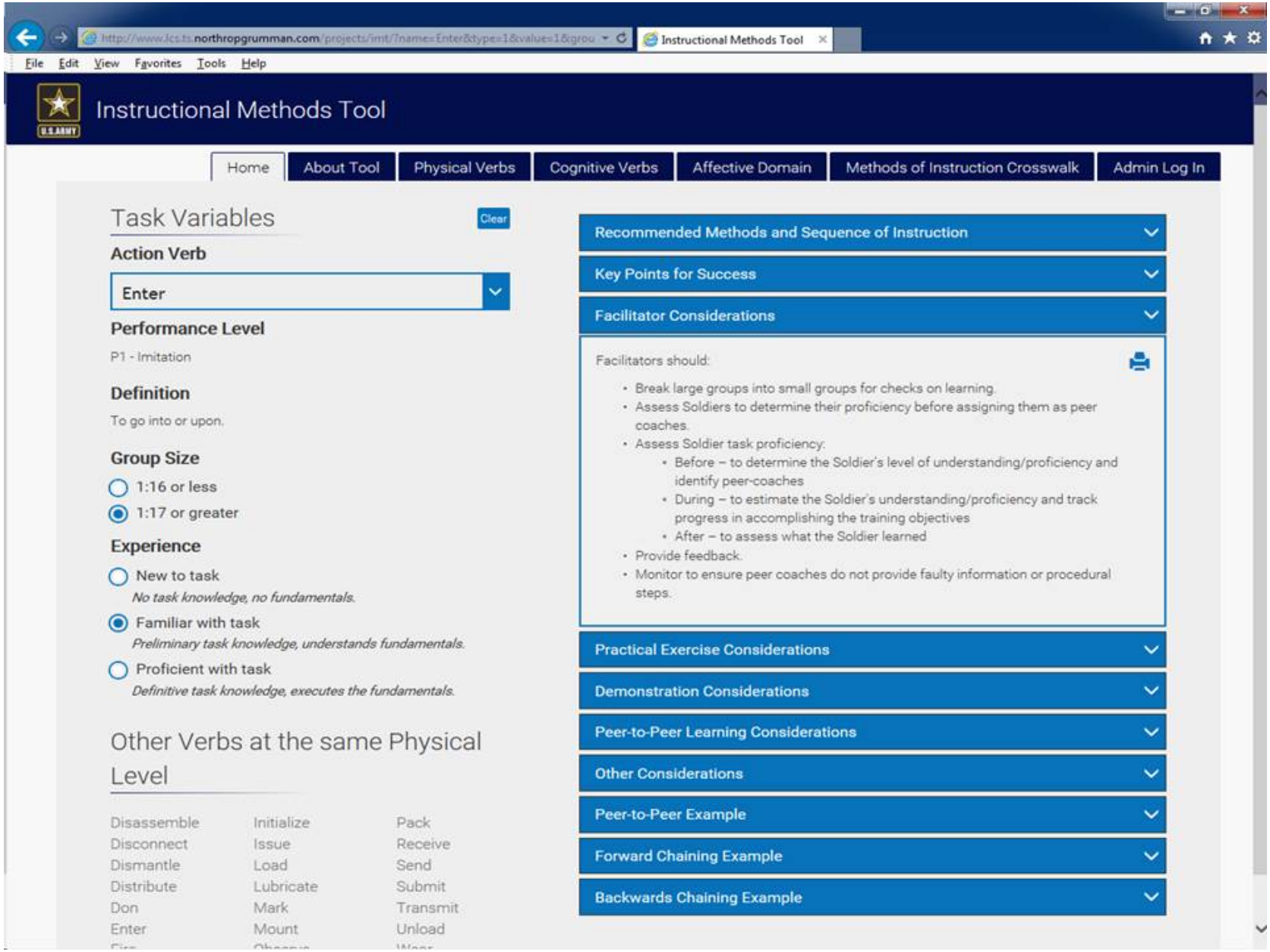
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Assess Soldier task proficiency:
Before – to determine the Soldier's level of understanding/proficiency and identify peer-coaches
During – to estimate the Soldier's understanding/proficiency and track progress in accomplishing the training objectives
After – to assess what the Soldier learned
Provide feedback.
Monitor to ensure peer coaches do not provide faulty information or procedural steps.
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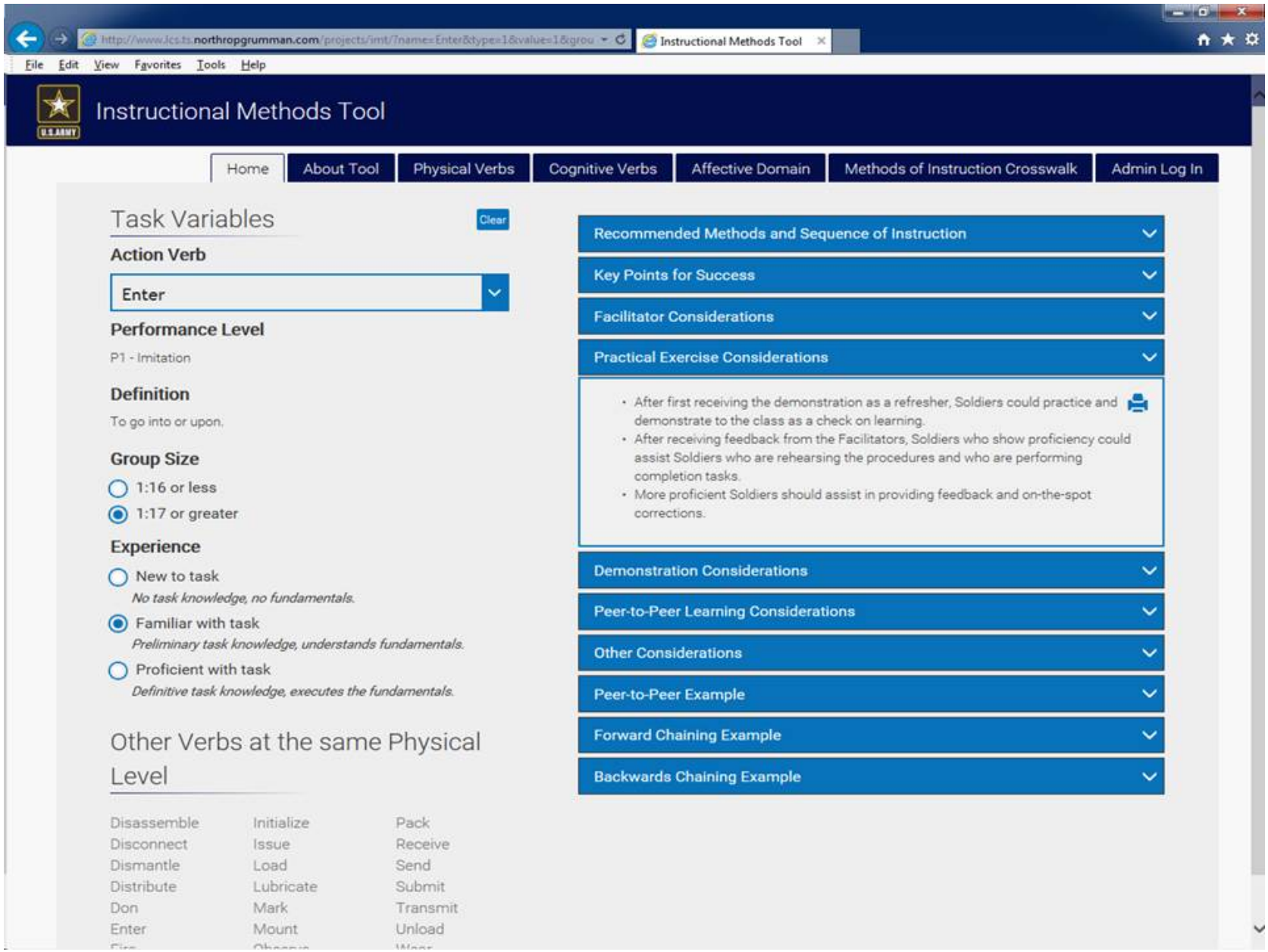
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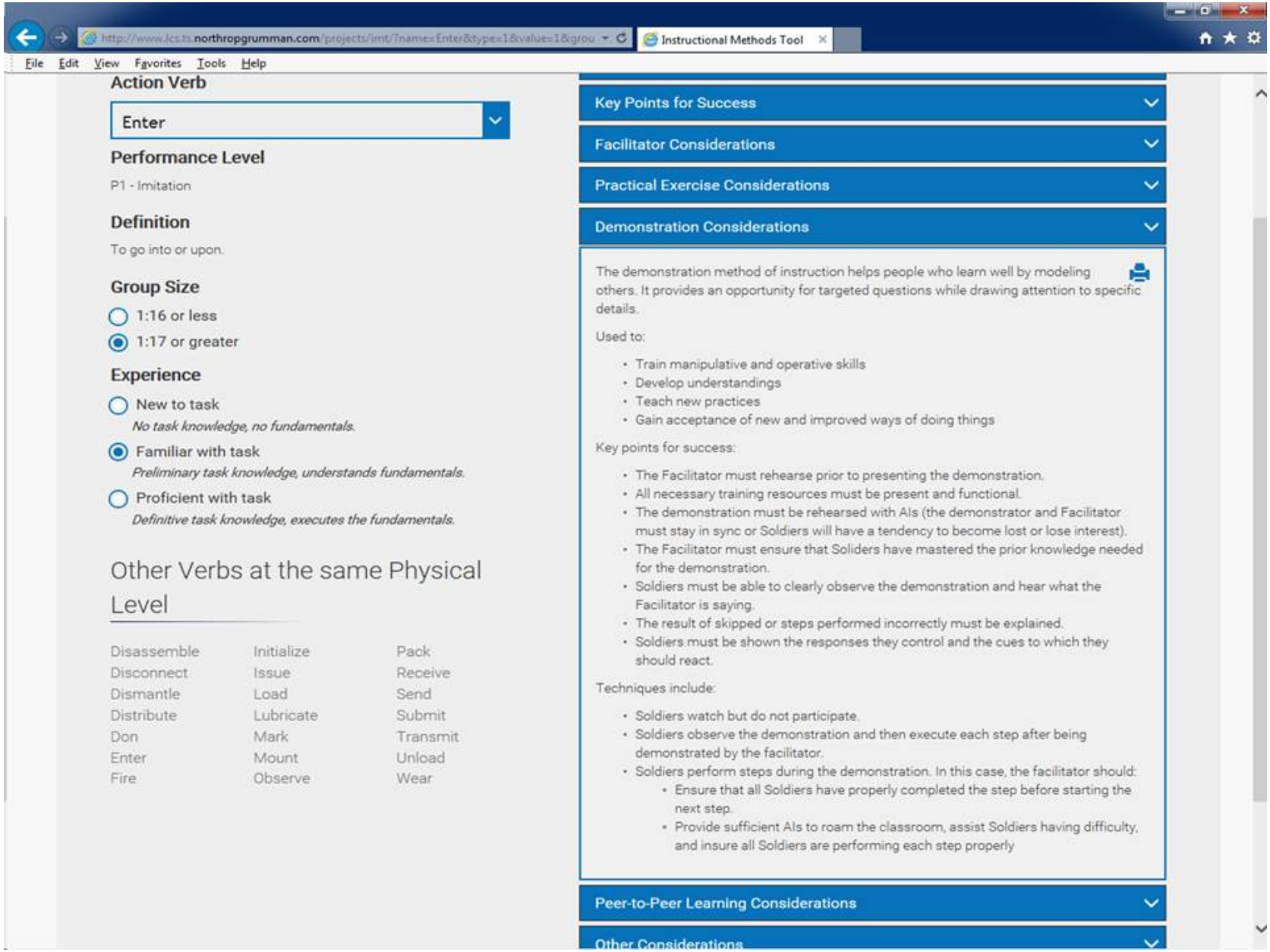
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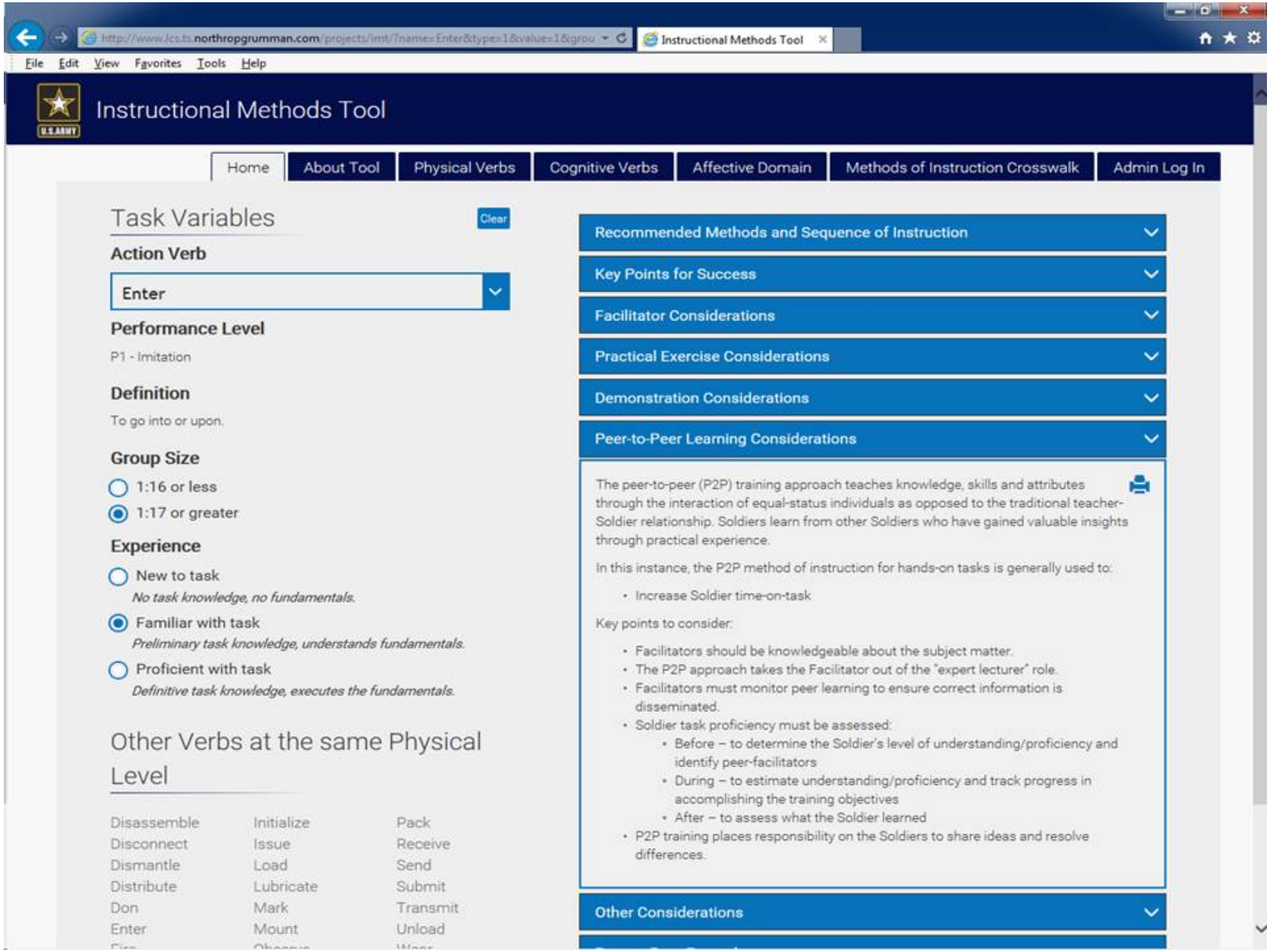
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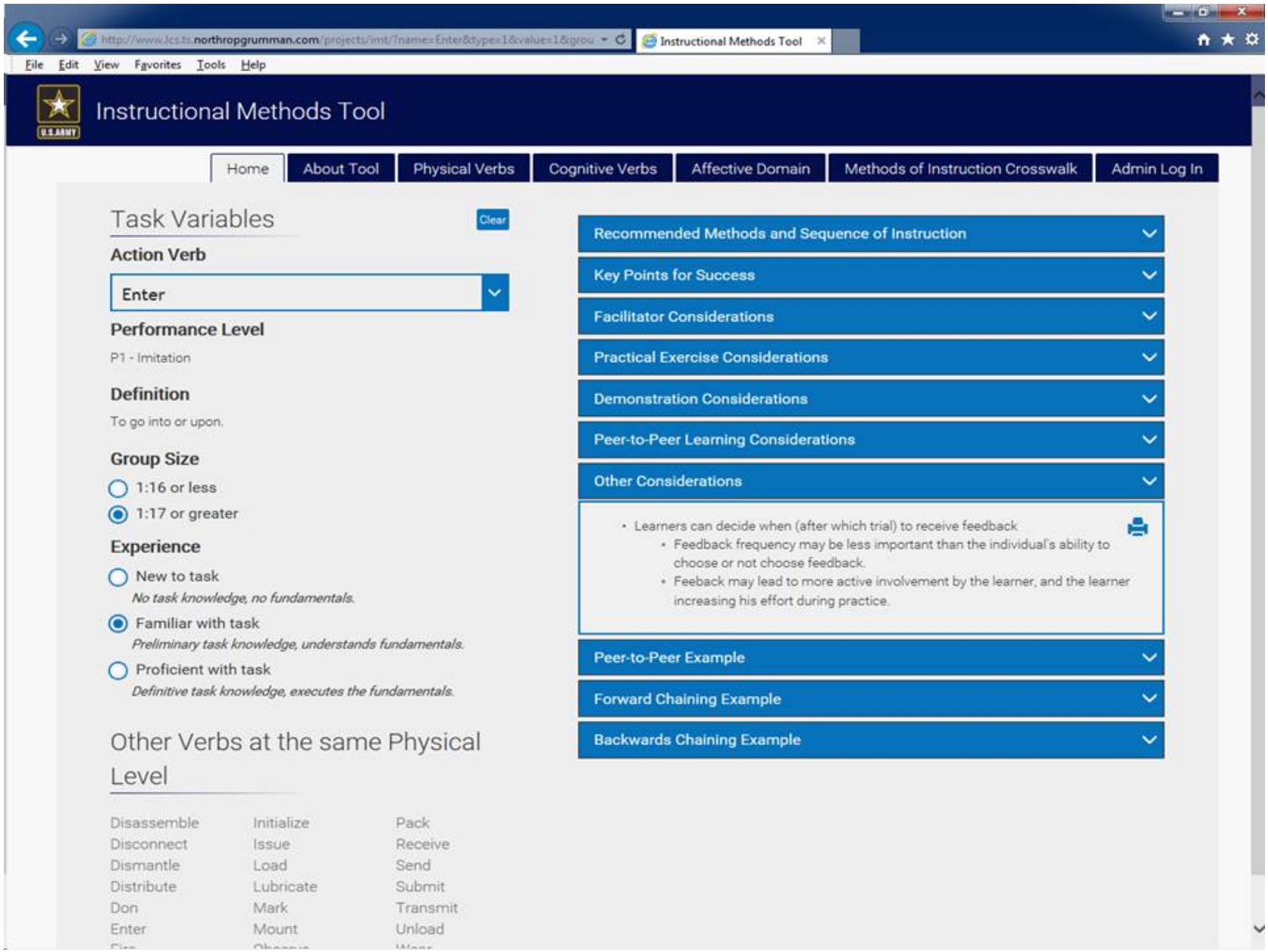
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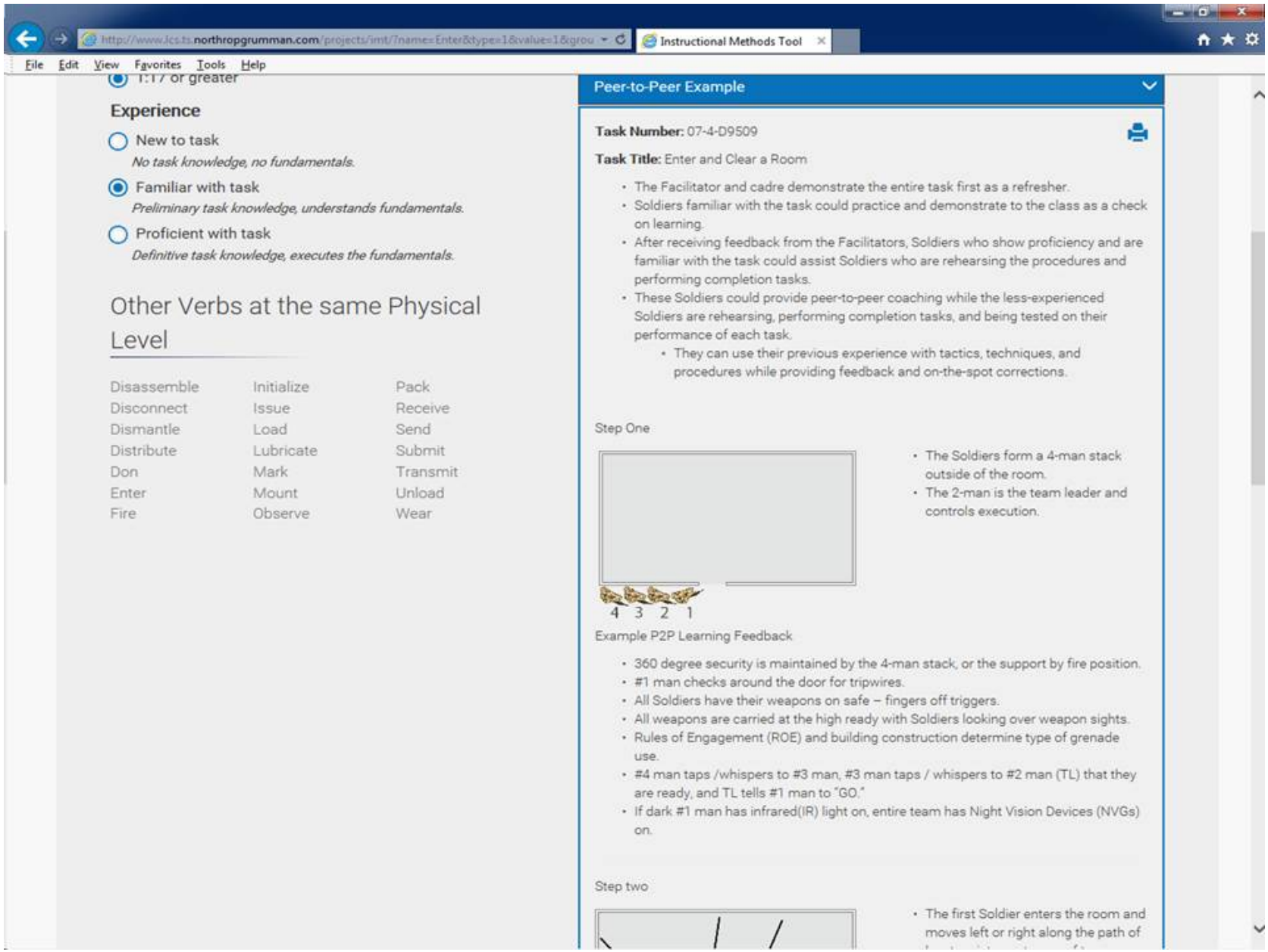
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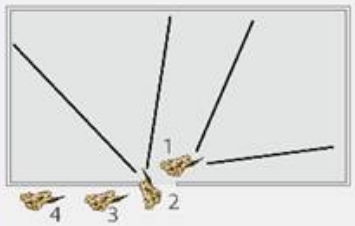
Instructional Methods Tool
File Edit View Favorites Tools Help
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at 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
Peer-to-Peer Example
Task Number: 07-4-D9509
Task Title: Enter and Clear a Room
The Facilitator and cadre demonstrate the entire task first as a refresher.
Soldiers familiar with the task could practice and demonstrate to the class as a check on learning.
After receiving feedback from the Facilitators, Soldiers who show proficiency and are familiar with the task could assist Soldiers who are rehearsing the procedures and performing completion tasks.
These Soldiers could provide peer-to-peer coaching while the less-experienced Soldiers are rehearsing, performing completion tasks, and being tested on their performance of each task.
They can use their previous experience with tactics, techniques, and procedures while providing feedback and on-the-spot corrections.
Step One
4 3 2 1
The Soldiers form a 4-man stack outside of the room.
The 2-man is the team leader and controls execution.
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 two
The first Soldier enters the room and moves left or right along the path of

- 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

- #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.

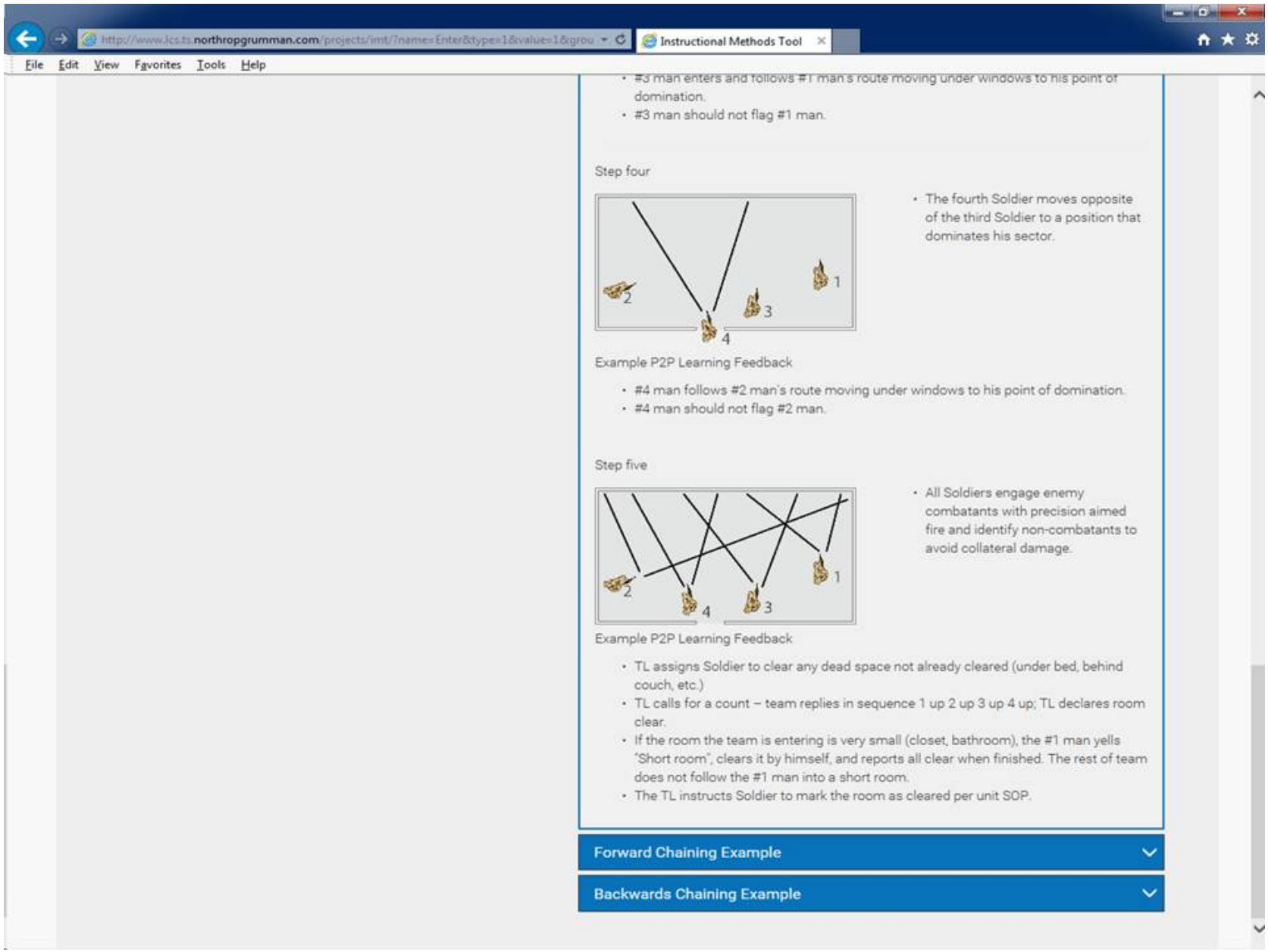
Step three

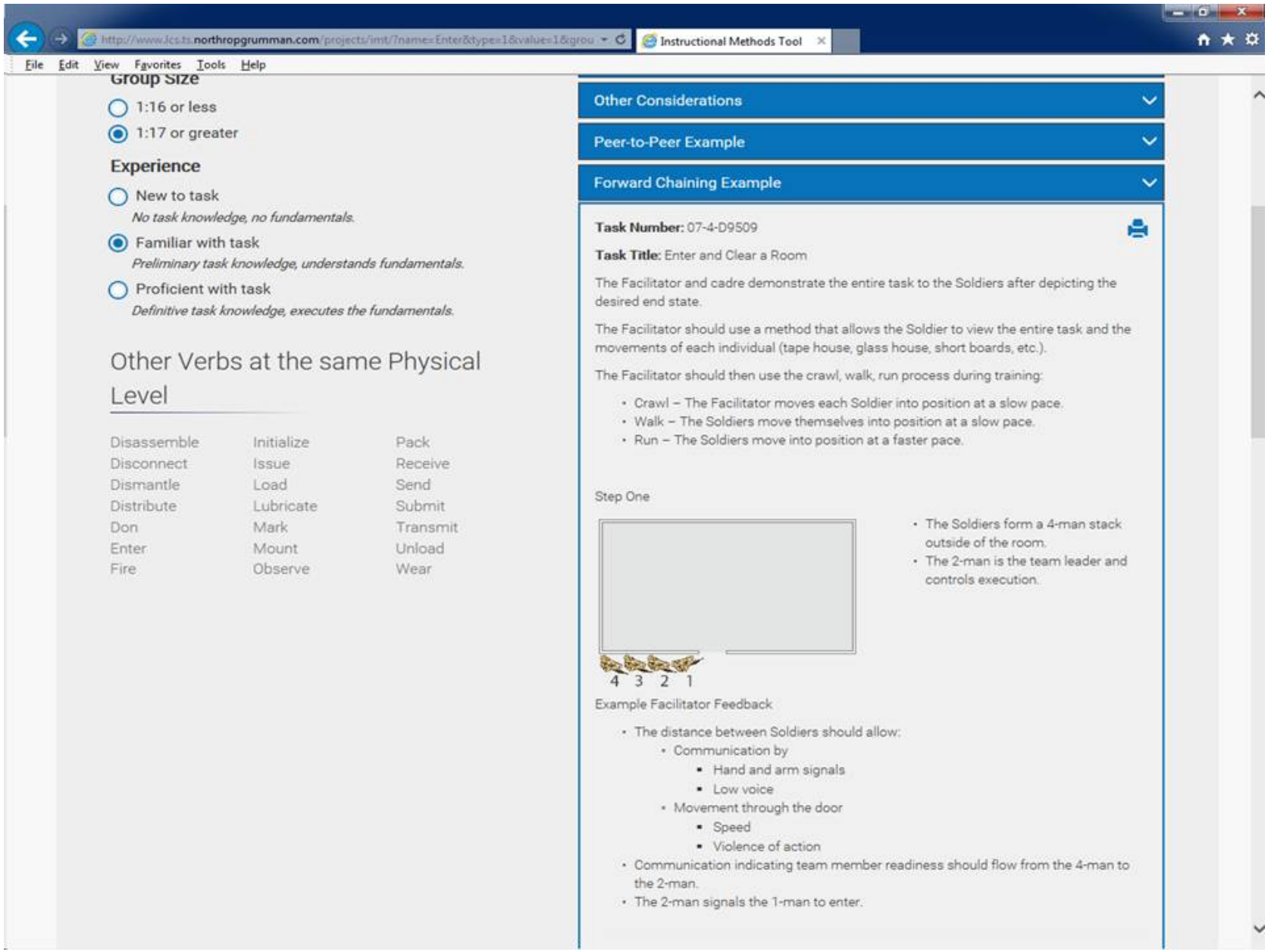
- The third Soldier moves opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.

Example P2P Learning Feedback

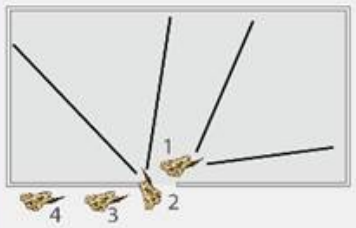
- #3 man enters and follows #1 man's route moving under windows to his point of domination.
- #3 man should not flag #1 man.

Step four


http://www.jcs.ts.northropgrumman.com/projects/imt/?name=Enter&type=1&value=1&grou
Instructional Methods Tool
File Edit View Favorites Tools Help
• #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.
1
2
3
4
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 aimed fire and identify non-combatants to avoid collateral damage.
1
2
4
3
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


Instructional Methods Tool
File Edit View Favorites Tools Help
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
Other Considerations
Peer-to-Peer Example
Forward Chaining Example
Task Number: 07-4-D9509
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.
4 3 2 1
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.

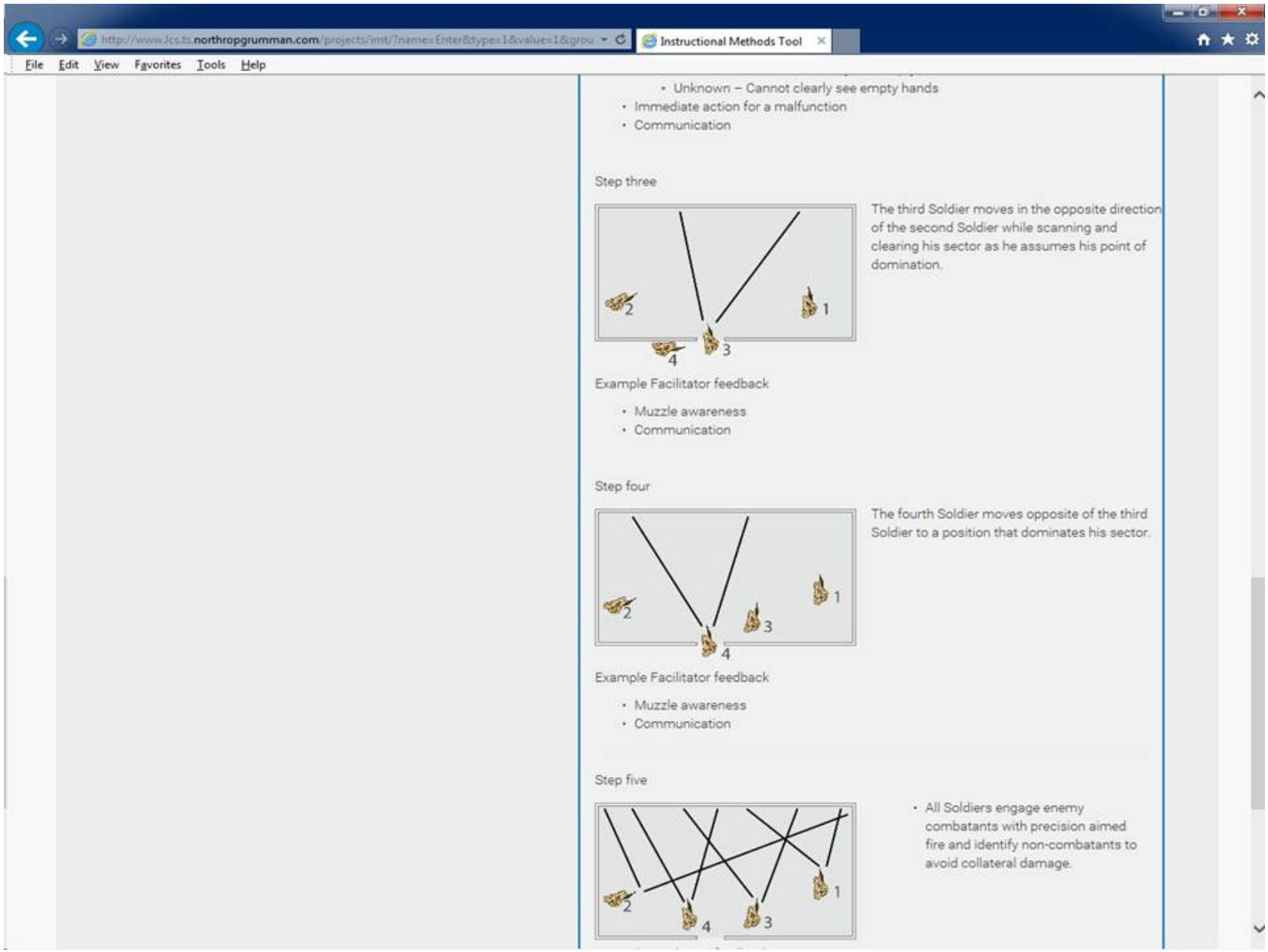
Example Facilitator feedback

- 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.

Example Facilitator feedback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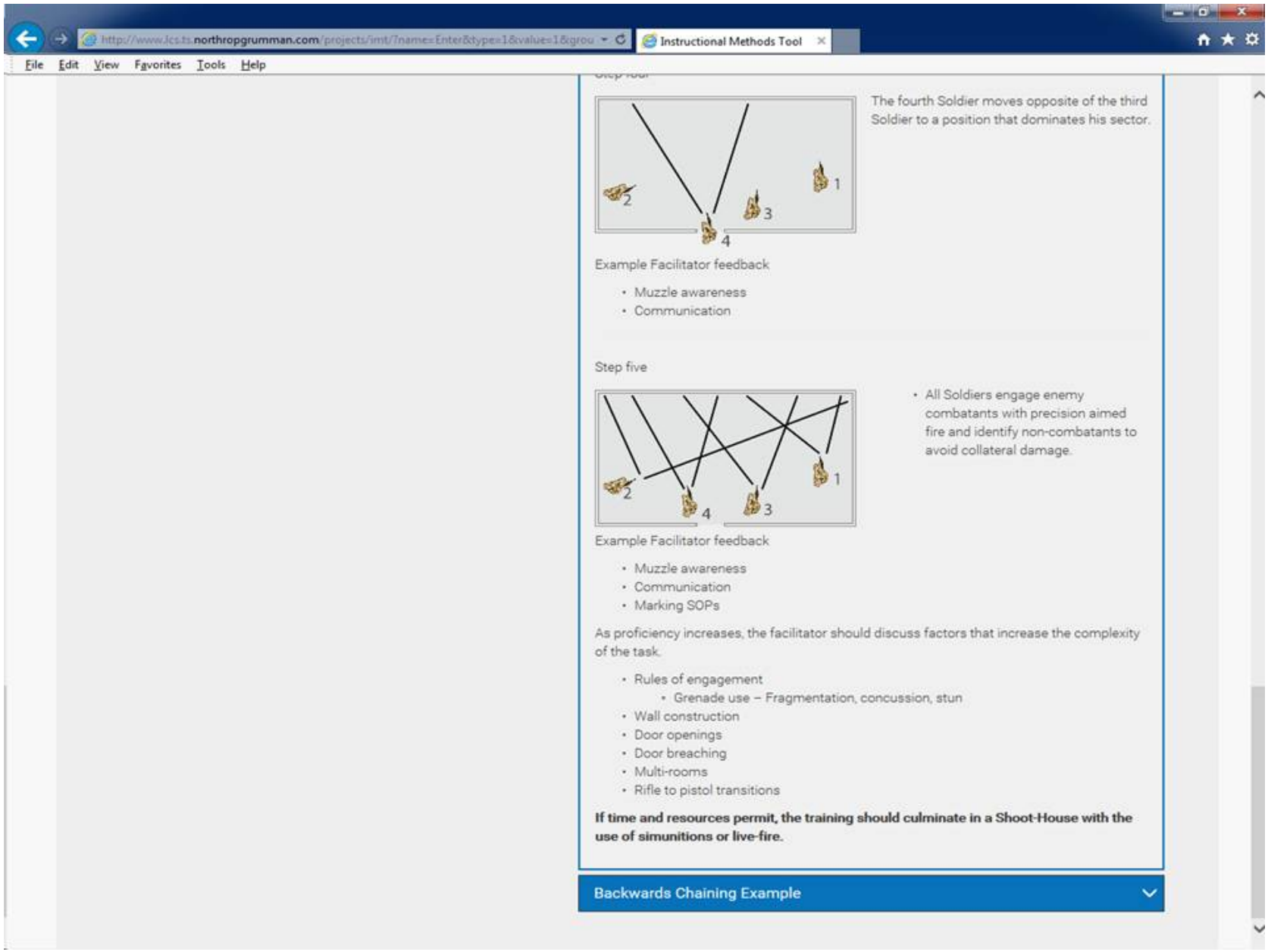
Instructional Methods Tool
File Edit View Favorites Tools Help
• Unknown – Cannot clearly see empty hands
• Immediate action for a malfunction
• Communication
Step three
The third Soldier moves in the opposite direction of the second Soldier while scanning and clearing his sector as he assumes his point of domination.
1
2
3
4
Example Facilitator feedback
• Muzzle awareness
• Communication
Step four
The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.
1
2
3
4
Example Facilitator feedback
• Muzzle awareness
• Communication
Step five
• All Soldiers engage enemy combatants with precision aimed fire and identify non-combatants to avoid collateral damage.
1
2
3
4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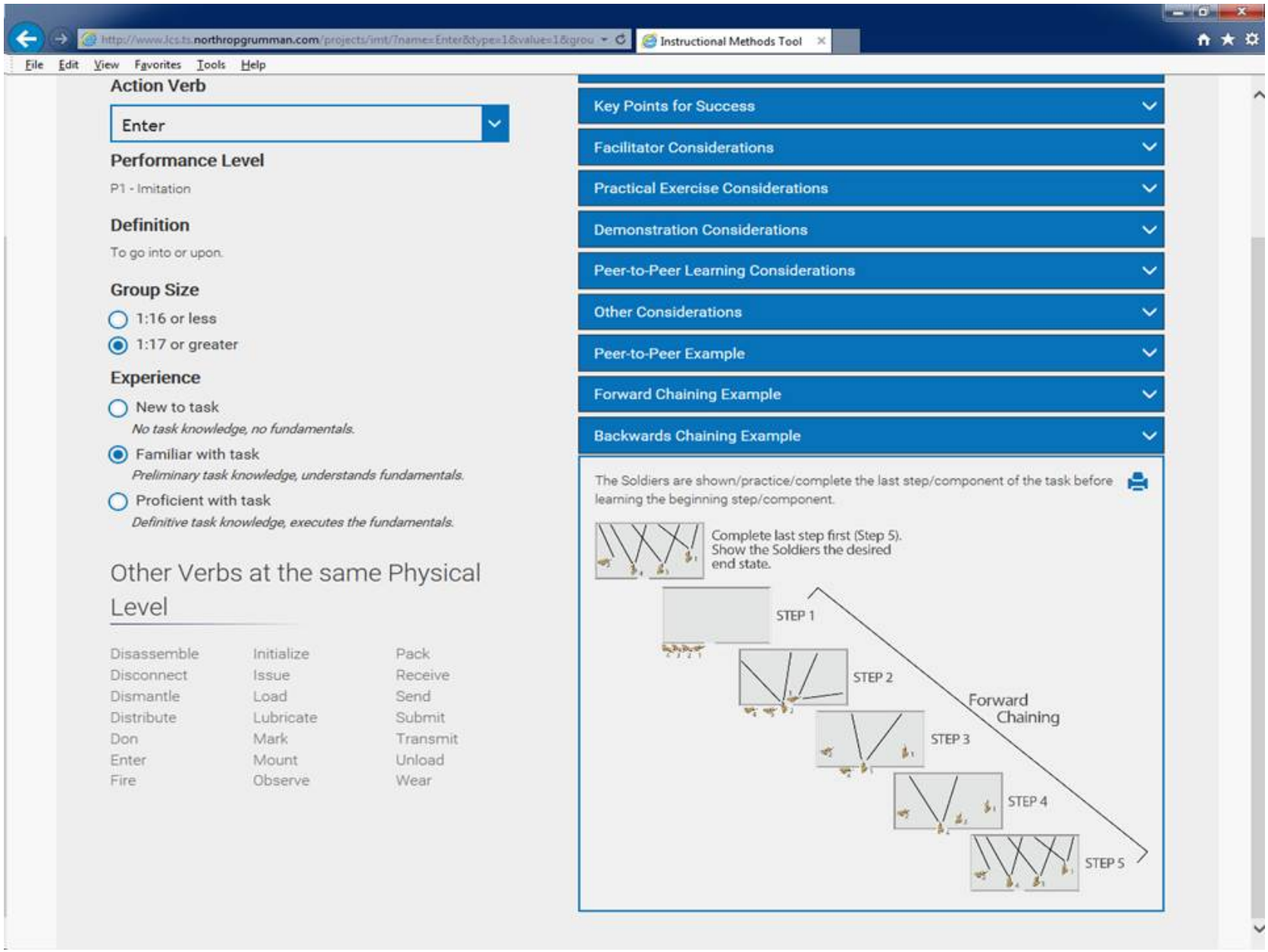
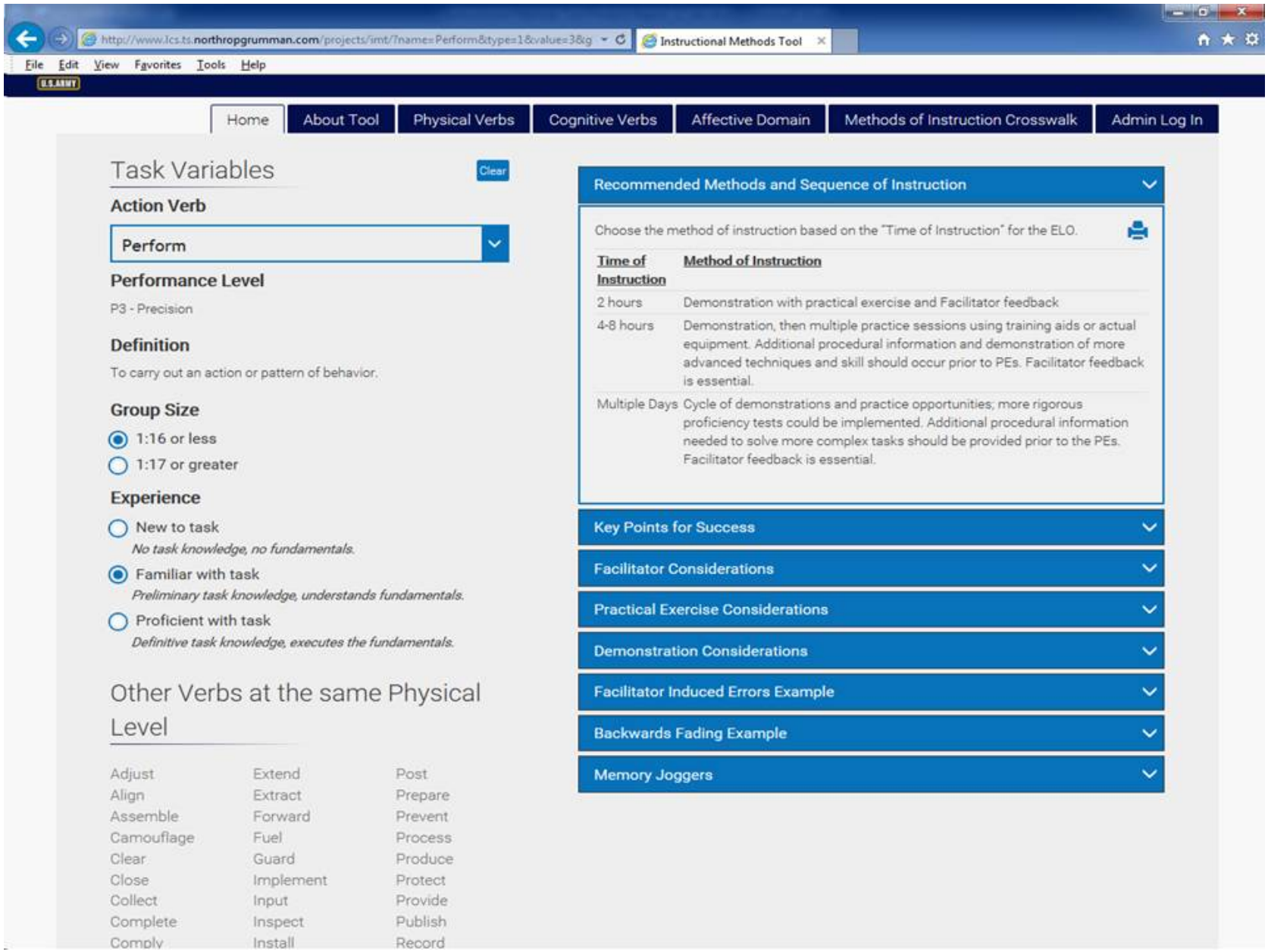
Instructional Methods Tool
File Edit View Favorites Tools Help
The fourth Soldier moves opposite of the third Soldier to a position that dominates his sector.
1
2
3
4
Example Facilitator feedback
• Muzzle awareness
• Communication
Step five
• All Soldiers engage enemy combatants with precision aimed fire and identify non-combatants to avoid collateral damage.
1
2
3
4
Example Facilitator feedback
• Muzzle awareness
• Communication
• Marking SOPs
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.
Backwards Chaining Example


Instructional Methods Tool
File Edit View Favorites Tools Help
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
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Peer-to-Peer Learning Considerations
Other Considerations
Peer-to-Peer Example
Forward Chaining Example
Backwards Chaining Example
The Soldiers are shown/practice/complete the last step/component of the task before learning the beginning step/component.
Complete last step first (Step 5). Show the Soldiers the desired end state.
STEP 1
STEP 2
STEP 3
STEP 4
STEP 5
Forward Chaining

Appendix G

Military Task Examples
P2+P3 – Manipulation and Precision / Small Group / Familiar with Task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Instructional Methods Tool
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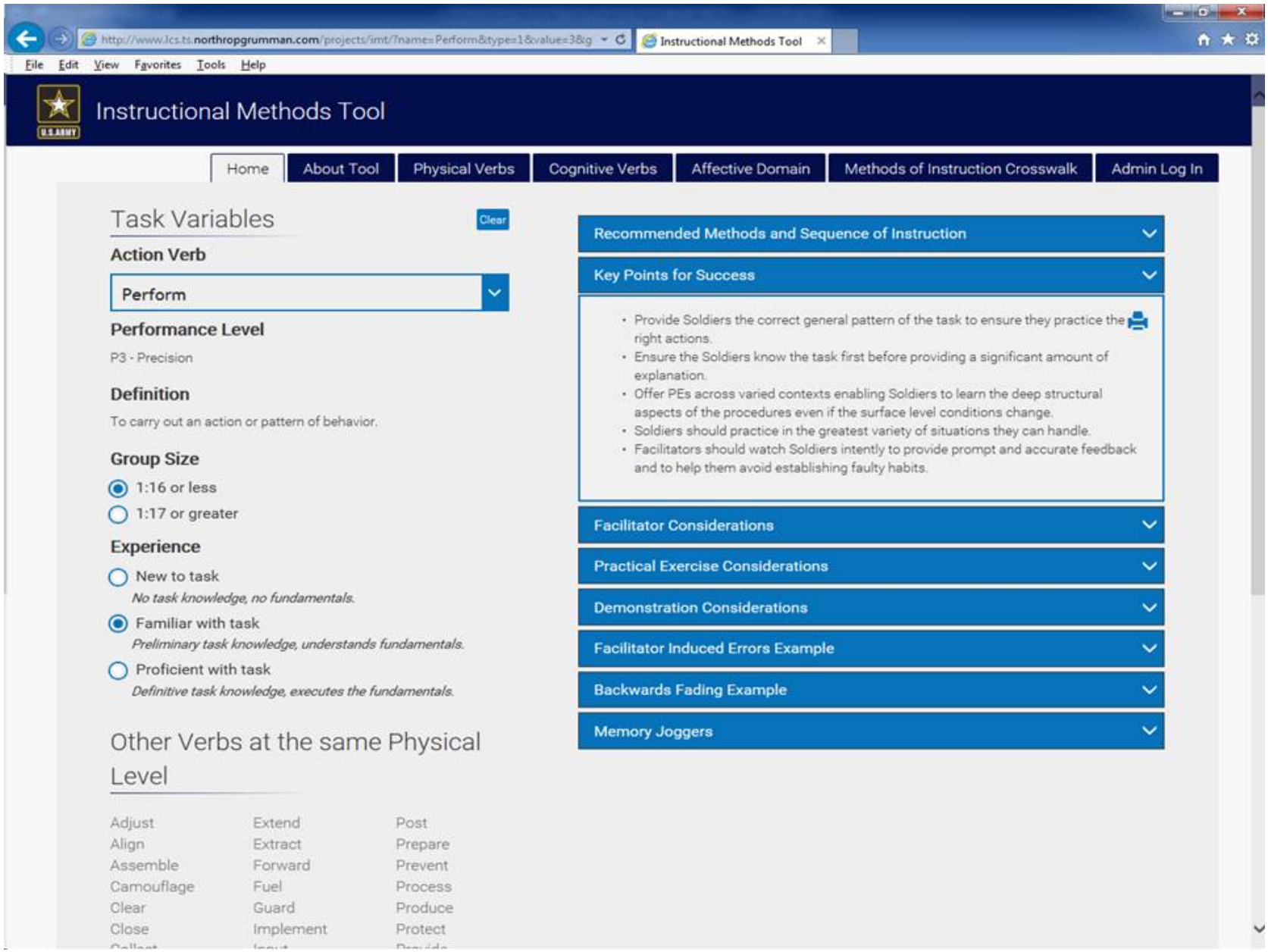
U.S.ARMY
Home
About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Perform
Performance Level
P3 - Precision
Definition
To carry out an action or pattern of behavior.
Group Size
1:16 or less
1:17 or greater
Experience
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
Extend
Extract
Forward
Fuel
Guard
Implement
Input
Inspect
Install
Post
Prepare
Prevent
Process
Produce
Protect
Provide
Publish
Record
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
2 hours
Demonstration with practical exercise and Facilitator feedback
4-8 hours
Demonstration, then multiple practice sessions using training aids or actual equipment. Additional procedural information and demonstration of more advanced techniques and skill should occur prior to PEs. Facilitator feedback is essential.
Multiple Days
Cycle of demonstrations and practice opportunities; more rigorous proficiency tests could be implemented. Additional procedural information needed to solve more complex tasks should be provided prior to the PEs. Facilitator feedback is essential.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Facilitator Induced Errors Example
Backwards Fading Example
Memory Joggers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Instructional Methods Tool
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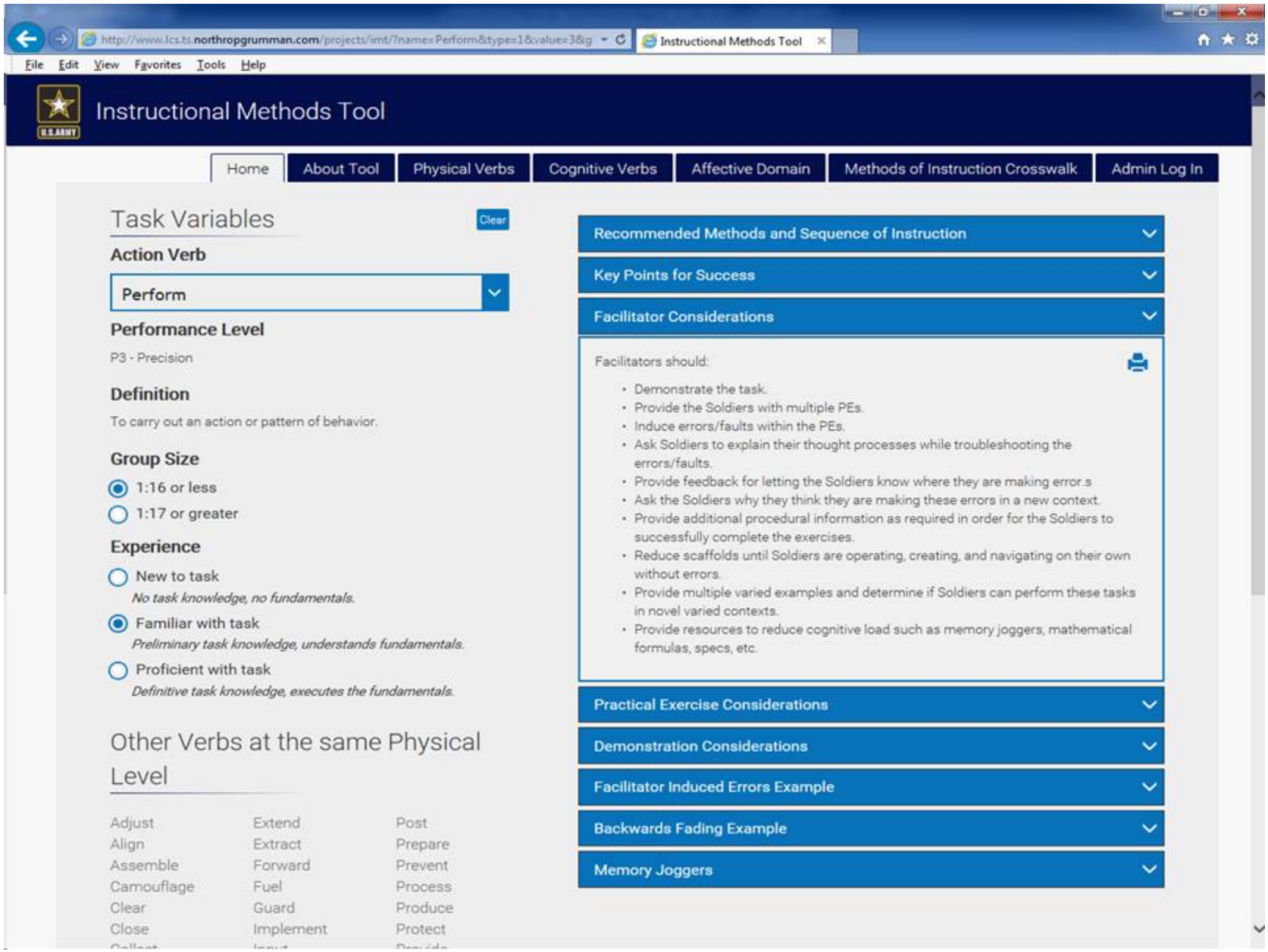
Forward
Fuel
Guard
Implement
Post
Prepare
Prevent
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Key Points for Success
• Provide Soldiers the correct general pattern of the task to ensure they practice the right actions.
• Ensure the Soldiers know the task first before providing 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 Fading Example
Memory Joggers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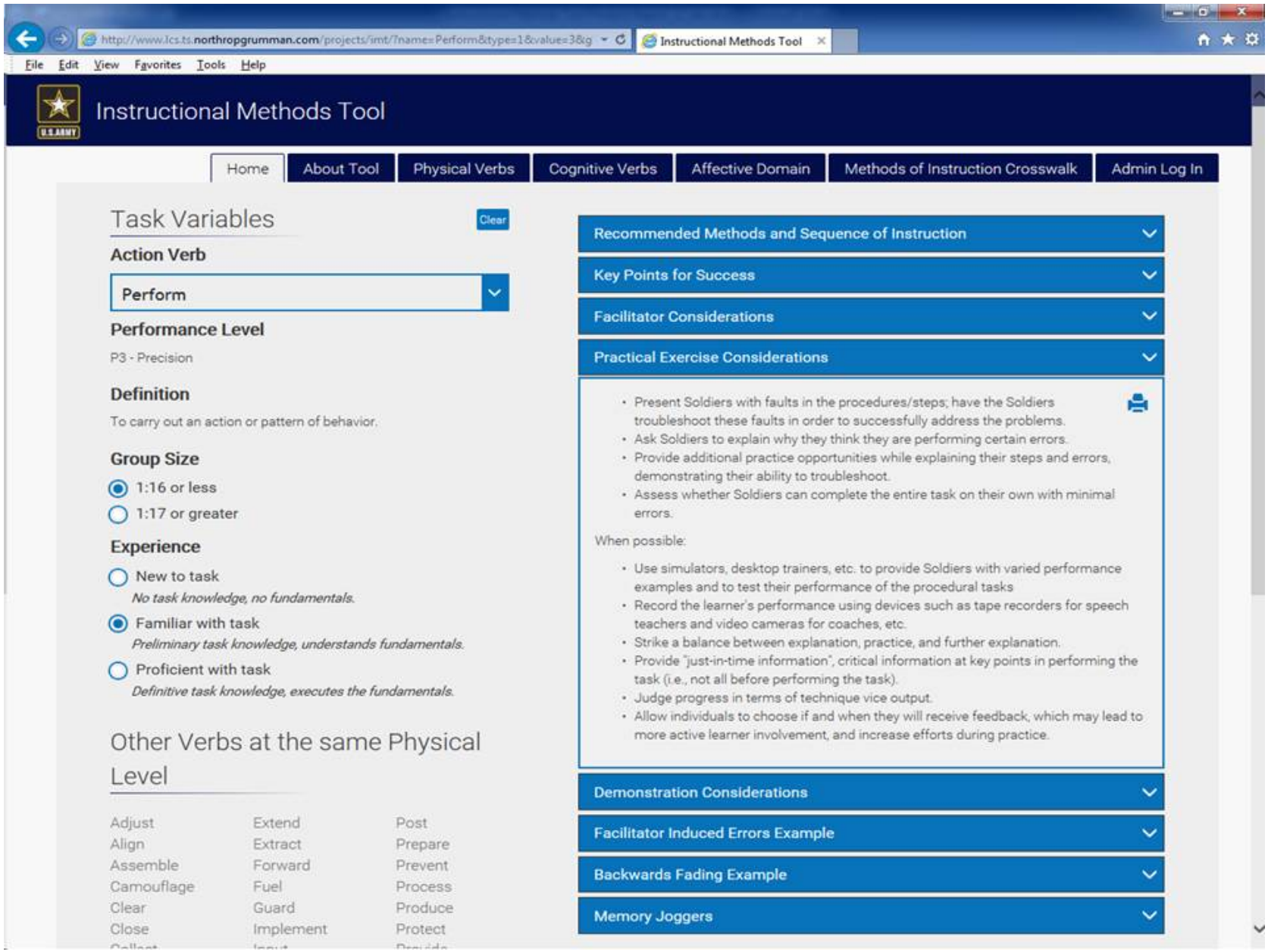
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Demonstrate the task.
Provide the Soldiers with multiple PEs.
Induce errors/faults within the PEs.
Ask Soldiers to explain their thought processes while troubleshooting the errors/faults.
Provide feedback for letting the Soldiers know where they are making error.s
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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Fuel
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Implement
Post
Prepare
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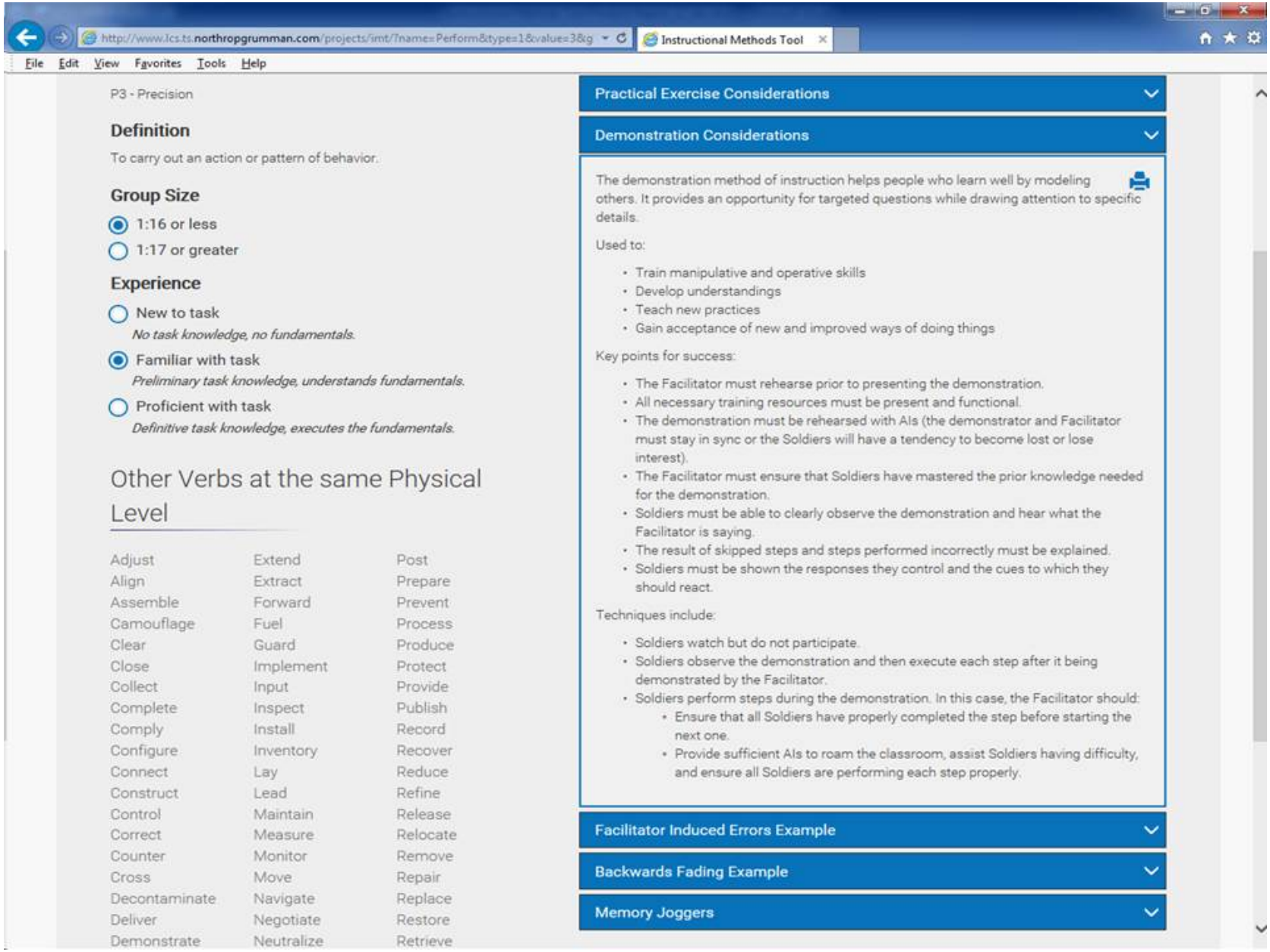
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
• Present Soldiers with faults in the procedures/steps; have the Soldiers troubleshoot these faults in order to successfully address the problems.
• 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 vice 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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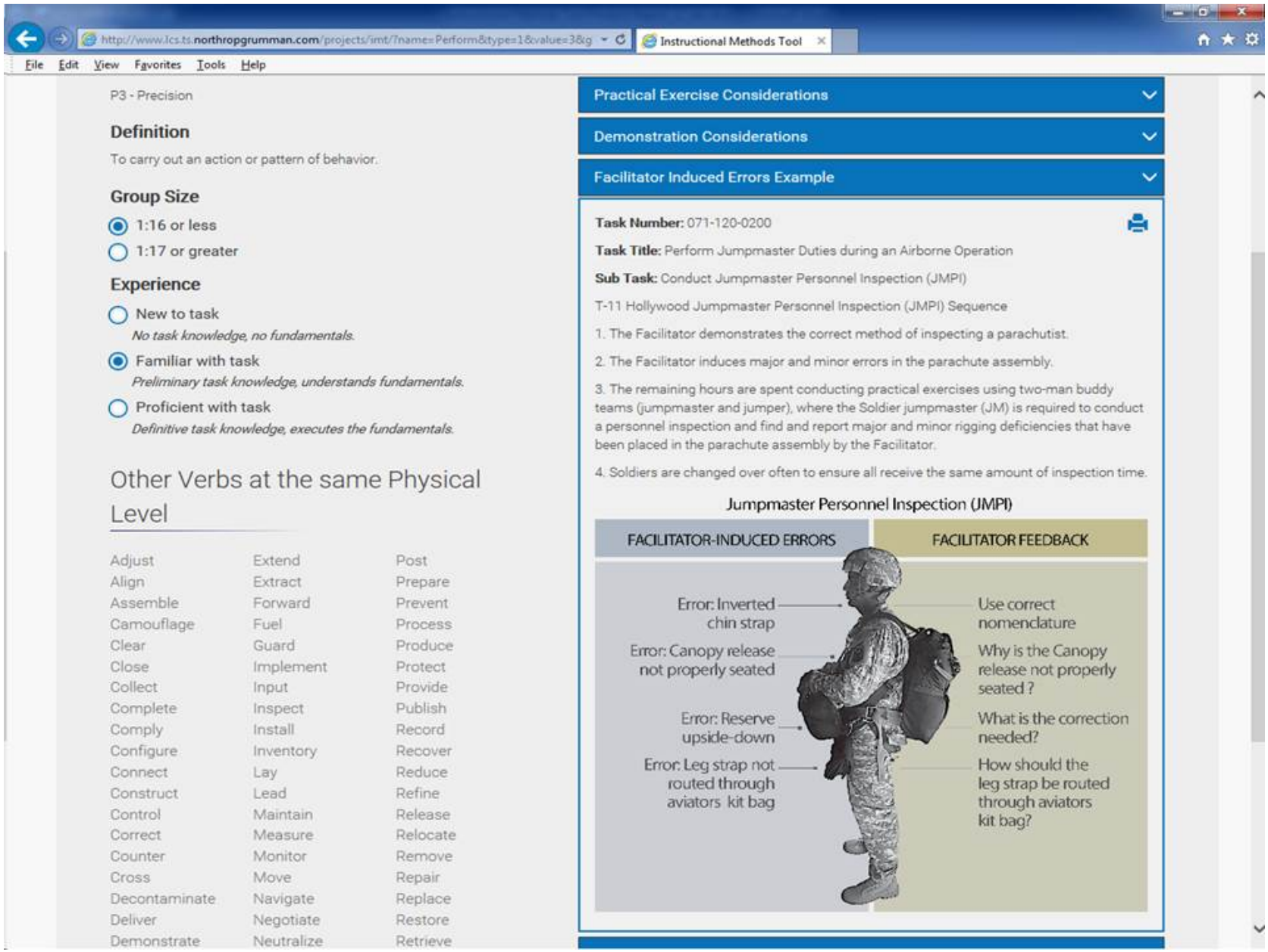
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Adjust Align Assemble Camouflage Clear Close Collect Complete Comply Configure Connect Construct Control Correct Counter Cross Decontaminate Deliver Demonstrate
Extend Extract Forward Fuel Guard Implement Input Inspect Install Inventory Lay Lead Maintain Measure Monitor Move Navigate Negotiate Neutralize
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve
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, and ensure all Soldiers are performing each step properly.
Facilitator Induced Errors Example
Backwards Fading Example
Memory Joggers


http://www.lcs.ts.northropgrumman.com/projects/imt/?name=Perform&type=1&value=3&g
Instructional Methods Tool
File Edit View Favorites Tools Help
P3 - Precision
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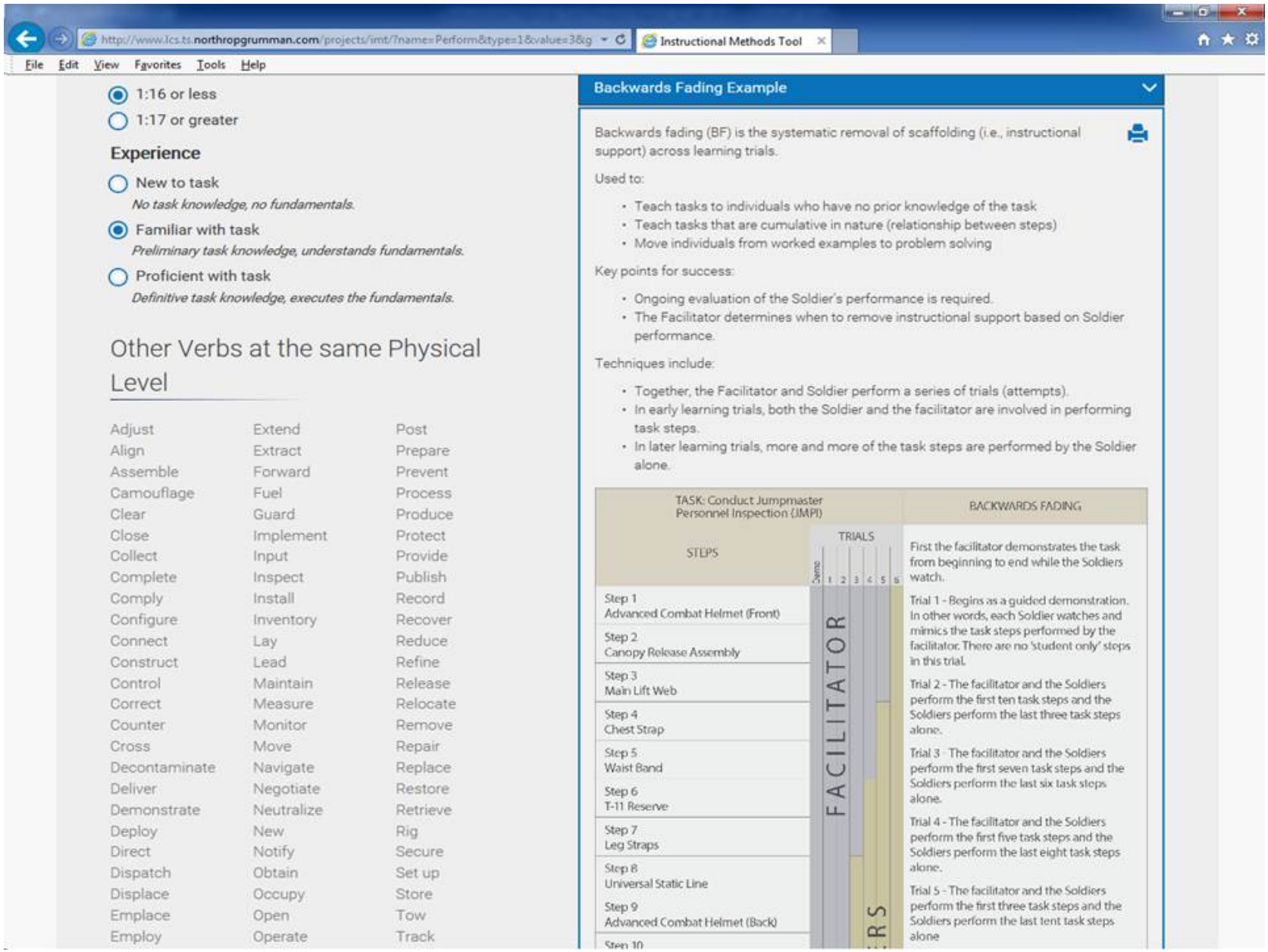
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve
Practical Exercise Considerations
Demonstration Considerations
Facilitator Induced Errors Example
Task Number: 071-120-0200
Task Title: Perform Jumpmaster Duties during an Airborne Operation
Sub Task: Conduct Jumpmaster Personnel Inspection (JMPI)
T-11 Hollywood Jumpmaster Personnel Inspection (JMPI) 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 (JMPI)
FACILITATOR-INDUCED ERRORS
FACILITATOR FEEDBACK
Error: Inverted chin strap
Error: Canopy release not properly seated
Error: Reserve upside-down
Error: Leg strap not routed through aviators kit bag
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?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Instructional Methods Tool
File Edit View Favorites Tools Help
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
Correct
Counter
Cross
Decontaminate
Deliver
Demonstrate
Deploy
Direct
Dispatch
Displace
Emplace
Employ
Extend
Extract
Forward
Fuel
Guard
Implement
Input
Inspect
Install
Inventory
Lay
Lead
Maintain
Measure
Monitor
Move
Navigate
Negotiate
Neutralize
New
Notify
Obtain
Occupy
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Operate
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Prevent
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Produce
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Record
Recover
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Rig
Secure
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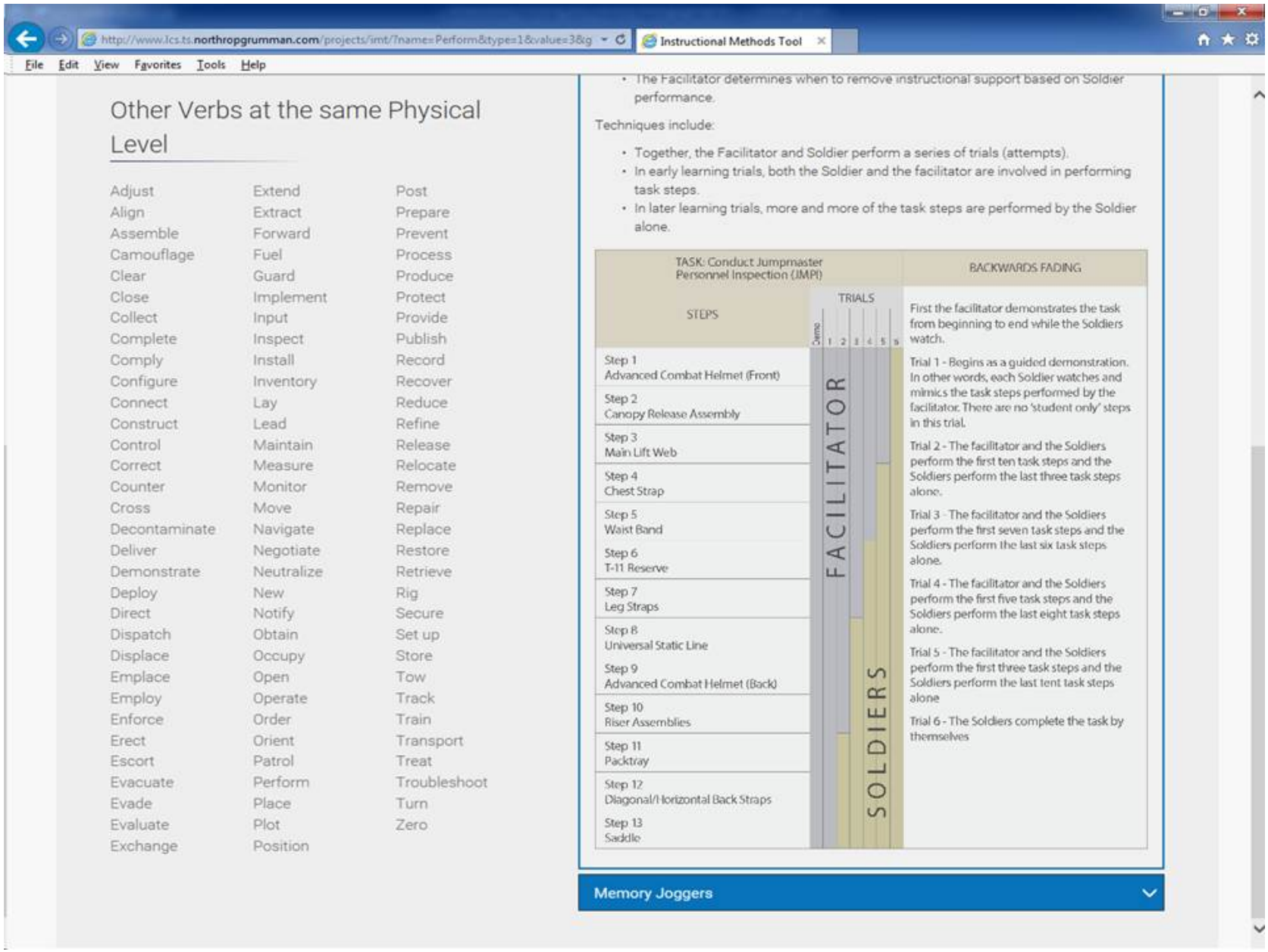
Store
Tow
Track
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.
Used to:
• Teach tasks to individuals who have no prior knowledge of the task
• Teach tasks that are cumulative in nature (relationship between 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 task steps.
• In later learning trials, more and more of the task steps are performed by the Soldier alone.
TASK: Conduct Jumpmaster Personnel Inspection (JMPI)
BACKWARDS FADING
STEPS
TRIALS
Demo
1 2 3 4 5 6
FACILITATOR
Step 1 Advanced Combat Helmet (Front)
Step 2 Canopy Release Assembly
Step 3 Main Lift Web
Step 4 Chest Strap
Step 5 Waist Band
Step 6 T-11 Reserve
Step 7 Leg Straps
Step 8 Universal Static Line
Step 9 Advanced Combat Helmet (Back)
Step 10
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 '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 tent task steps alone


http://www.lcs.ts.northropgrumman.com/projects/imt/?name=Perform&type=1&value=3&g
Instructional Methods Tool
File Edit View Favorites Tools Help
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 Emplace Employ Enforce Erect Escort Evacuate Evade Evaluate Exchange
Extend Extract Forward Fuel Guard Implement Input Inspect Install Inventory Lay Lead Maintain Measure Monitor Move Navigate Negotiate Neutralize New Notify Obtain Occupy Open Operate Order Orient Patrol Perform Place Plot Position
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve Rig Secure Set up Store Tow Track Train Transport Treat Troubleshoot Turn Zero
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 Personnel Inspection (JMPI)
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
FACILITATOR
SOLDIERS
Step 1 Advanced Combat Helmet (Front)
Step 2 Canopy Release Assembly
Step 3 Main Lift Web
Step 4 Chest Strap
Step 5 Waist Band
Step 6 T-11 Reserve
Step 7 Leg Straps
Step 8 Universal Static Line
Step 9 Advanced Combat Helmet (Back)
Step 10 Riser Assemblies
Step 11 Packtray
Step 12 Diagonal/Horizontal Back Straps
Step 13 Saddle
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 '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.
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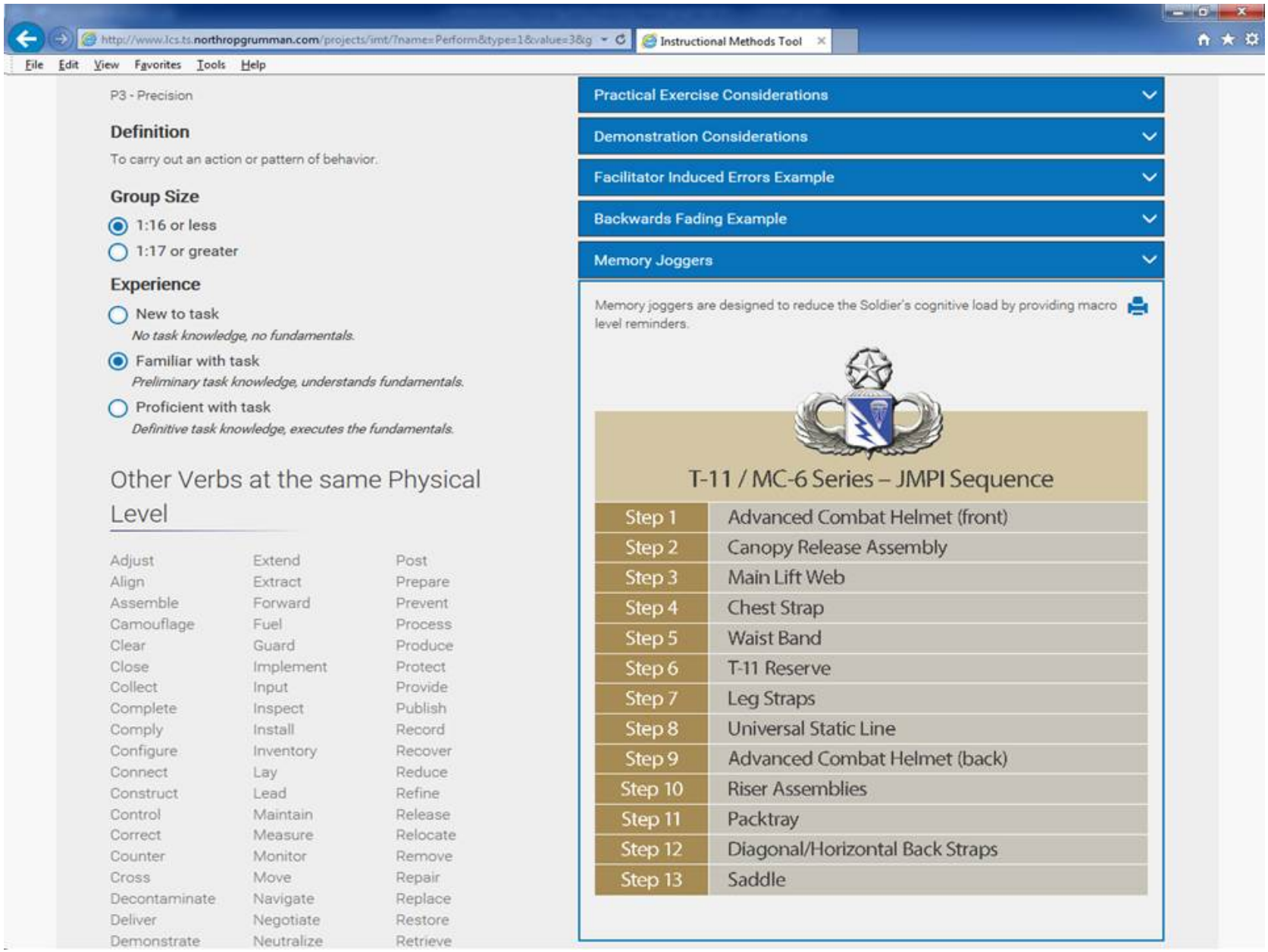
Trial 4 - The facilitator and the Soldiers perform the first five task steps and the Soldiers perform the last eight task steps alone.
Trial 5 - The facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last tent task steps alone
Trial 6 - The Soldiers complete the task by themselves
Memory Joggers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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.
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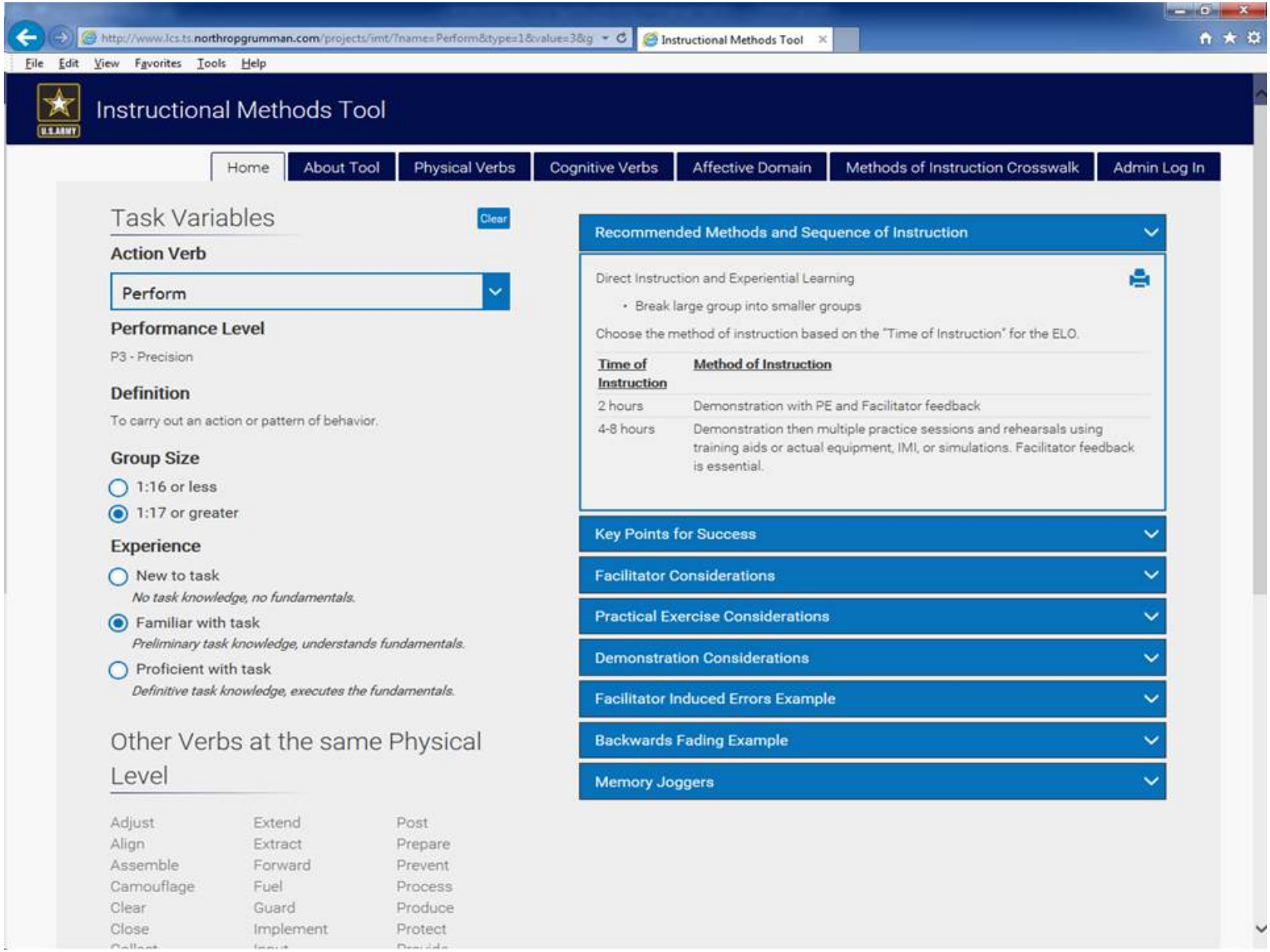
Replace
Restore
Retrieve
Practical Exercise Considerations
Demonstration Considerations
Facilitator Induced Errors Example
Backwards Fading Example
Memory Joggers
Memory joggers are designed to reduce the Soldier's cognitive load by providing macro level reminders.
T-11 / MC-6 Series – JMPI Sequence
Step 1 Advanced Combat Helmet (front)
Step 2 Canopy Release Assembly
Step 3 Main Lift Web
Step 4 Chest Strap
Step 5 Waist Band
Step 6 T-11 Reserve
Step 7 Leg Straps
Step 8 Universal Static Line
Step 9 Advanced Combat Helmet (back)
Step 10 Riser Assemblies
Step 11 Packtray
Step 12 Diagonal/Horizontal Back Straps
Step 13 Saddle

Appendix H

Military Task Examples
P2+P3 – Manipulation and Precision / Large Group / Familiar with Task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Instructional Methods Tool
File Edit View Favorites Tools Help
Instructional Methods Tool
Home
About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
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Action Verb
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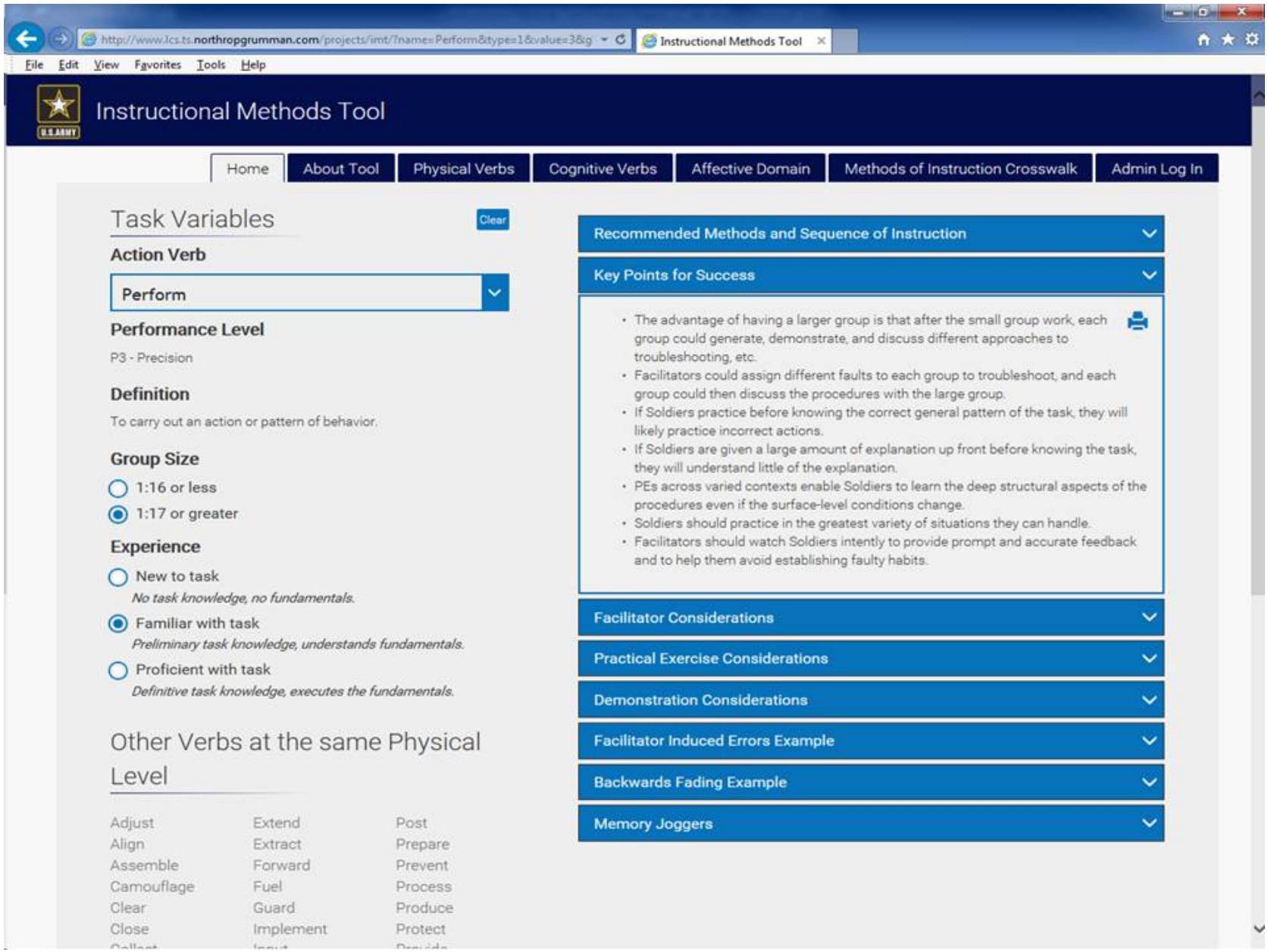
Protect
Recommended Methods and Sequence of Instruction
Direct Instruction and Experiential Learning
Break large group into smaller groups
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
2 hours
Demonstration with PE and Facilitator 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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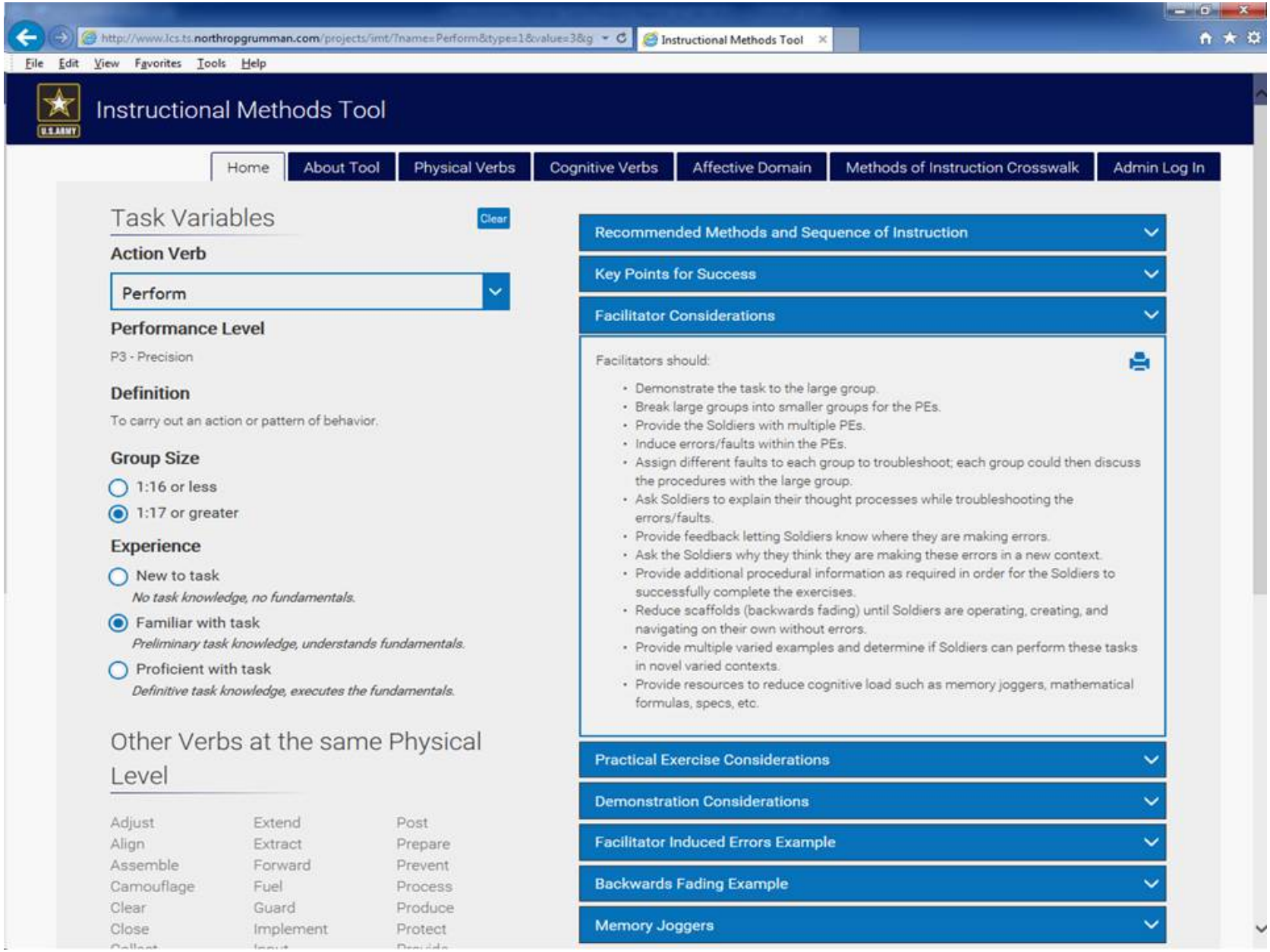
Recommended Methods and Sequence of Instruction
Key Points for Success
The advantage of having a larger group is that after the small group work, each group could generate, demonstrate, and discuss different approaches to troubleshooting, etc.
Facilitators could assign different faults to each group to troubleshoot, and each group could then discuss the procedures with the large group.
If Soldiers practice before knowing the correct general pattern of the task, they will likely practice incorrect actions.
If Soldiers are given a large amount of explanation up front before knowing the task, they will understand little of the explanation.
PEs across varied contexts enable 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 Fading Example
Memory Joggers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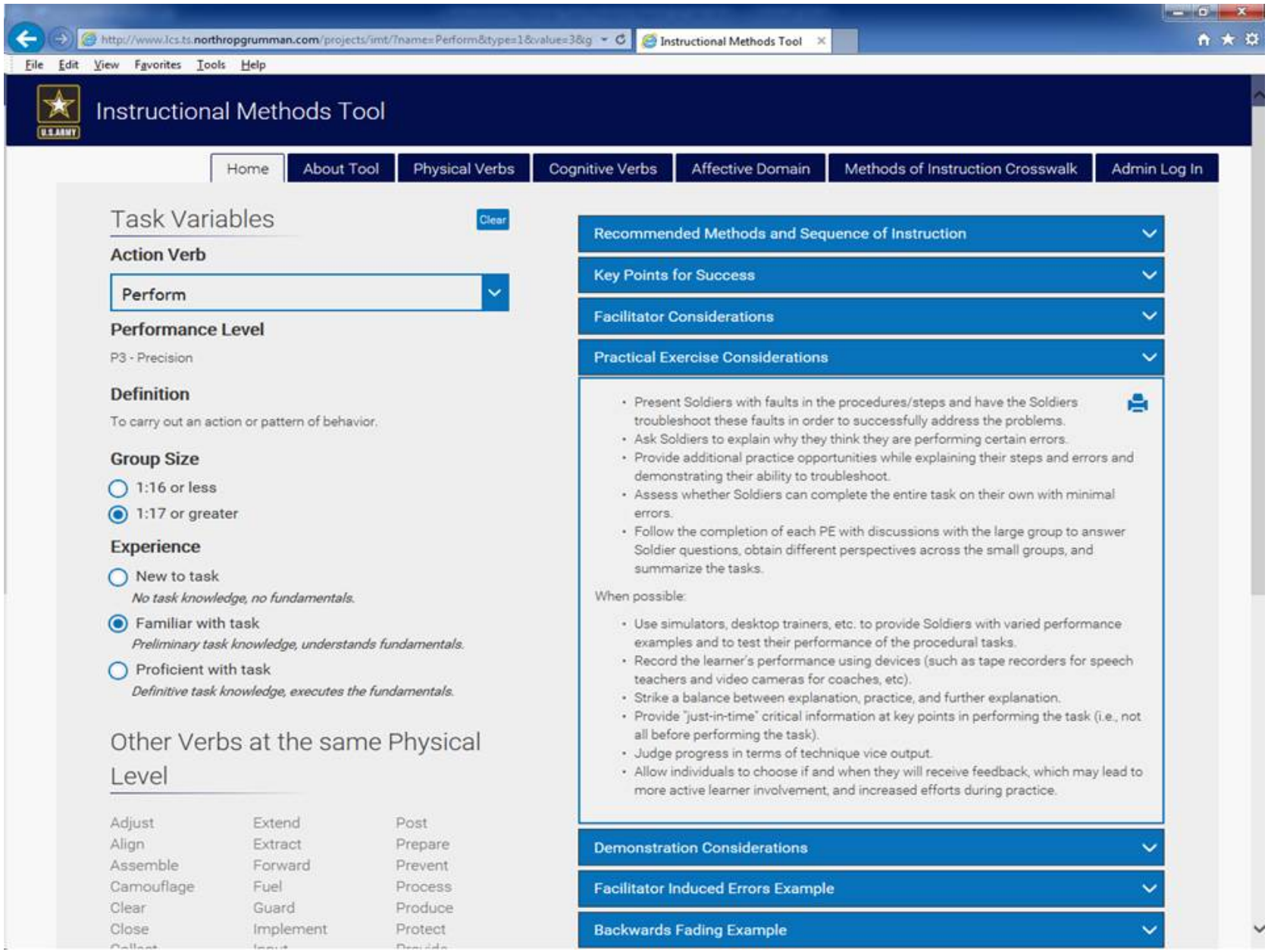
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Demonstrate the task to the large group.
Break large groups into smaller groups for the PEs.
Provide the Soldiers with multiple PEs.
Induce errors/faults within the PEs.
Assign different faults to each group to troubleshoot; each group could then discuss the procedures with the large group.
Ask Soldiers to explain their thought processes while troubleshooting the errors/faults.
Provide feedback letting 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 (backwards fading) 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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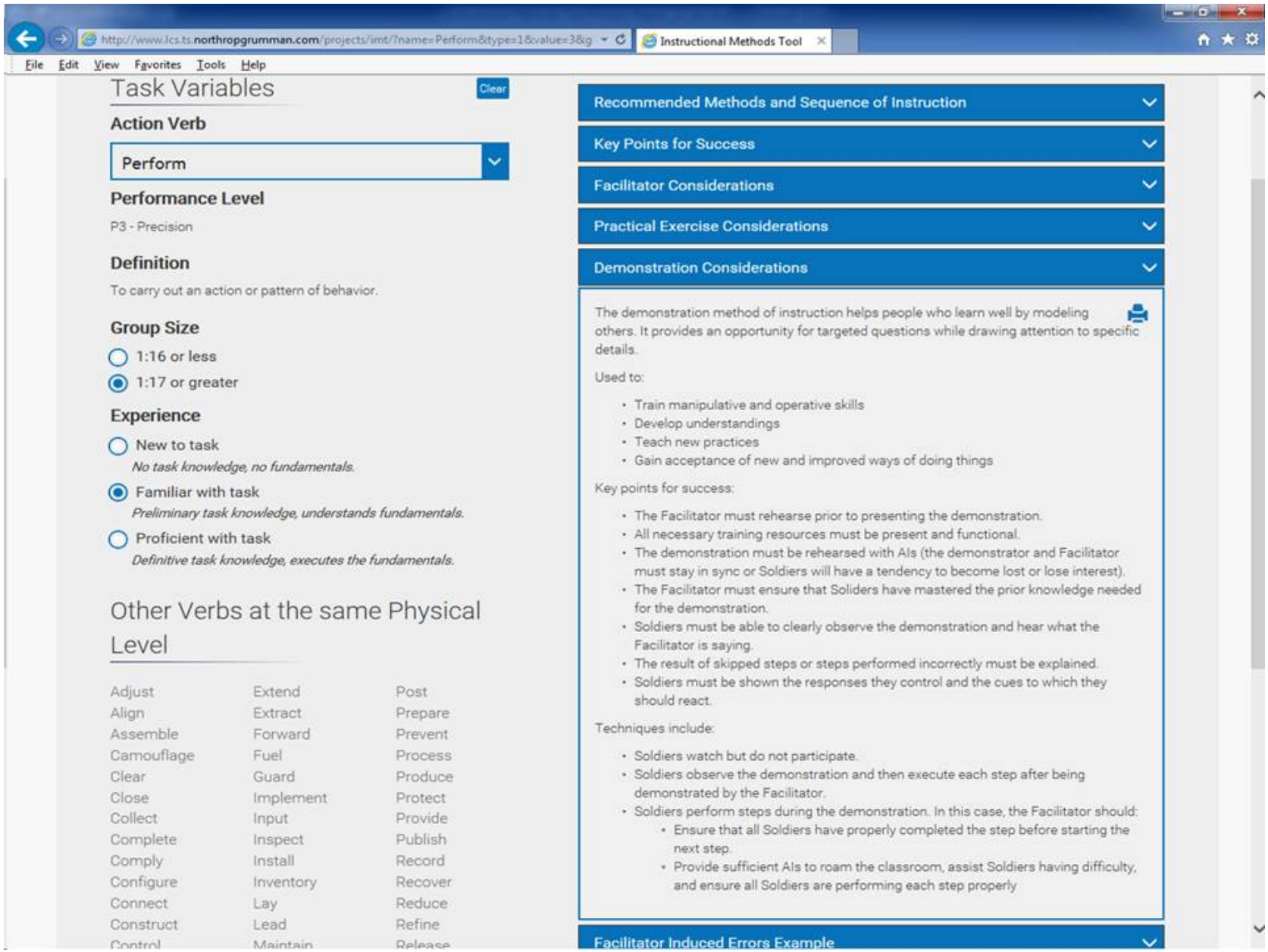
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
• Present Soldiers with faults in the procedures/steps and have the Soldiers troubleshoot these faults in order to successfully address the problems.
• Ask Soldiers to explain 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 vice output.
• Allow individuals to choose if 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 Fading Example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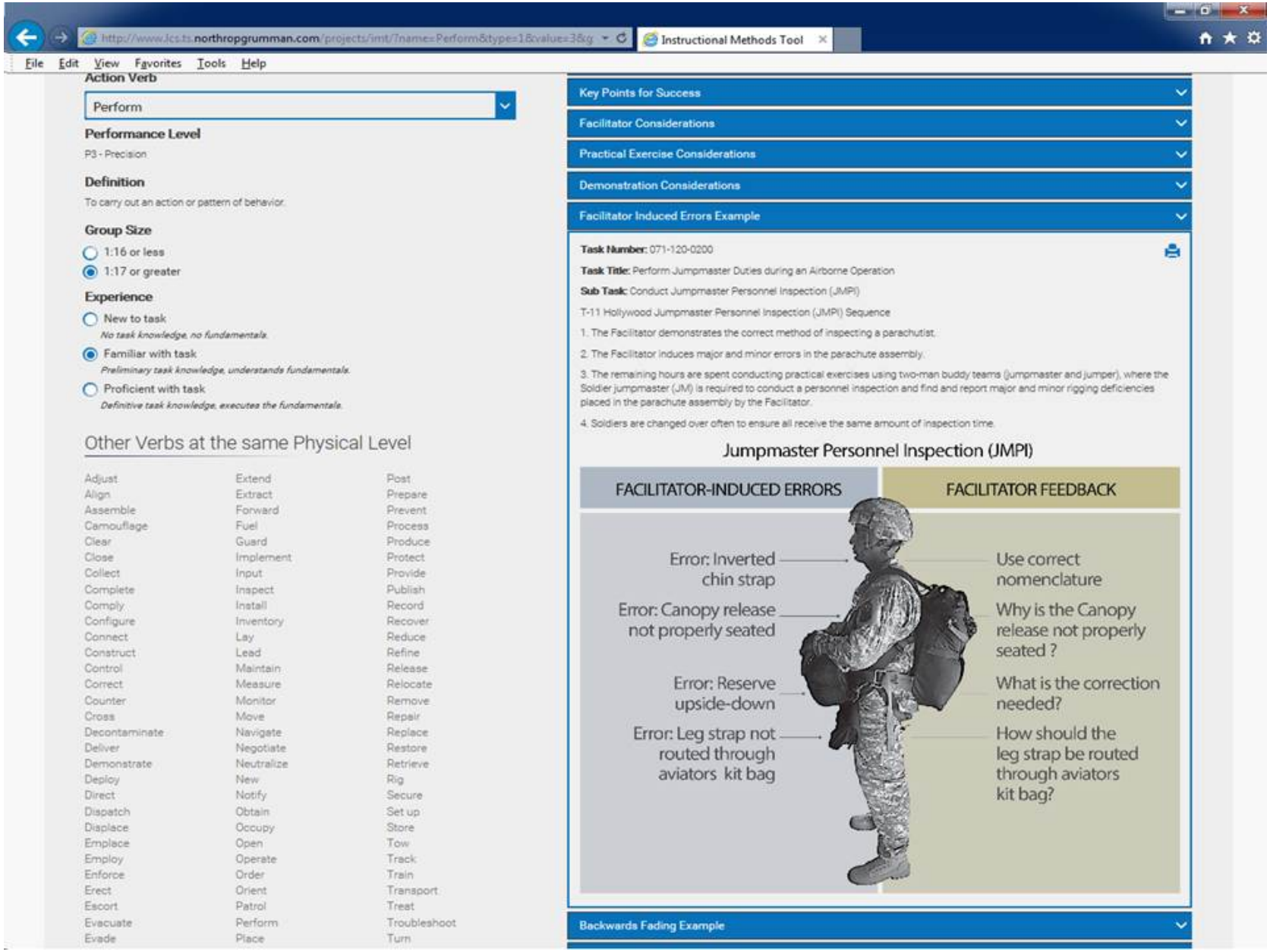
Recover
Reduce
Refine
Release
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity 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 Soliders 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 Errors Example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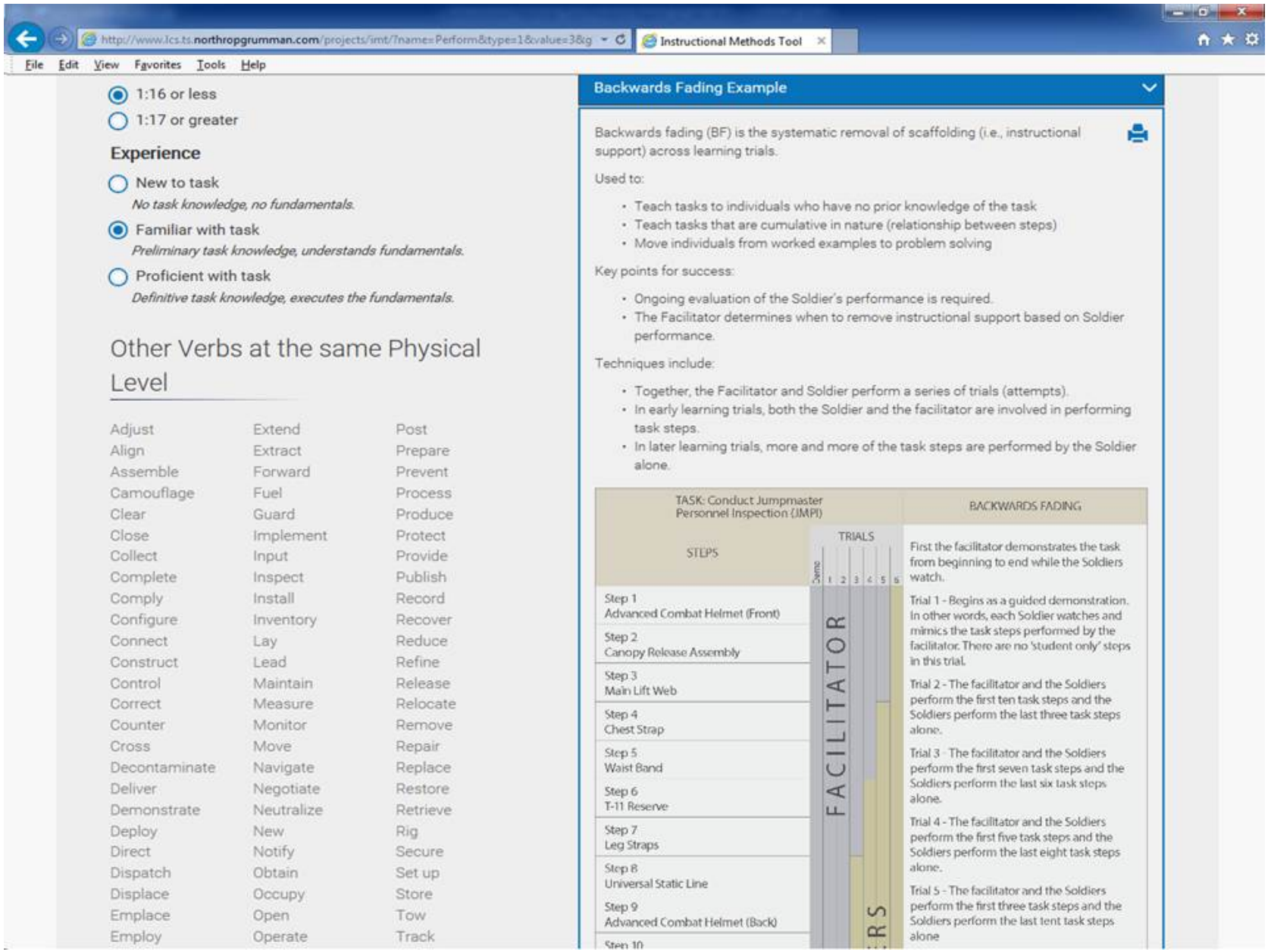
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
Facilitator Induced Errors Example
Task Number: 071-120-0200
Task Title: Perform Jumpmaster Duties during an Airborne Operation
Sub Task: Conduct Jumpmaster Personnel Inspection (JMPI)
T-11 Hollywood Jumpmaster Personnel Inspection (JMPI) 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 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
FACILITATOR FEEDBACK
Error: Inverted chin strap
Error: Canopy release not properly seated
Error: Reserve upside-down
Error: Leg strap not routed through aviators kit bag
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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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:
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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.
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BACKWARDS FADING
STEPS
TRIALS
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1
2
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Step 1
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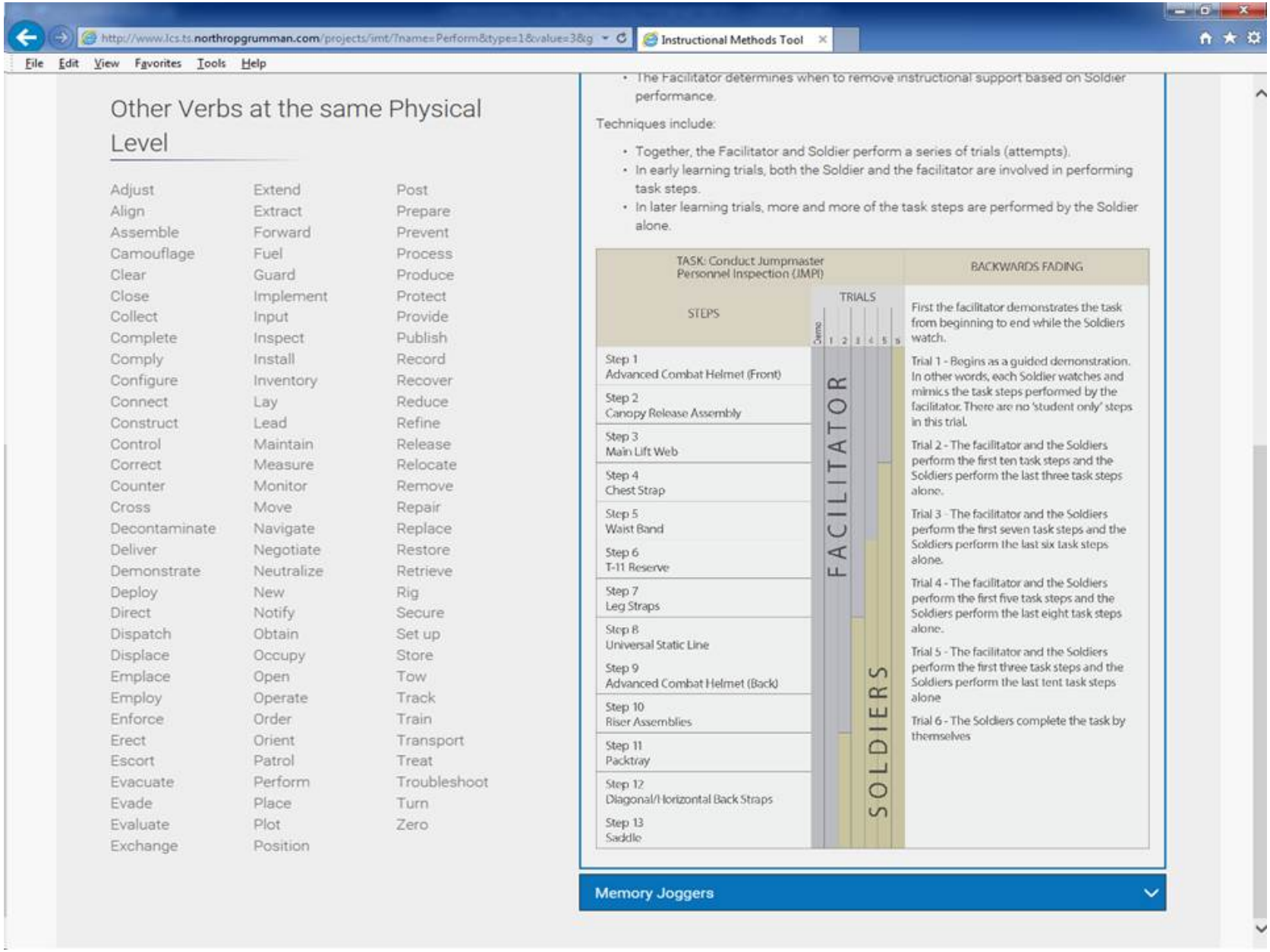
Trial 4 - The facilitator and the Soldiers perform the first five task steps and the Soldiers perform the last eight task steps alone.
Trial 5 - The facilitator and the Soldiers perform the first three task steps and the Soldiers perform the last tent task steps alone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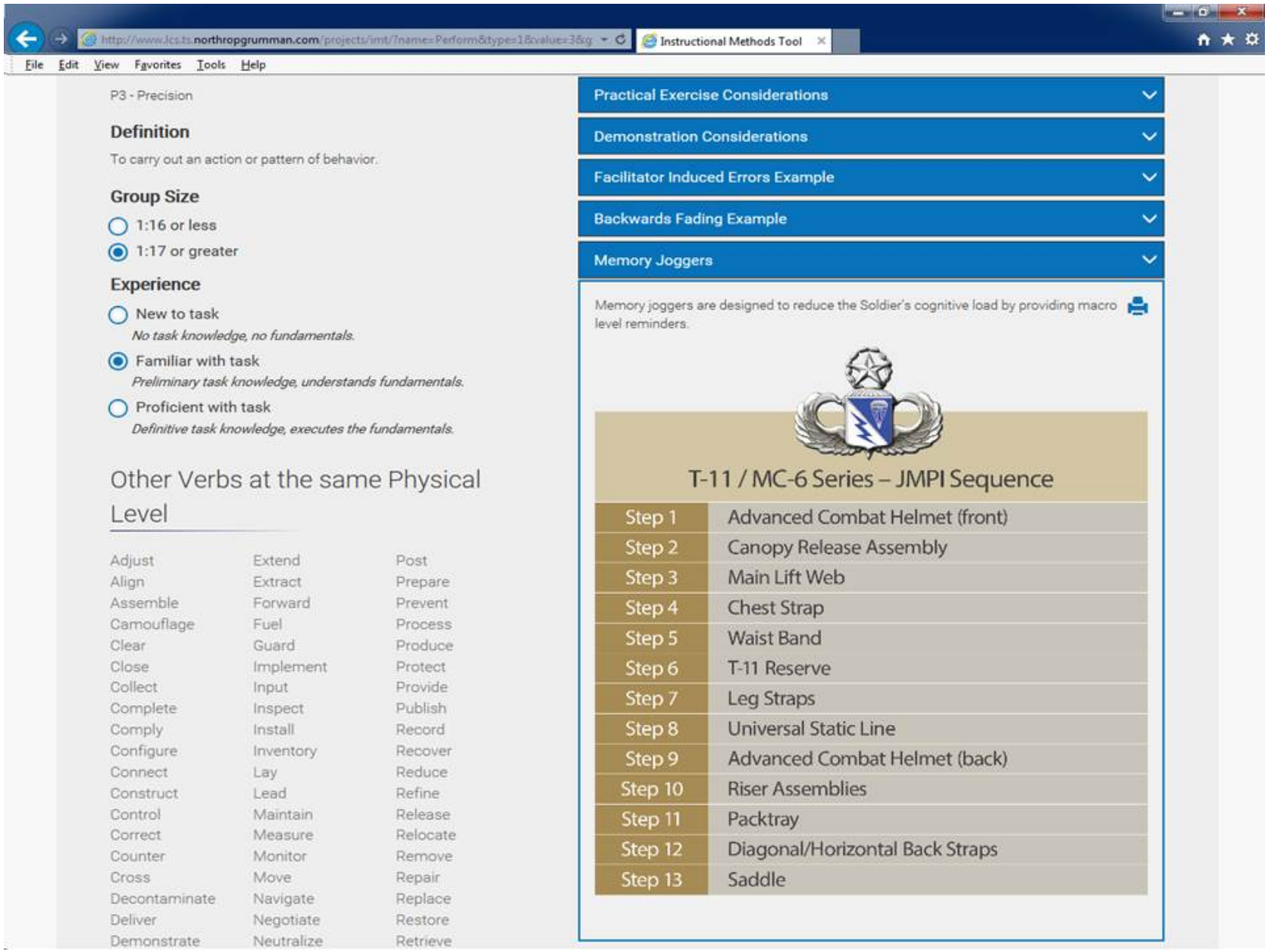
Instructional Methods Tool
File Edit View Favorites Tools Help
Other Verbs at the same Physical Level
Adjust Align Assemble Camouflage Clear Close Collect Complete Comply Configure Connect Construct Control Correct Counter Cross Decontaminate Deliver Demonstrate Deploy Direct Dispatch Displace Emplace Employ Enforce Erect Escort Evacuate Evade Evaluate Exchange
Extend Extract Forward Fuel Guard Implement Input Inspect Install Inventory Lay Lead Maintain Measure Monitor Move Navigate Negotiate Neutralize New Notify Obtain Occupy Open Operate Order Orient Patrol Perform Place Plot Position
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve Rig Secure Set up Store Tow Track Train Transport Treat Troubleshoot Turn Zero
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 Personnel Inspection (JMPI)
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
Step 1 Advanced Combat Helmet (Front)
Step 2 Canopy Release Assembly
Step 3 Main Lift Web
Step 4 Chest Strap
Step 5 Waist Band
Step 6 T-11 Reserve
Step 7 Leg Straps
Step 8 Universal Static Line
Step 9 Advanced Combat Helmet (Back)
Step 10 Riser Assemblies
Step 11 Packtray
Step 12 Diagonal/Horizontal Back Straps
Step 13 Saddle
FACILITATOR
SOLDIERS
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 '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 tent task steps alone
Trial 6 - The Soldiers complete the task by themselves
Memory Joggers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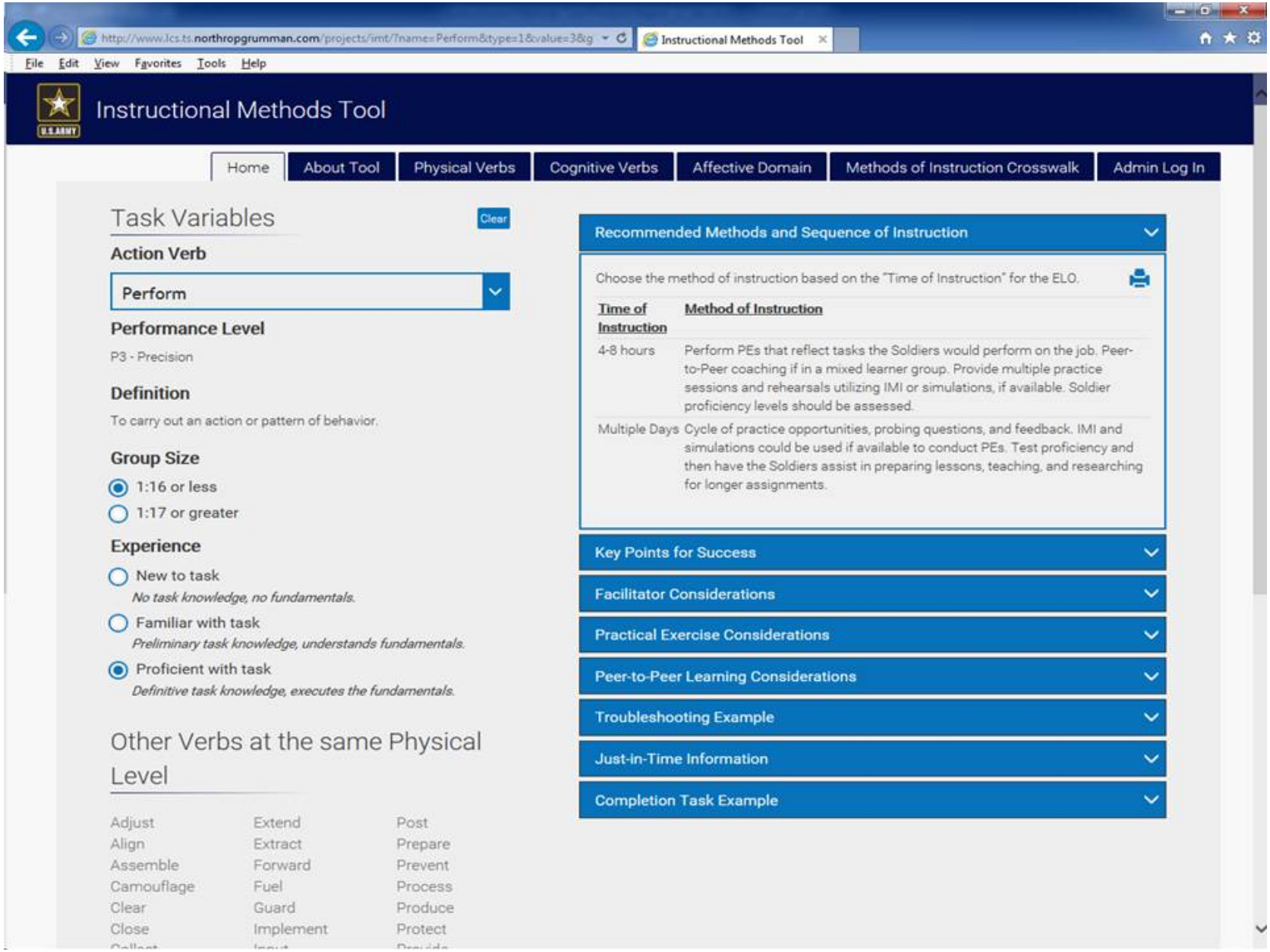
Instructional Methods Tool
File Edit View Favorites Tools Help
P3 - Precision
Definition
To carry out an action or pattern of behavior.
Group Size
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
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
Correct
Counter
Cross
Decontaminate
Deliver
Demonstrate
Extend
Extract
Forward
Fuel
Guard
Implement
Input
Inspect
Install
Inventory
Lay
Lead
Maintain
Measure
Monitor
Move
Navigate
Negotiate
Neutralize
Post
Prepare
Prevent
Process
Produce
Protect
Provide
Publish
Record
Recover
Reduce
Refine
Release
Relocate
Remove
Repair
Replace
Restore
Retrieve
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 – JMPI Sequence
Step 1 Advanced Combat Helmet (front)
Step 2 Canopy Release Assembly
Step 3 Main Lift Web
Step 4 Chest Strap
Step 5 Waist Band
Step 6 T-11 Reserve
Step 7 Leg Straps
Step 8 Universal Static Line
Step 9 Advanced Combat Helmet (back)
Step 10 Riser Assemblies
Step 11 Packtray
Step 12 Diagonal/Horizontal Back Straps
Step 13 Saddle

Appendix I

Military Task Examples
P2+3 – Manipulation and Precision / Small Group / Proficient with Task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Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Perform
Performance Level
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Definition
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Group Size
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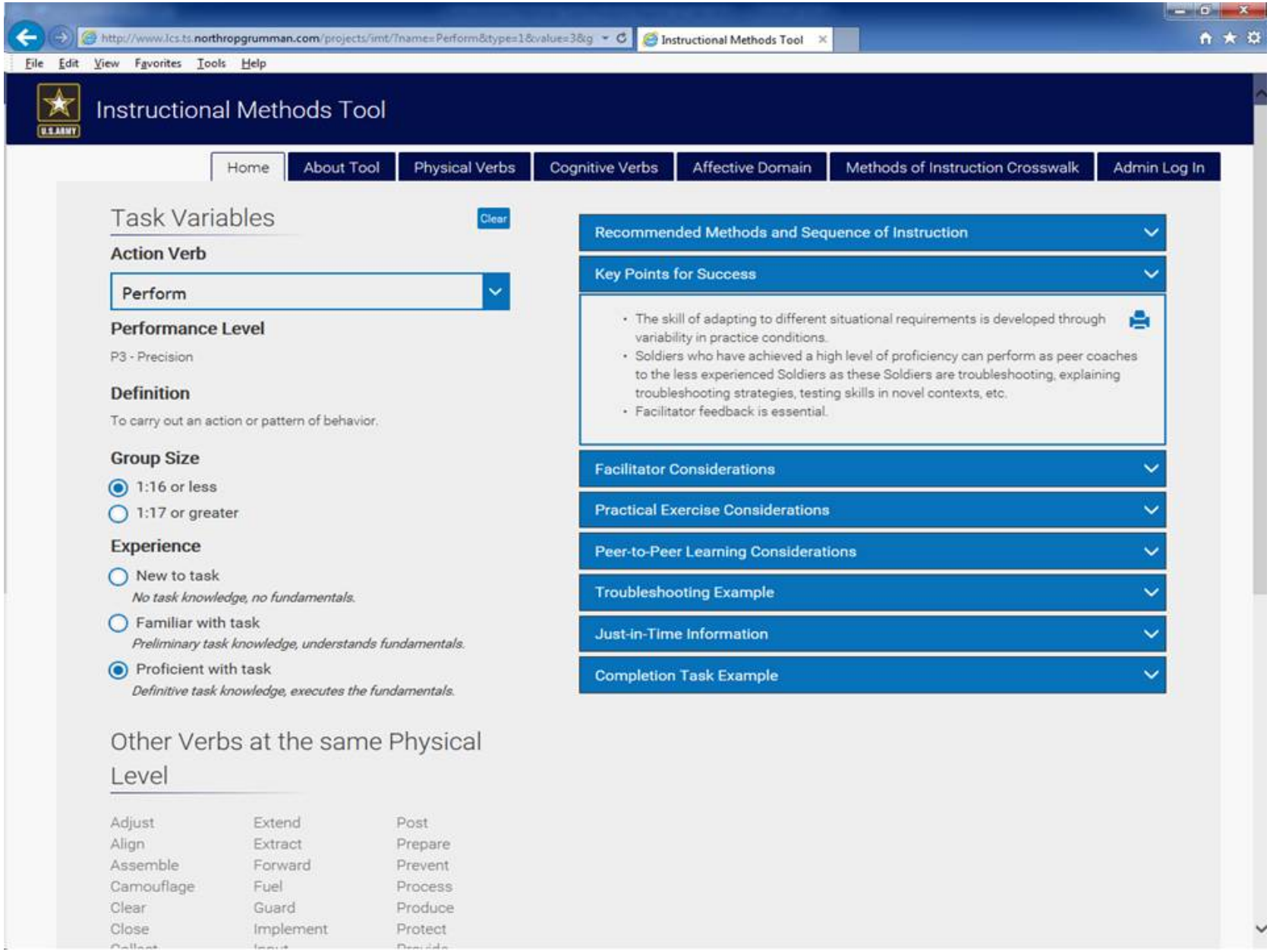
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Adjust
Align
Assemble
Camouflage
Clear
Close
Extend
Extract
Forward
Fuel
Guard
Implement
Post
Prepare
Prevent
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-8 hours
Perform PEs that reflect tasks the Soldiers would perform on the job. Peer-to-Peer coaching if in a mixed learner group. Provide multiple practice sessions and rehearsals utilizing IMI or simulations, if available. Soldier proficiency levels should be assessed.
Multiple Days
Cycle of practice opportunities, probing questions, and feedback. IMI and simulations could be used if available to conduct PEs. Test proficiency and then have the Soldiers assist in preparing lessons, teaching, and researching for longer assignments.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Troubleshooting Example
Just-in-Time Information
Completion Task Example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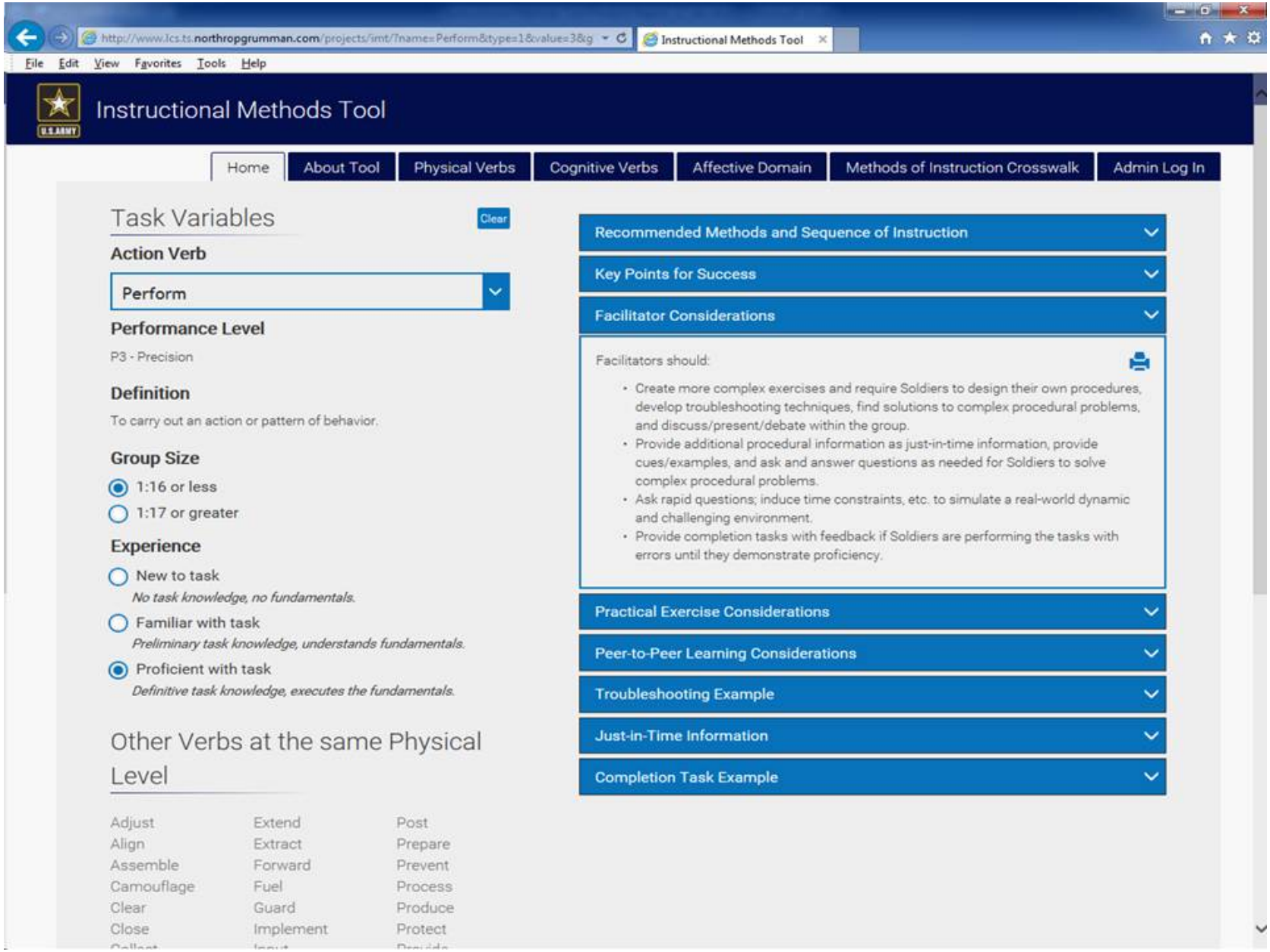
Fuel
Guard
Implement
Post
Prepare
Prevent
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Key Points for Success
• The skill of adapting to different situational requirements is developed through variability in practice conditions.
• Soldiers who have achieved a high level of proficiency can perform as peer coaches to the less experienced Soldiers as these Soldiers are troubleshooting, explaining troubleshooting strategies, testing skills in novel contexts, etc.
• Facilitator feedback is essential.
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Troubleshooting Example
Just-in-Time Information
Completion Task Example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Fuel
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Implement
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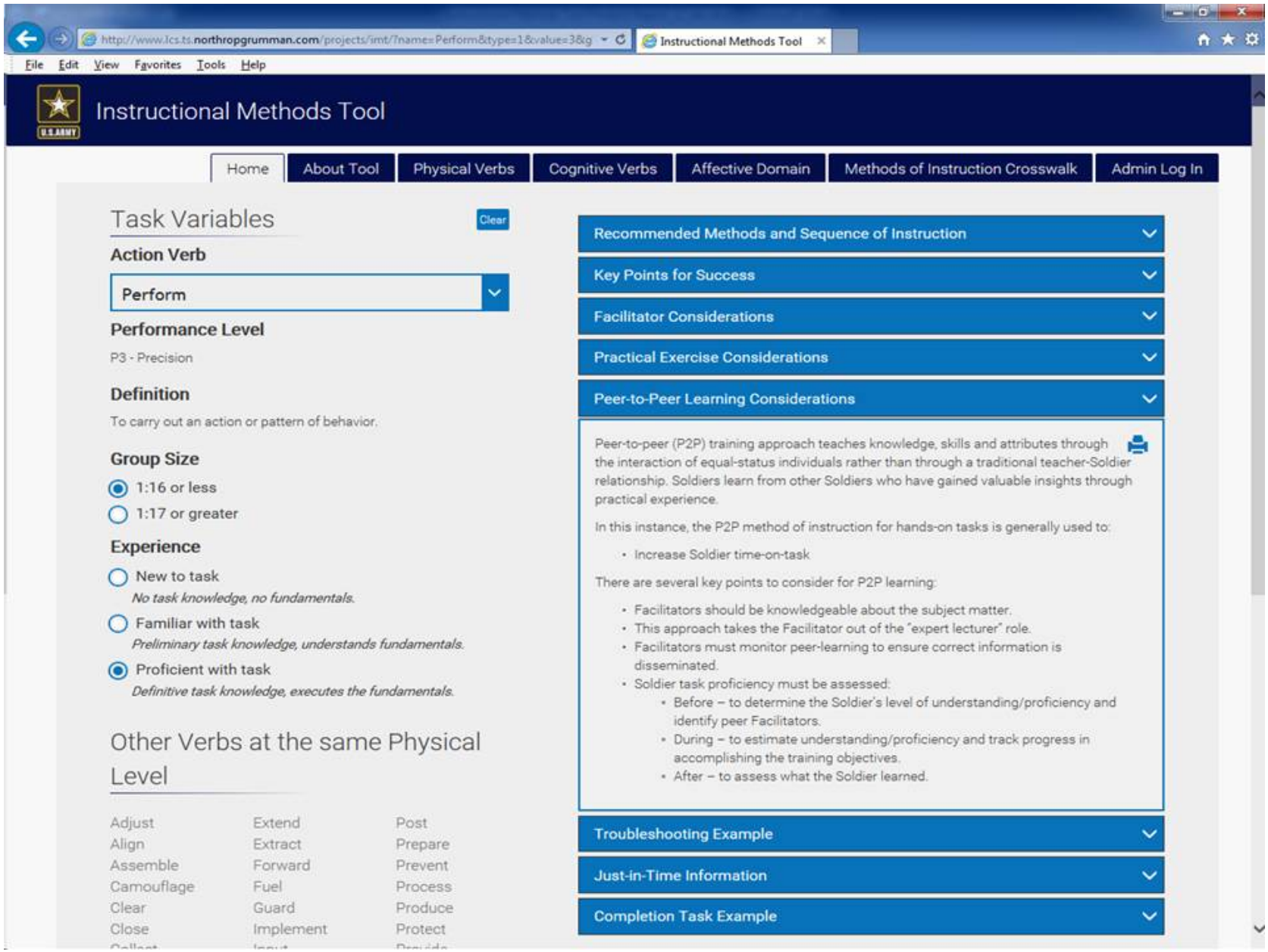
Prepare
Prevent
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
• Create more complex exercises and require Soldiers to design their own procedures, develop troubleshooting techniques, find solutions to complex procedural problems, and discuss/present/debate within the group.
• Provide additional procedural information as just-in-time information, provide cues/examples, and ask and answer questions as needed for Soldiers to solve complex procedural problems.
• Ask rapid questions; induce time constraints, etc. to simulate a real-world dynamic and challenging environment.
• Provide completion tasks with feedback if Soldiers are performing the tasks with errors until they demonstrate proficiency.
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Troubleshooting Example
Just-in-Time Information
Completion Task Example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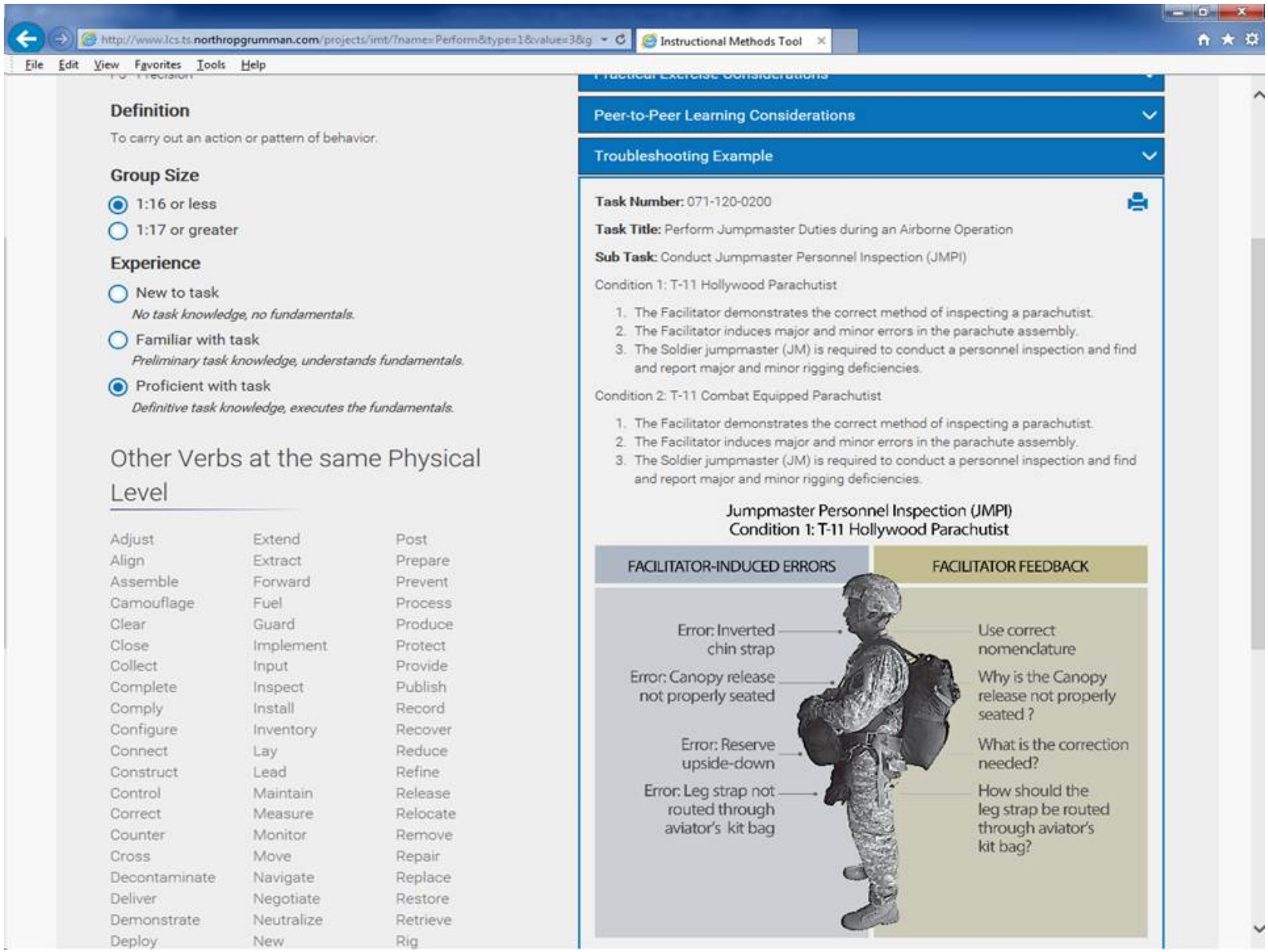
Fuel
Guard
Implement
Post
Prepare
Prevent
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals rather than through a 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
There are several key points to consider for P2P learning:
• Facilitators should be knowledgeable about the subject matter.
• This 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.
Troubleshooting Example
Just-in-Time Information
Completion Task Example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Instructional Methods Tool
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Definition
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Group Size
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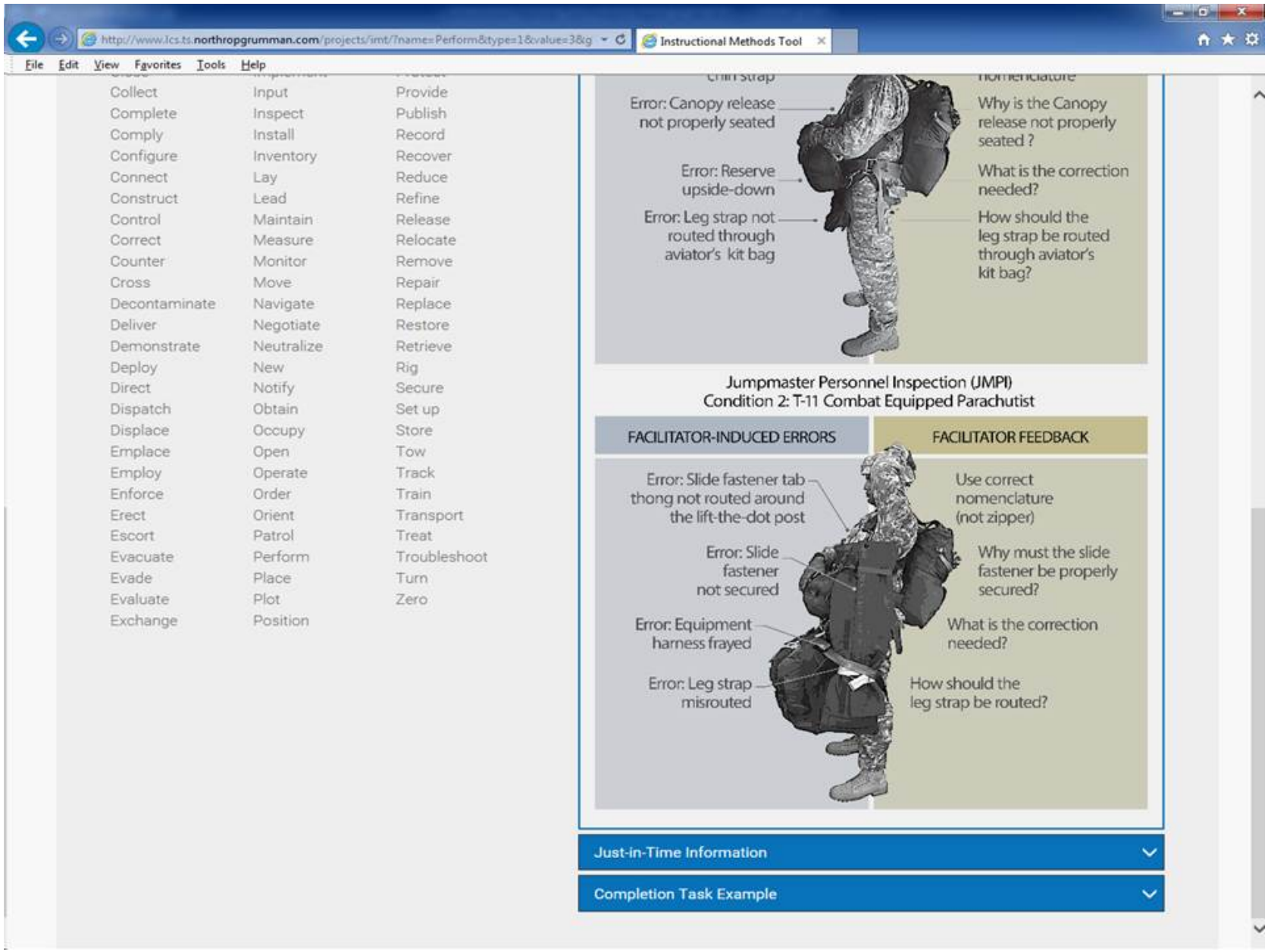
Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Adjust Align Assemble Camouflage Clear Close Collect Complete Comply Configure Connect Construct Control Correct Counter Cross Decontaminate Deliver Demonstrate Deploy
Extend Extract Forward Fuel Guard Implement Input Inspect Install Inventory Lay Lead Maintain Measure Monitor Move Navigate Negotiate Neutralize New
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve Rig
Peer-to-Peer Learning Considerations
Troubleshooting Example
Task Number: 071-120-0200
Task Title: Perform Jumpmaster Duties during an Airborne Operation
Sub Task: Conduct Jumpmaster Personnel Inspection (JMPI)
Condition 1: T-11 Hollywood Parachutist
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 Soldier jumpmaster (JM) is required to conduct a personnel inspection and find and report major and minor rigging deficiencies.
Condition 2: T-11 Combat Equipped Parachutist
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 Soldier jumpmaster (JM) is required to conduct a personnel inspection and find and report major and minor rigging deficiencies.
Jumpmaster Personnel Inspection (JMPI)
Condition 1: T-11 Hollywood Parachutist
FACILITATOR-INDUCED ERRORS
FACILITATOR FEEDBACK
Error: Inverted chin strap
Use correct nomenclature
Error: Canopy release not properly seated
Why is the Canopy release not properly seated ?
Error: Reserve upside-down
What is the correction needed?
Error: Leg strap not routed through aviator's kit bag
How should the leg strap be routed through aviator's kit bag?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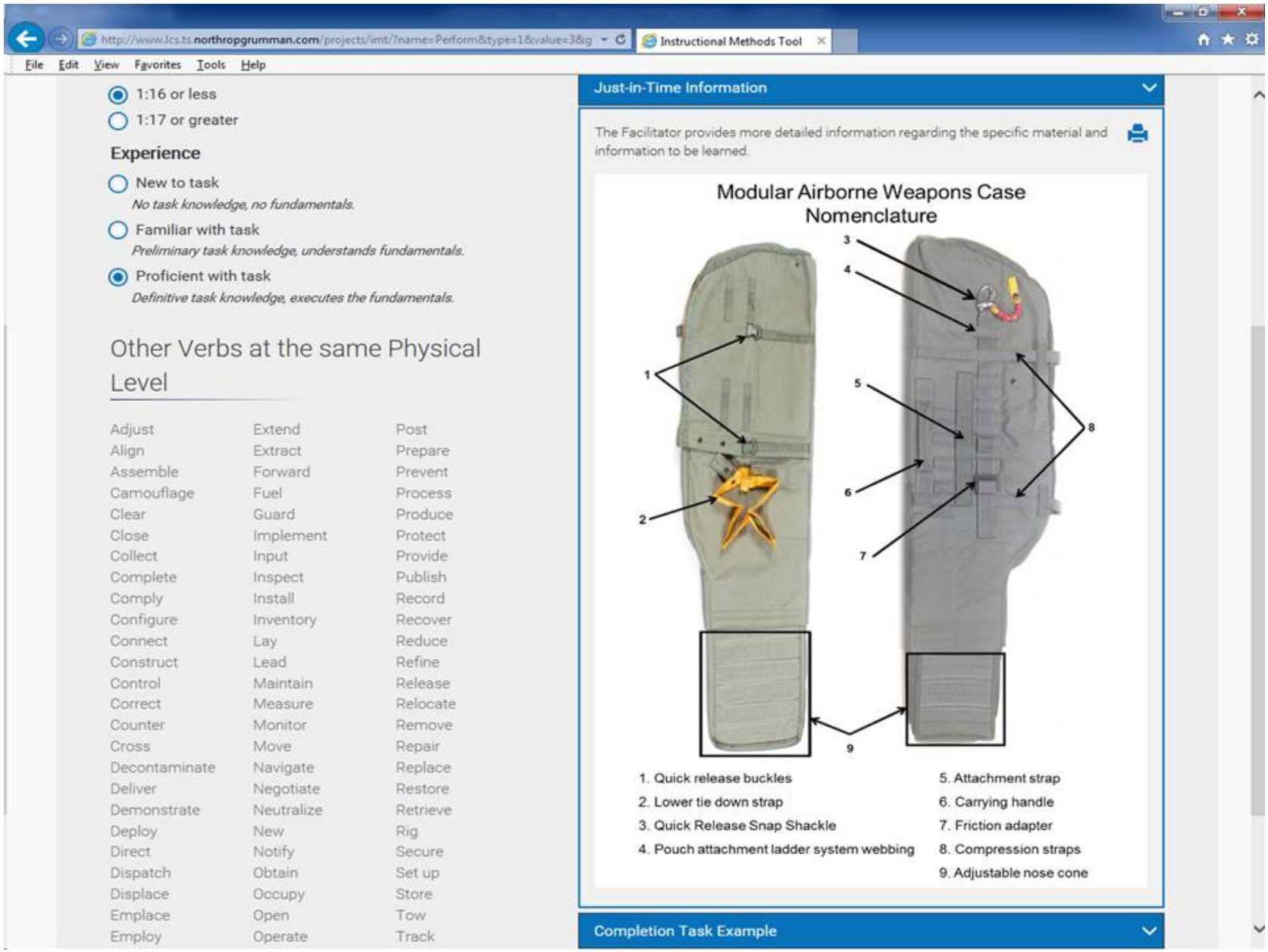
Collect Input Provide
Complete Inspect Publish
Comply Install Record
Configure Inventory Recover
Connect Lay Reduce
Construct Lead Refine
Control Maintain Release
Correct Measure Relocate
Counter Monitor Remove
Cross Move Repair
Decontaminate Navigate Replace
Deliver Negotiate Restore
Demonstrate Neutralize Retrieve
Deploy New Rig
Direct Notify Secure
Dispatch Obtain Set up
Displace Occupy Store
Emplace 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
Error: Canopy release not properly seated
Why is the Canopy release not properly seated ?
Error: Reserve upside-down
What is the correction needed?
Error: Leg strap not routed through aviator's kit bag
How should the leg strap be routed through aviator's kit bag?
Jumpmaster Personnel Inspection (JMPI)
Condition 2: T-11 Combat Equipped Parachutist
FACILITATOR-INDUCED ERRORS
FACILITATOR FEEDBACK
Error: Slide fastener tab thong not routed around the lift-the-dot post
Use correct nomenclature (not zipper)
Error: Slide fastener not secured
Why must the slide fastener be properly secured?
Error: Equipment harness frayed
What is the correction needed?
Error: Leg strap misrouted
How should the leg strap be routed?
Just-in-Time Information
Completion Task Example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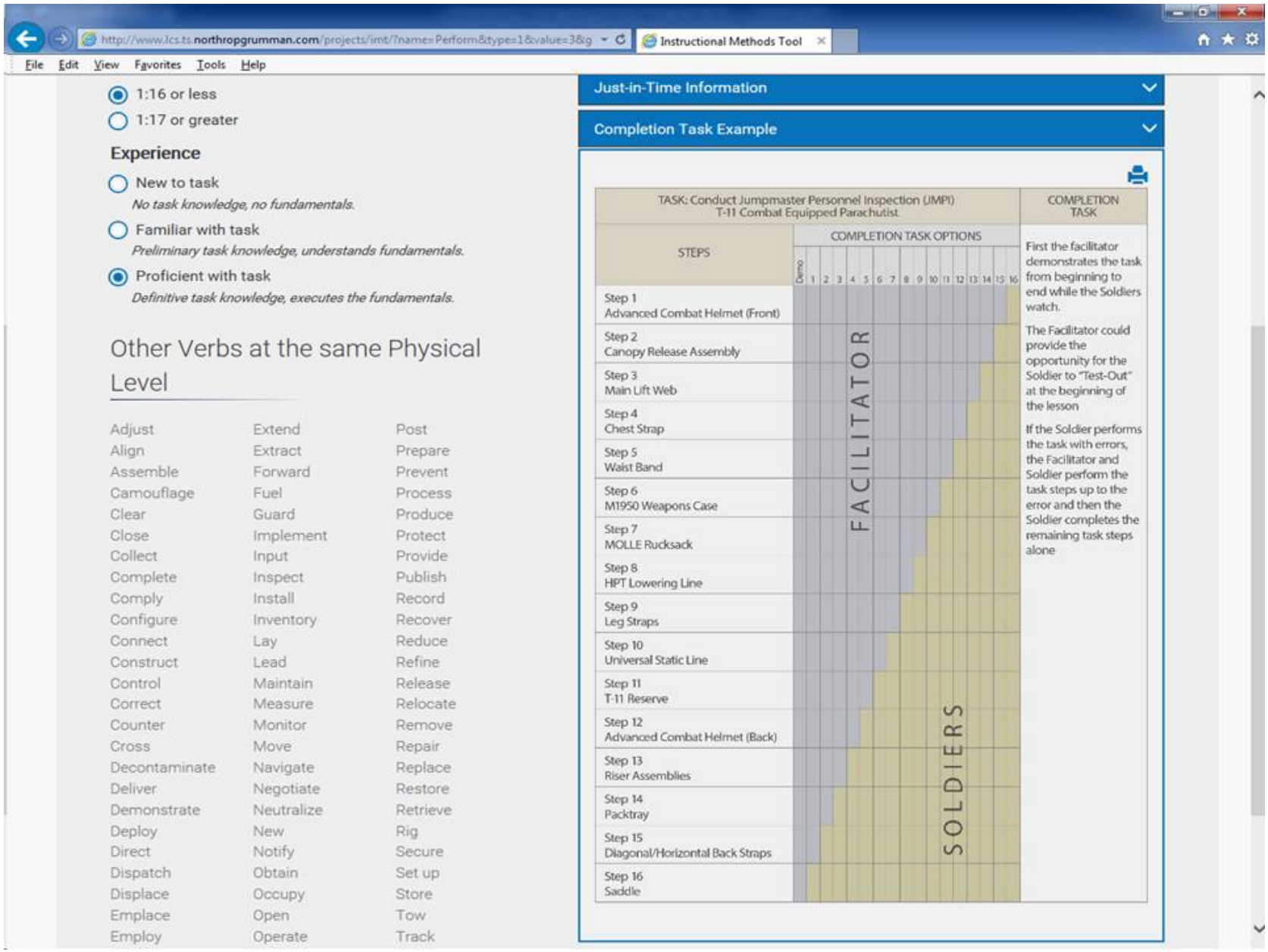
Instructional Methods Tool
File Edit View Favorites Tools Help
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Adjust Align Assemble Camouflage Clear Close Collect Complete Comply Configure Connect Construct Control Correct Counter Cross Decontaminate Deliver Demonstrate Deploy Direct Dispatch Displace Emplace Employ
Extend Extract Forward Fuel Guard Implement Input Inspect Install Inventory Lay Lead Maintain Measure Monitor Move Navigate Negotiate Neutralize New Notify Obtain Occupy Open Operate
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve Rig Secure Set up Store Tow Track
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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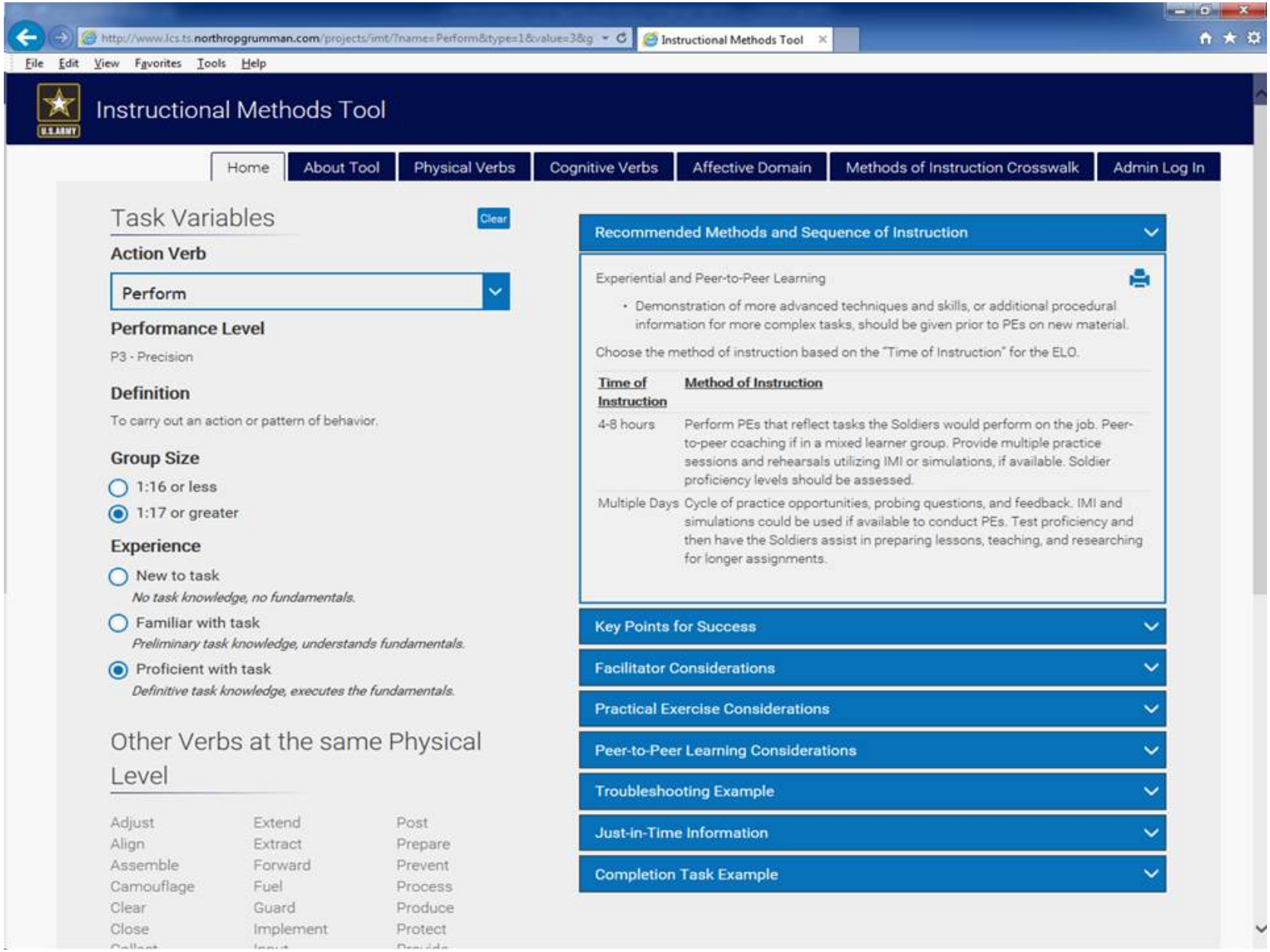
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve Rig Secure Set up Store Tow Track
Just-in-Time Information
Completion Task Example
TASK: Conduct Jumpmaster Personnel Inspection (JMPI)
T-11 Combat Equipped Parachutist
COMPLETION TASK
STEPS
COMPLETION TASK OPTIONS
Demo 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Step 1 Advanced Combat Helmet (Front)
Step 2 Canopy Release Assembly
Step 3 Main Lift Web
Step 4 Chest Strap
Step 5 Waist Band
Step 6 M1950 Weapons Case
Step 7 MOLLE Rucksack
Step 8 HPT Lowering Line
Step 9 Leg Straps
Step 10 Universal Static Line
Step 11 T-11 Reserve
Step 12 Advanced Combat Helmet (Back)
Step 13 Riser Assemblies
Step 14 Packtray
Step 15 Diagonal/Horizontal Back Straps
Step 16 Saddle
FACILITATOR
SOLDIERS
First the facilitator demonstrates the task from beginning to end while the Soldiers watch.
The Facilitator could provide the opportunity for the Soldier to "Test-Out" at the beginning of the lesson
If the Soldier performs the task with errors, the Facilitator and Soldier perform the task steps up to the error and then the Soldier completes the remaining task steps alone

Appendix J

Military Task Examples
P2+P3 – Manipulation and Precision / Large Group / Proficient with Task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Admin Log In
Task Variables
Clear
Action Verb
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Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
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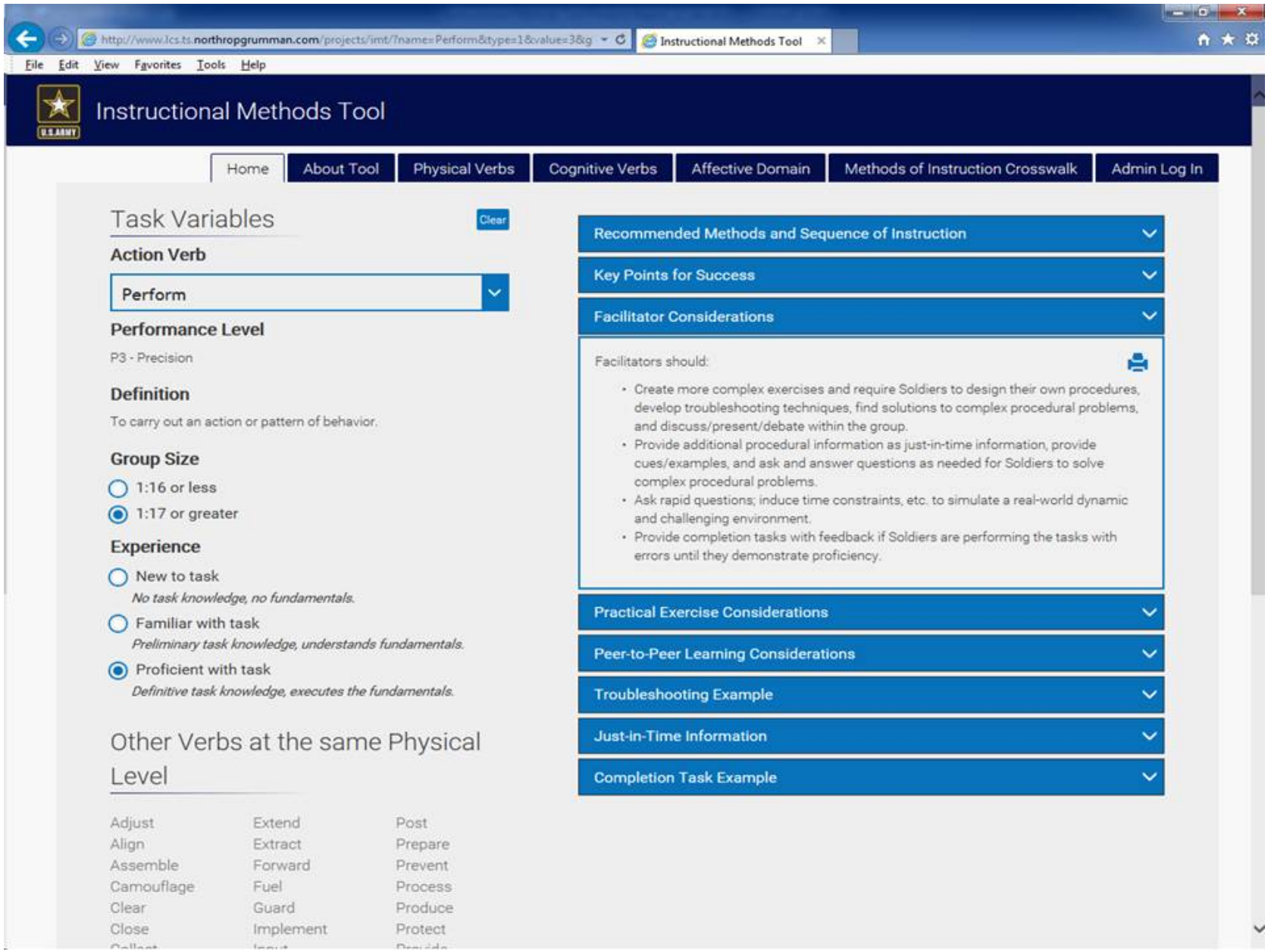
Align
Assemble
Camouflage
Clear
Close
Extend
Extract
Forward
Fuel
Guard
Implement
Post
Prepare
Prevent
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Experiential and Peer-to-Peer Learning
• Demonstration of more advanced techniques and skills, or additional procedural information for more complex tasks, should be given prior to PEs on new material.
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-8 hours
Perform PEs that reflect tasks the Soldiers would perform on the job. Peer-to-peer coaching if in a mixed learner group. Provide multiple practice sessions and rehearsals utilizing IMI or simulations, if available. Soldier proficiency levels should be assessed.
Multiple Days
Cycle of practice opportunities, probing questions, and feedback. IMI and simulations could be used if available to conduct PEs. Test proficiency and then have the Soldiers assist in preparing lessons, teaching, and researching for longer assignments.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Troubleshooting Example
Just-in-Time Information
Completion Task Example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Produce
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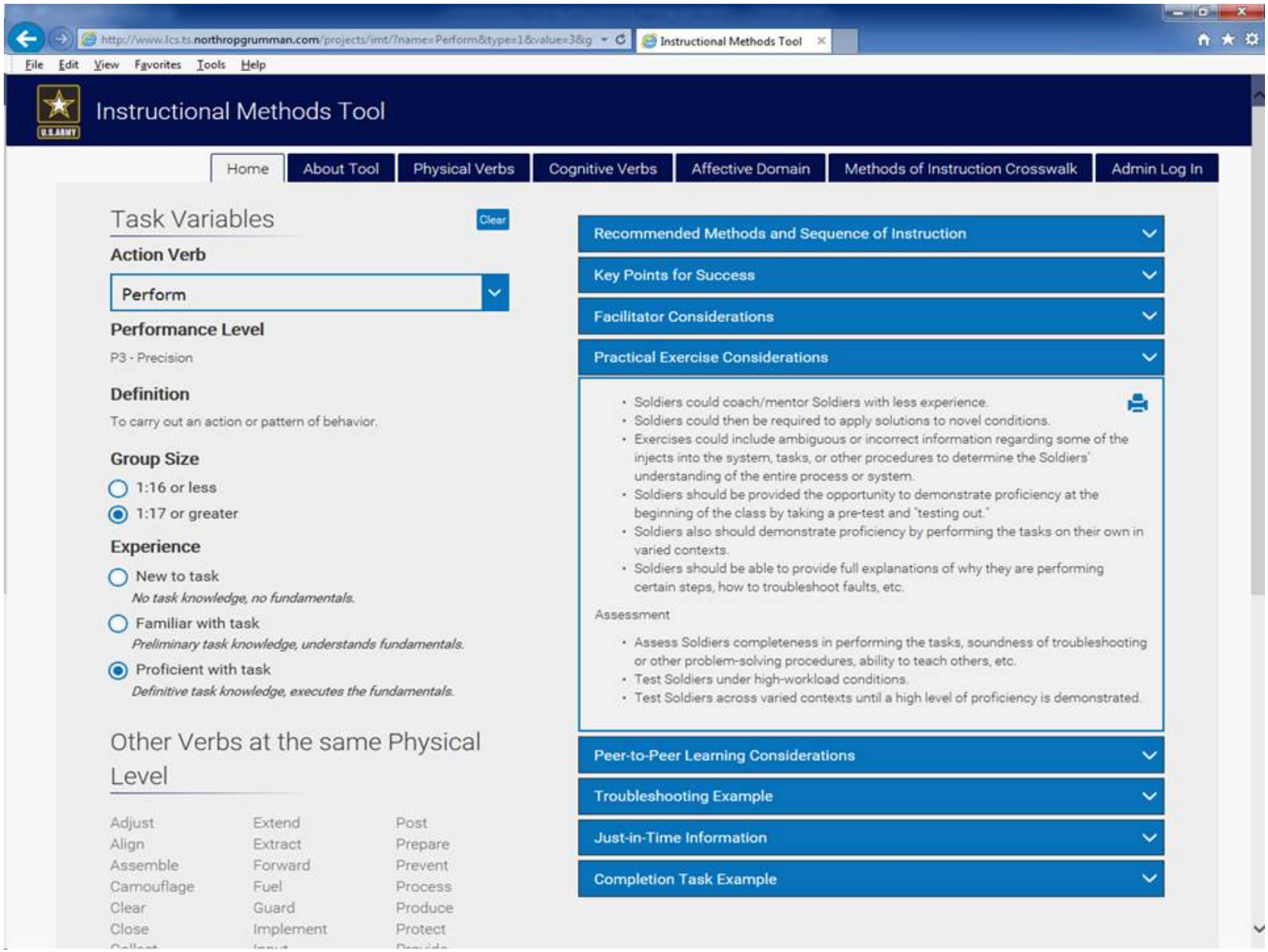
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
• Create more complex exercises and require Soldiers to design their own procedures, develop troubleshooting techniques, find solutions to complex procedural problems, and discuss/present/debate within the group.
• Provide additional procedural information as just-in-time information, provide cues/examples, and ask and answer questions as needed for Soldiers to solve complex procedural problems.
• Ask rapid questions; induce time constraints, etc. to simulate a real-world dynamic and challenging environment.
• Provide completion tasks with feedback if Soldiers are performing the tasks with errors until they demonstrate proficiency.
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Troubleshooting Example
Just-in-Time Information
Completion Task Example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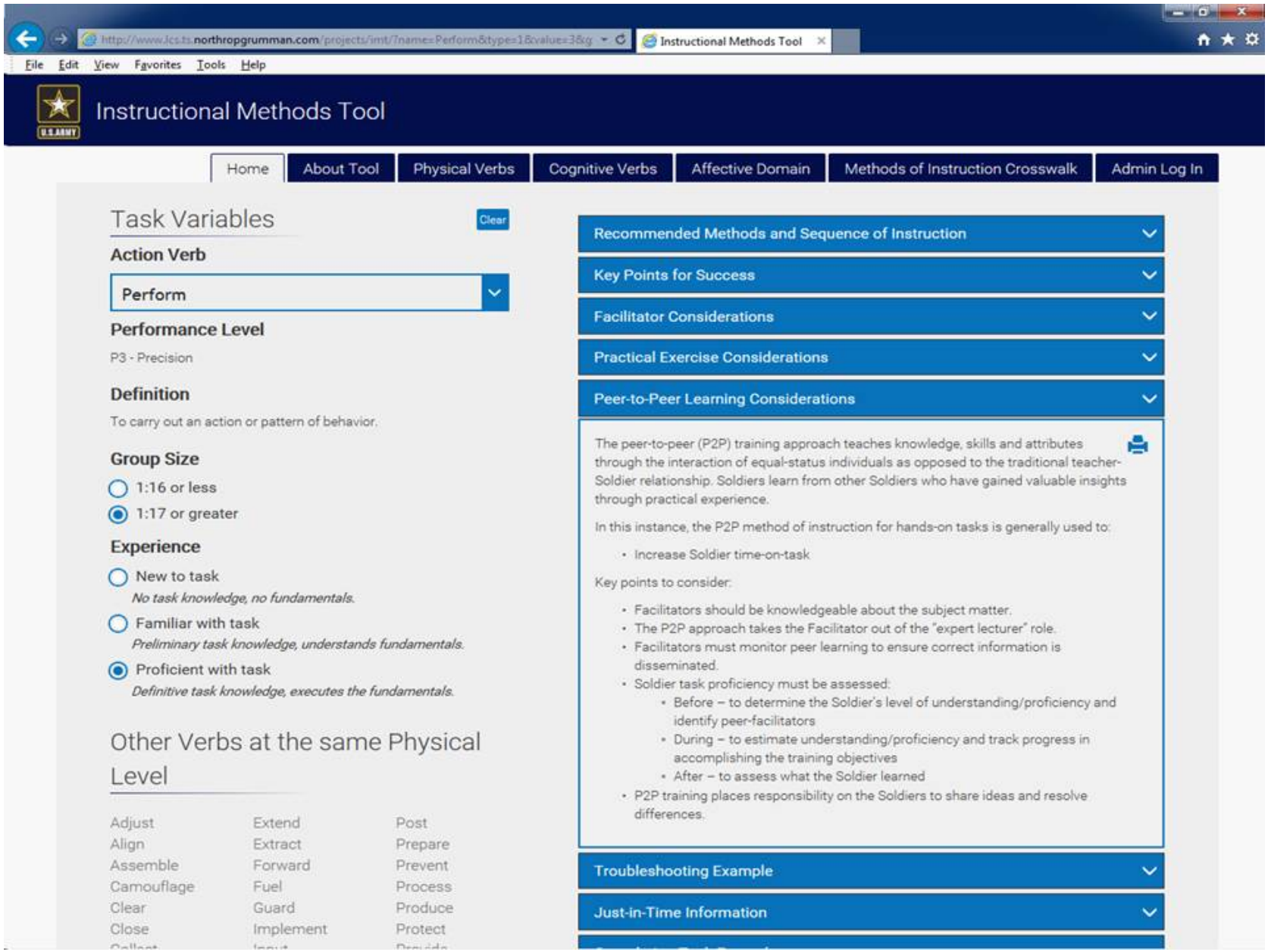
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Perform
Performance Level
P3 - Precision
Definition
To carry out an action or pattern of behavior.
Group Size
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, 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
Extend
Extract
Forward
Fuel
Guard
Implement
Post
Prepare
Prevent
Process
Produce
Protect
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
• Soldiers could coach/mentor Soldiers with less experience.
• Soldiers could then be required to apply solutions to novel conditions.
• Exercises could include ambiguous or incorrect information regarding some of the injects into the system, tasks, or other procedures to determine the Soldiers' understanding of the entire process or system.
• Soldiers should be provided the opportunity to demonstrate proficiency at the beginning of the class by taking a pre-test and "testing out."
• Soldiers also should demonstrate proficiency by performing the tasks on their own in varied contexts.
• Soldiers should be able to provide full explanations of why they are performing certain steps, how to troubleshoot faults, etc.
Assessment
• Assess Soldiers completeness in performing the tasks, soundness of troubleshooting or other problem-solving procedures, ability to teach others, etc.
• Test Soldiers under high-workload conditions.
• Test Soldiers across varied contexts until a high level of proficiency is demonstrated.
Peer-to-Peer Learning Considerations
Troubleshooting Example
Just-in-Time Information
Completion Task Example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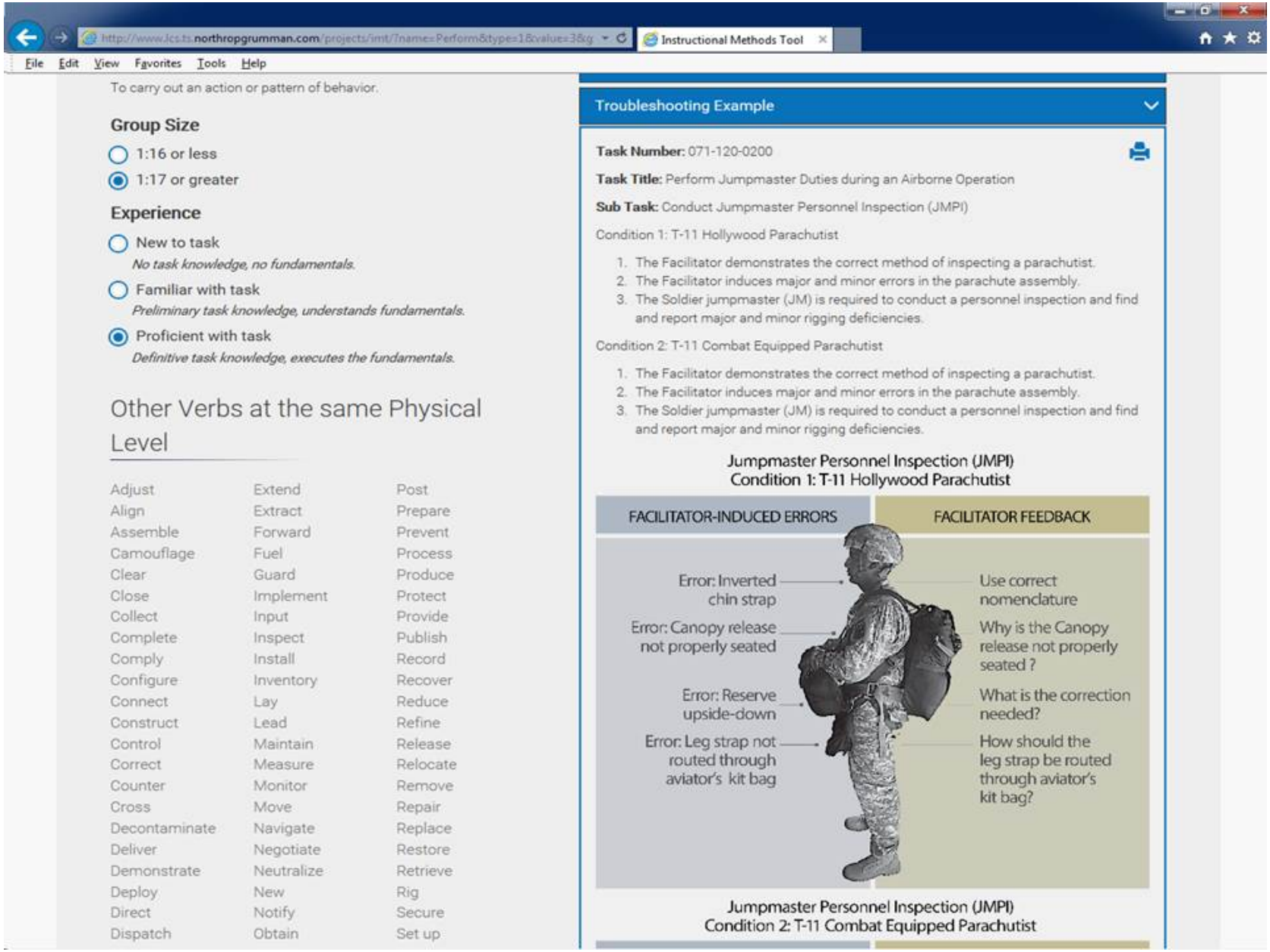
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier 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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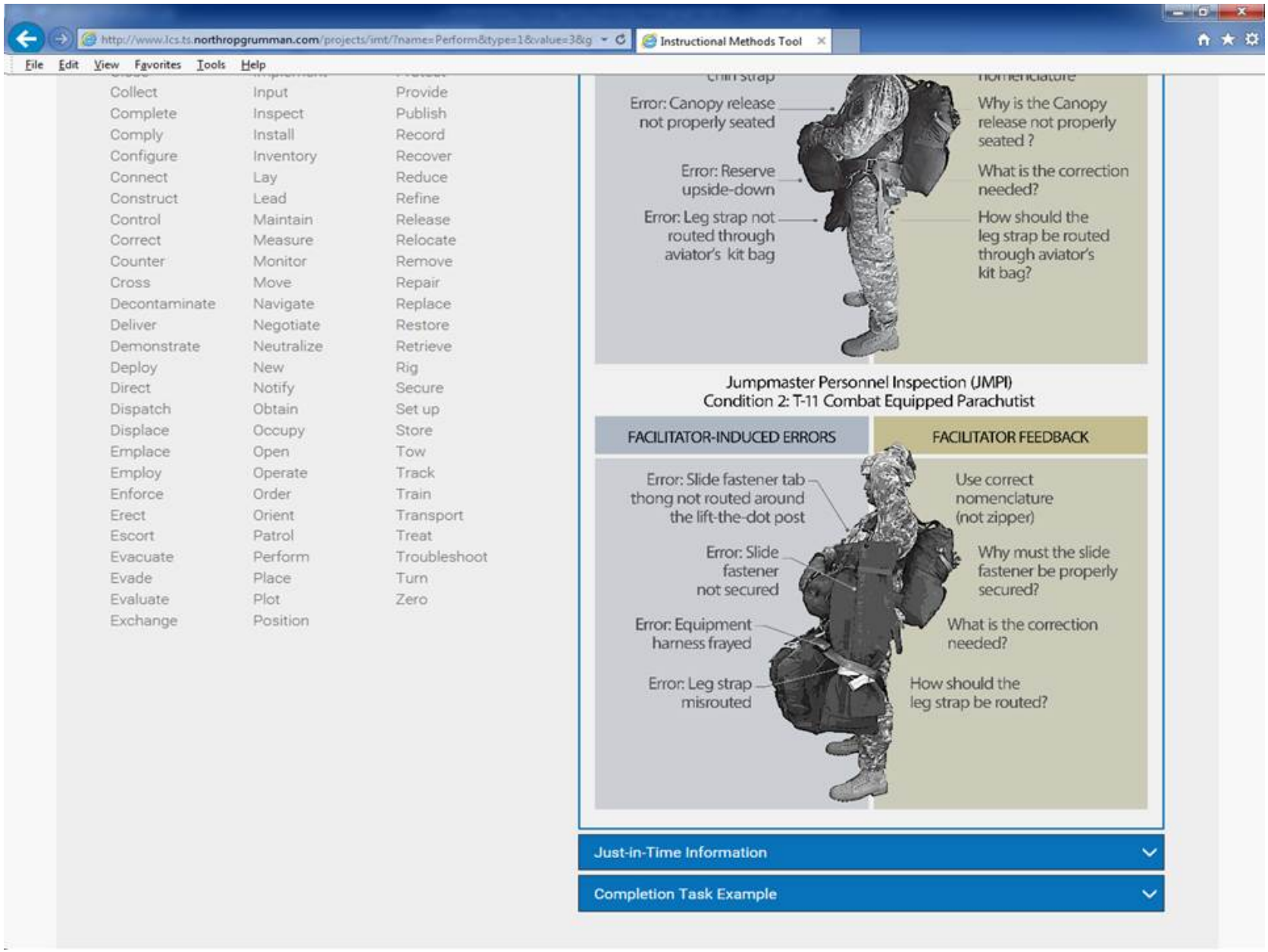
Close
Collect
Complete
Comply
Configure
Connect
Construct
Control
Correct
Counter
Cross
Decontaminate
Deliver
Demonstrate
Deploy
Direct
Dispatch
Extend
Extract
Forward
Fuel
Guard
Implement
Input
Inspect
Install
Inventory
Lay
Lead
Maintain
Measure
Monitor
Move
Navigate
Negotiate
Neutralize
New
Notify
Obtain
Post
Prepare
Prevent
Process
Produce
Protect
Provide
Publish
Record
Recover
Reduce
Refine
Release
Relocate
Remove
Repair
Replace
Restore
Retrieve
Rig
Secure
Set up
Troubleshooting Example
Task Number: 071-120-0200
Task Title: Perform Jumpmaster Duties during an Airborne Operation
Sub Task: Conduct Jumpmaster Personnel Inspection (JMPI)
Condition 1: T-11 Hollywood Parachutist
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 Soldier jumpmaster (JM) is required to conduct a personnel inspection and find and report major and minor rigging deficiencies.
Condition 2: T-11 Combat Equipped Parachutist
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 Soldier jumpmaster (JM) is required to conduct a personnel inspection and find and report major and minor rigging deficiencies.
Jumpmaster Personnel Inspection (JMPI)
Condition 1: T-11 Hollywood Parachutist
FACILITATOR-INDUCED ERRORS
FACILITATOR FEEDBACK
Error: Inverted chin strap
Use correct nomenclature
Error: Canopy release not properly seated
Why is the Canopy release not properly seated ?
Error: Reserve upside-down
What is the correction needed?
Error: Leg strap not routed through aviator's kit bag
How should the leg strap be routed through aviator's kit bag?
Jumpmaster Personnel Inspection (JMPI)
Condition 2: T-11 Combat Equipped Parachutist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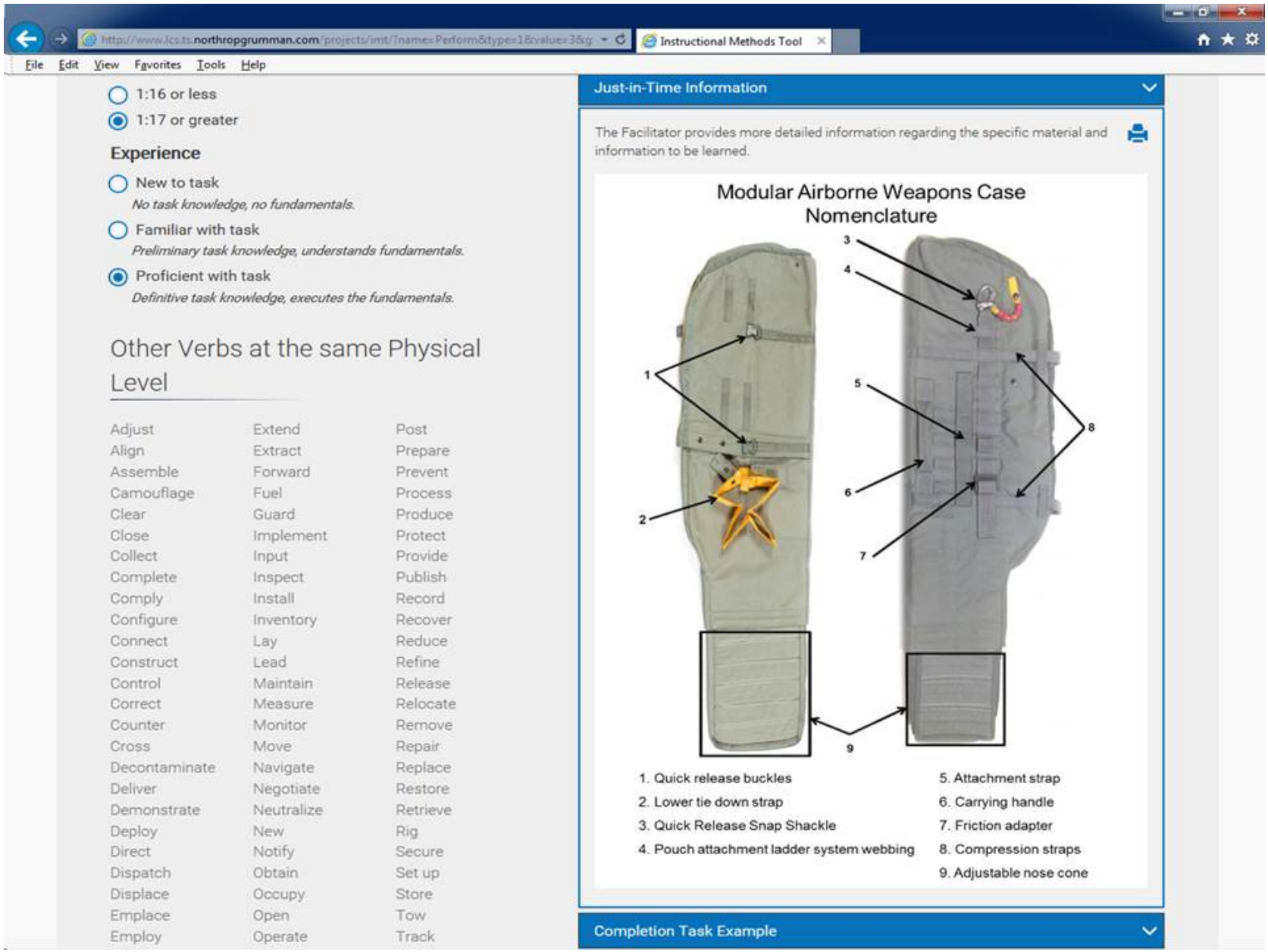
Collect Input Provide
Complete Inspect Publish
Comply Install Record
Configure Inventory Recover
Connect Lay Reduce
Construct Lead Refine
Control Maintain Release
Correct Measure Relocate
Counter Monitor Remove
Cross Move Repair
Decontaminate Navigate Replace
Deliver Negotiate Restore
Demonstrate Neutralize Retrieve
Deploy New Rig
Direct Notify Secure
Dispatch Obtain Set up
Displace Occupy Store
Emplace 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
Error: Canopy release not properly seated
Why is the Canopy release not properly seated ?
Error: Reserve upside-down
What is the correction needed?
Error: Leg strap not routed through aviator's kit bag
How should the leg strap be routed through aviator's kit bag?
Jumpmaster Personnel Inspection (JMPI)
Condition 2: T-11 Combat Equipped Parachutist
FACILITATOR-INDUCED ERRORS
FACILITATOR FEEDBACK
Error: Slide fastener tab thong not routed around the lift-the-dot post
Use correct nomenclature (not zipper)
Error: Slide fastener not secured
Why must the slide fastener be properly secured?
Error: Equipment harness frayed
What is the correction needed?
Error: Leg strap misrouted
How should the leg strap be routed?
Just-in-Time Information
Completion Task Example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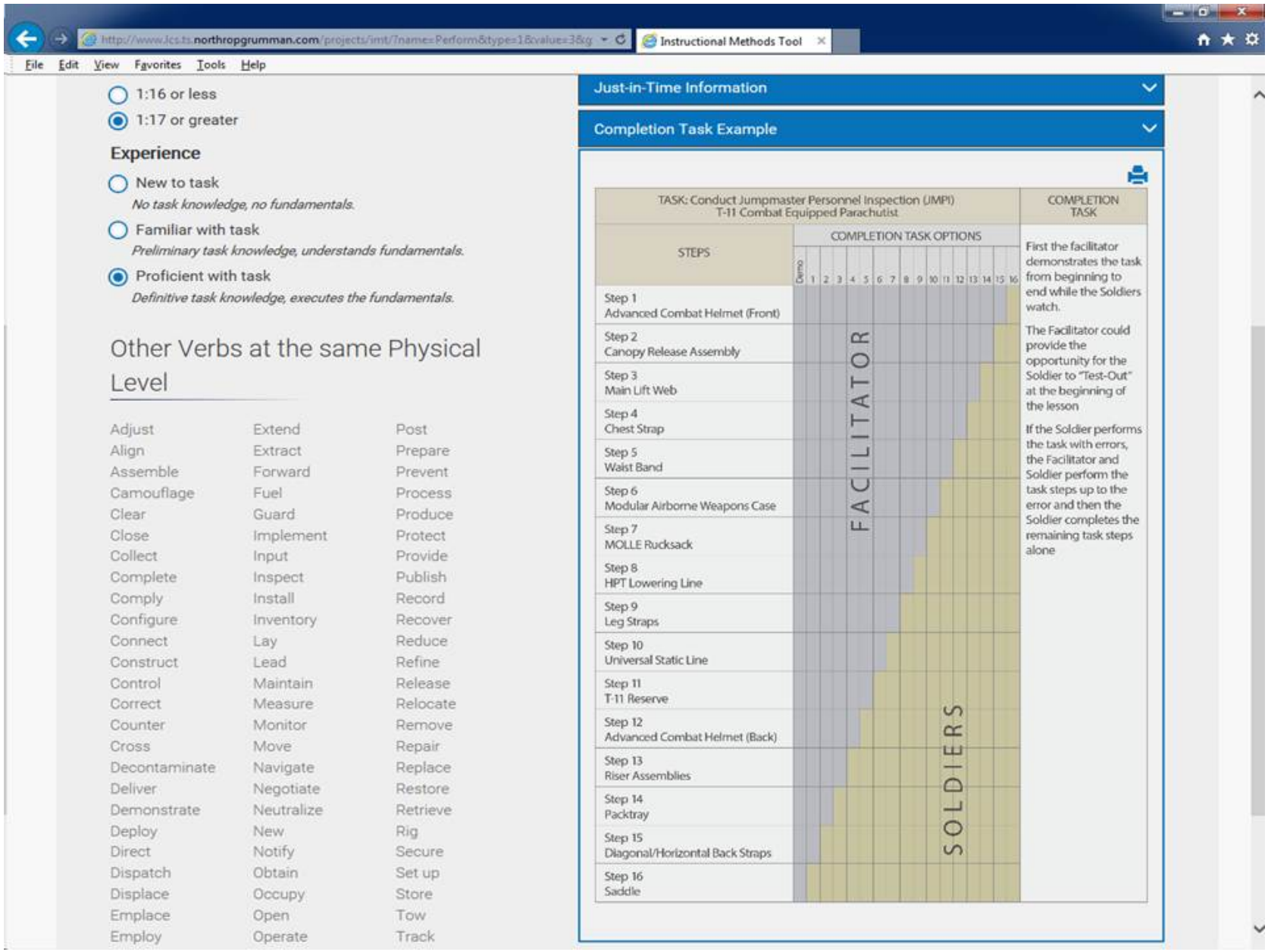
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Adjust Align Assemble Camouflage Clear Close Collect Complete Comply Configure Connect Construct Control Correct Counter Cross Decontaminate Deliver Demonstrate Deploy Direct Dispatch Displace Emplace Employ
Extend Extract Forward Fuel Guard Implement Input Inspect Install Inventory Lay Lead Maintain Measure Monitor Move Navigate Negotiate Neutralize New Notify Obtain Occupy Open Operate
Post Prepare Prevent Process Produce Protect Provide Publish Record Recover Reduce Refine Release Relocate Remove Repair Replace Restore Retrieve Rig Secure Set up Store Tow Track
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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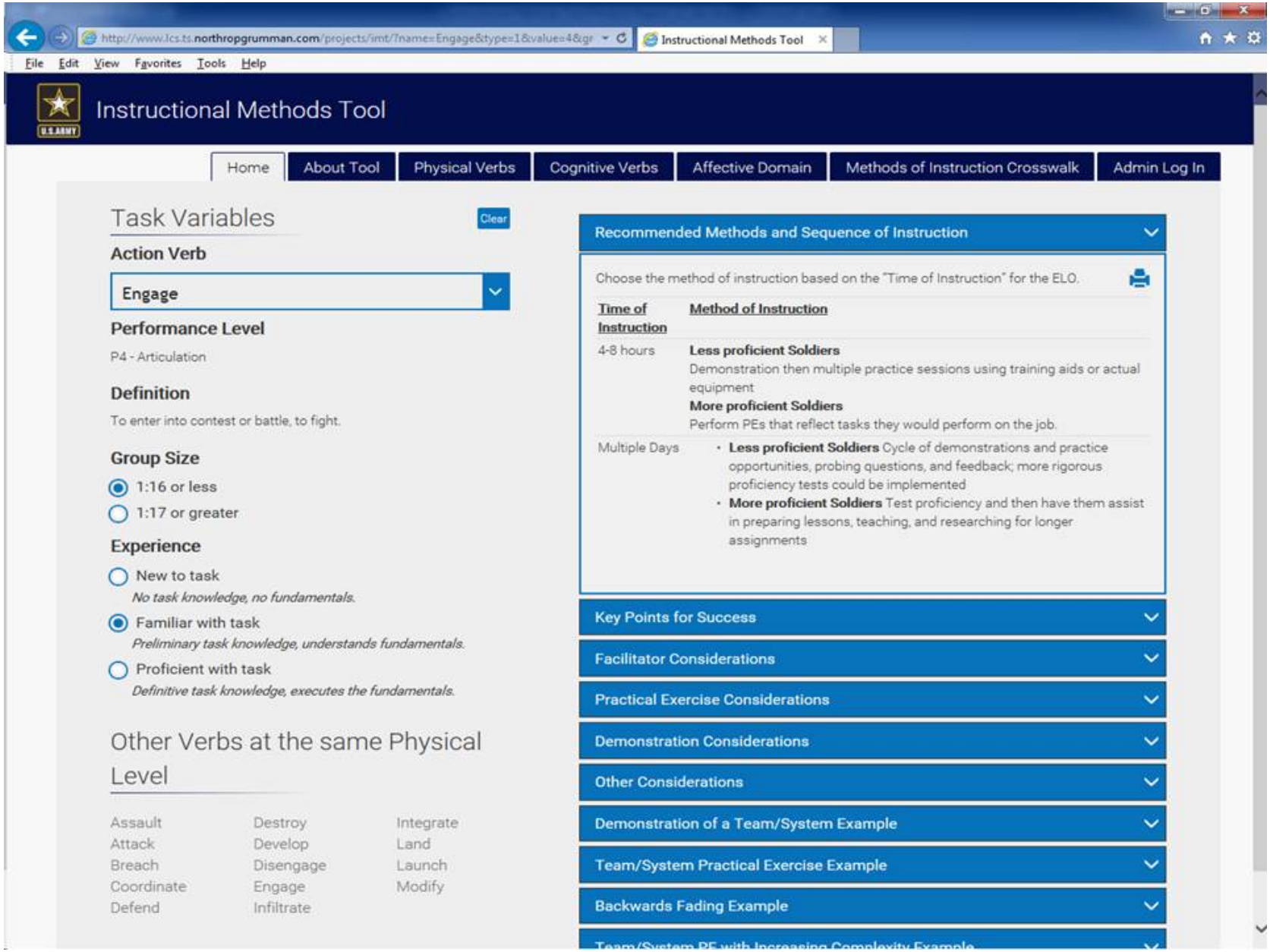
Just-in-Time Information
Completion Task Example
TASK: Conduct Jumpmaster Personnel Inspection (JMPI) T-11 Combat Equipped Parachutist
COMPLETION TASK
STEPS
COMPLETION TASK OPTIONS
Demo 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Step 1 Advanced Combat Helmet (Front)
Step 2 Canopy Release Assembly
Step 3 Main Lift Web
Step 4 Chest Strap
Step 5 Waist Band
Step 6 Modular Airborne Weapons Case
Step 7 MOLLE Rucksack
Step 8 HPT Lowering Line
Step 9 Leg Straps
Step 10 Universal Static Line
Step 11 T-11 Reserve
Step 12 Advanced Combat Helmet (Back)
Step 13 Riser Assemblies
Step 14 Packtray
Step 15 Diagonal/Horizontal Back Straps
Step 16 Saddle
FACILITATOR
SOLDIERS
First the facilitator demonstrates the task from beginning to end while the Soldiers watch.
The Facilitator could provide the opportunity for the Soldier to "Test-Out" at the beginning of the lesson
If the Soldier performs the task with errors, the Facilitator and Soldier perform the task steps up to the error and then the Soldier completes the remaining task steps alone

Appendix K

Military Task Examples
P4 - Articulation / Small Group / Familiar with Task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Methods of Instruction Crosswalk
Admin Log In
Task Variables
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Action Verb
Engage
Performance Level
P4 - Articulation
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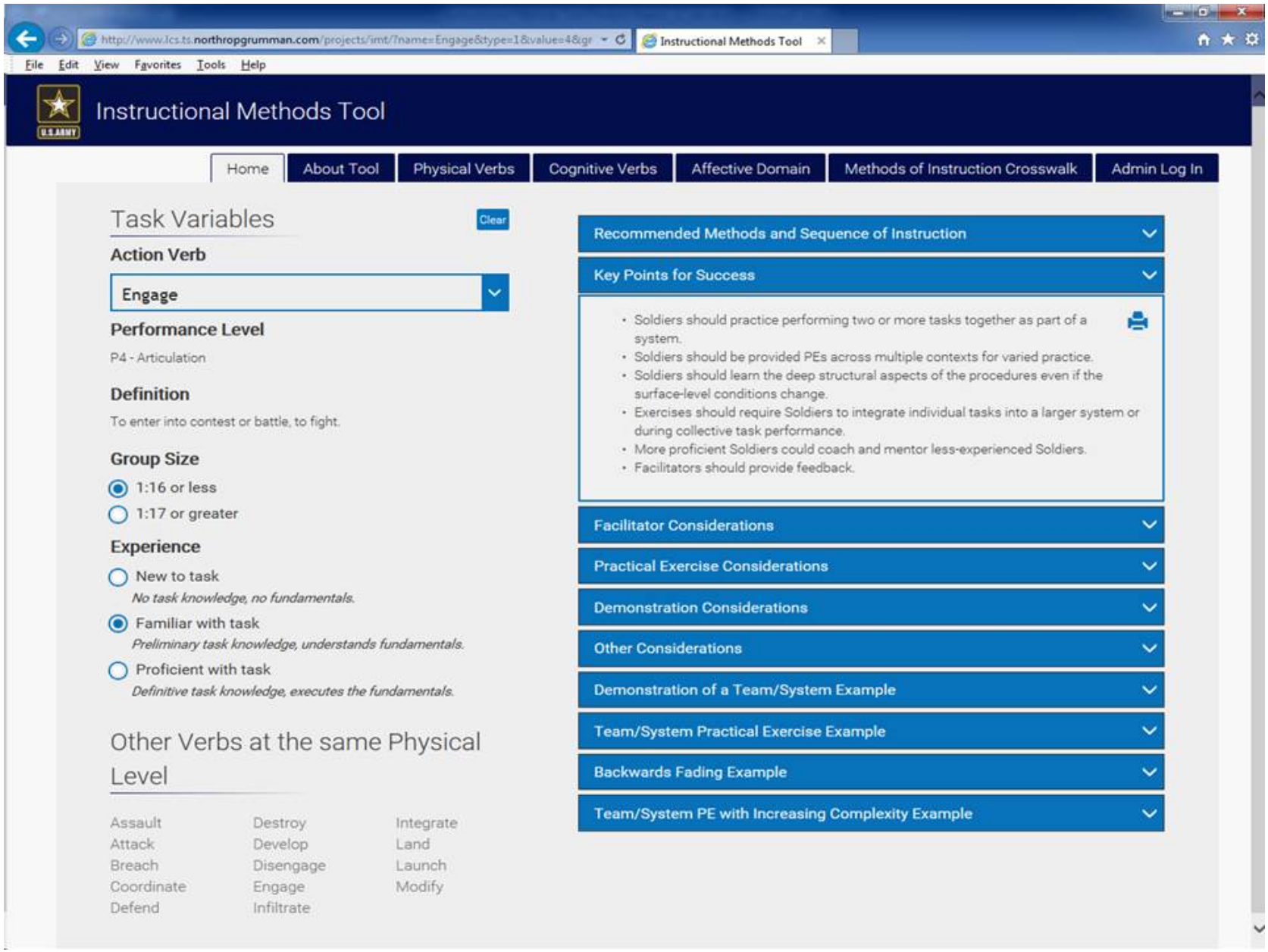
Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-8 hours
Less proficient 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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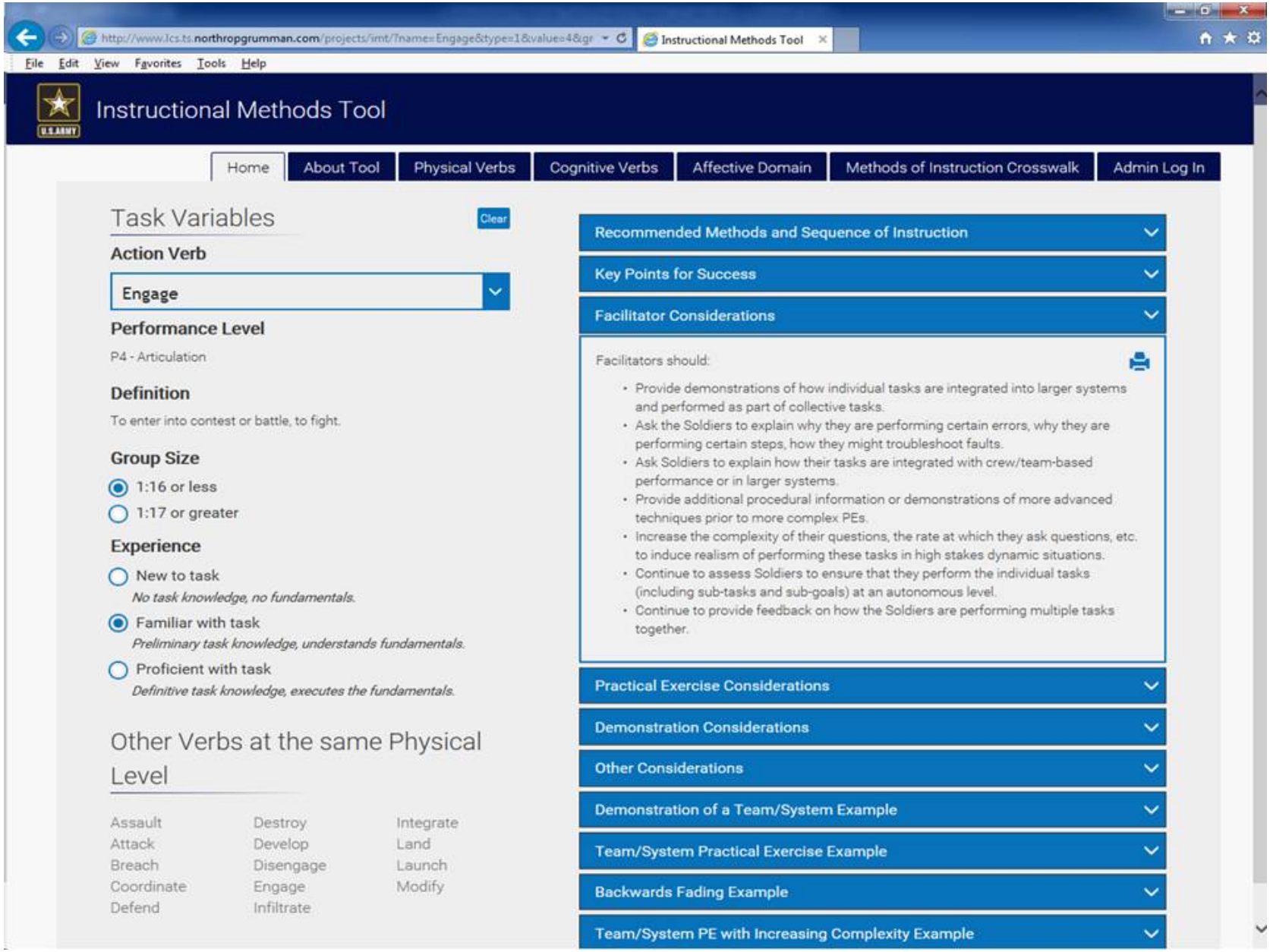
Recommended Methods and Sequence of Instruction
Key Points for Success
Soldiers should practice performing two or more tasks together as part of a system.
Soldiers should be provided PEs across multiple contexts for varied practice.
Soldiers should learn the deep structural aspects of the procedures 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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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
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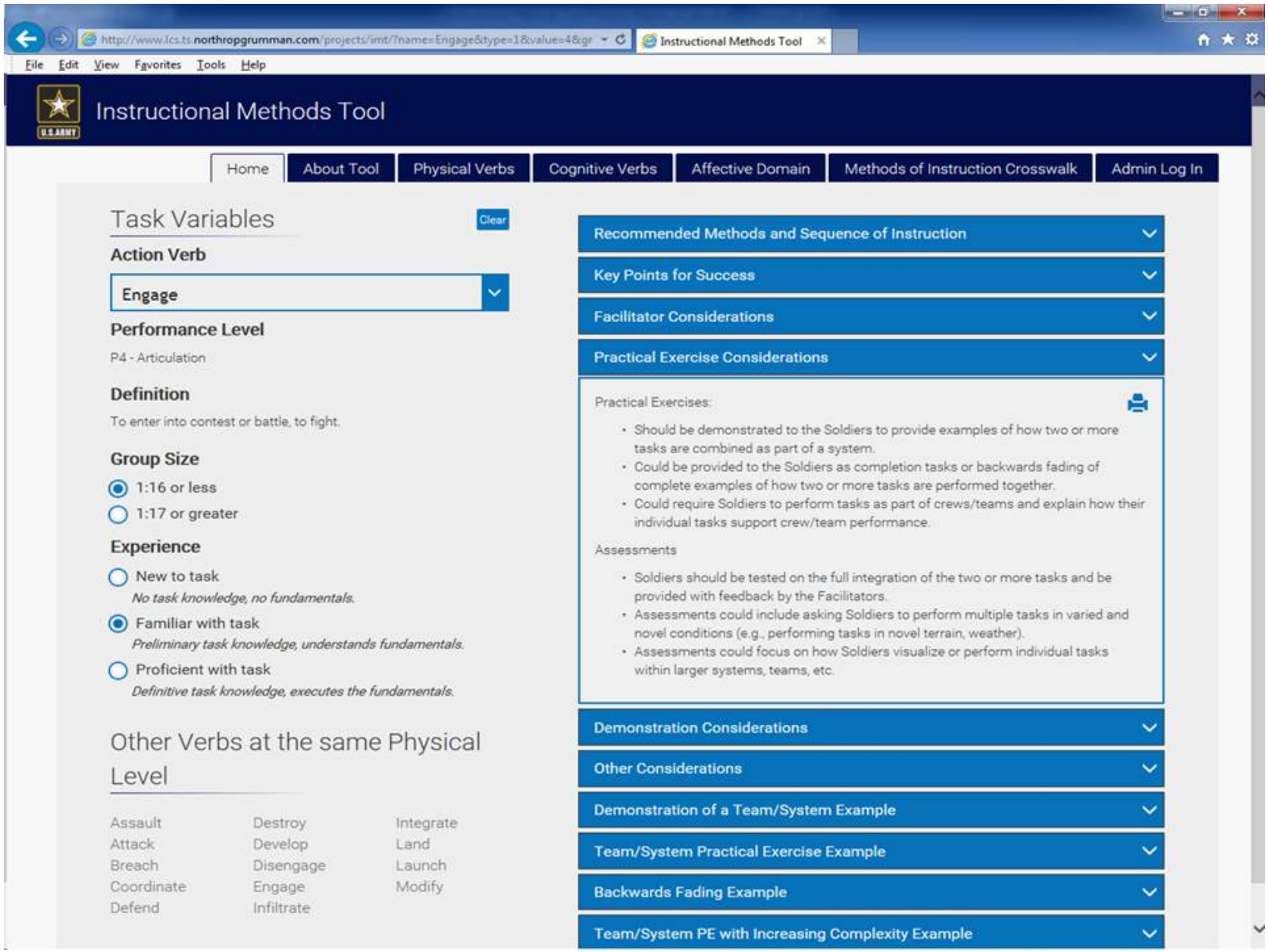
Team/System PE with Increasing Complexity Example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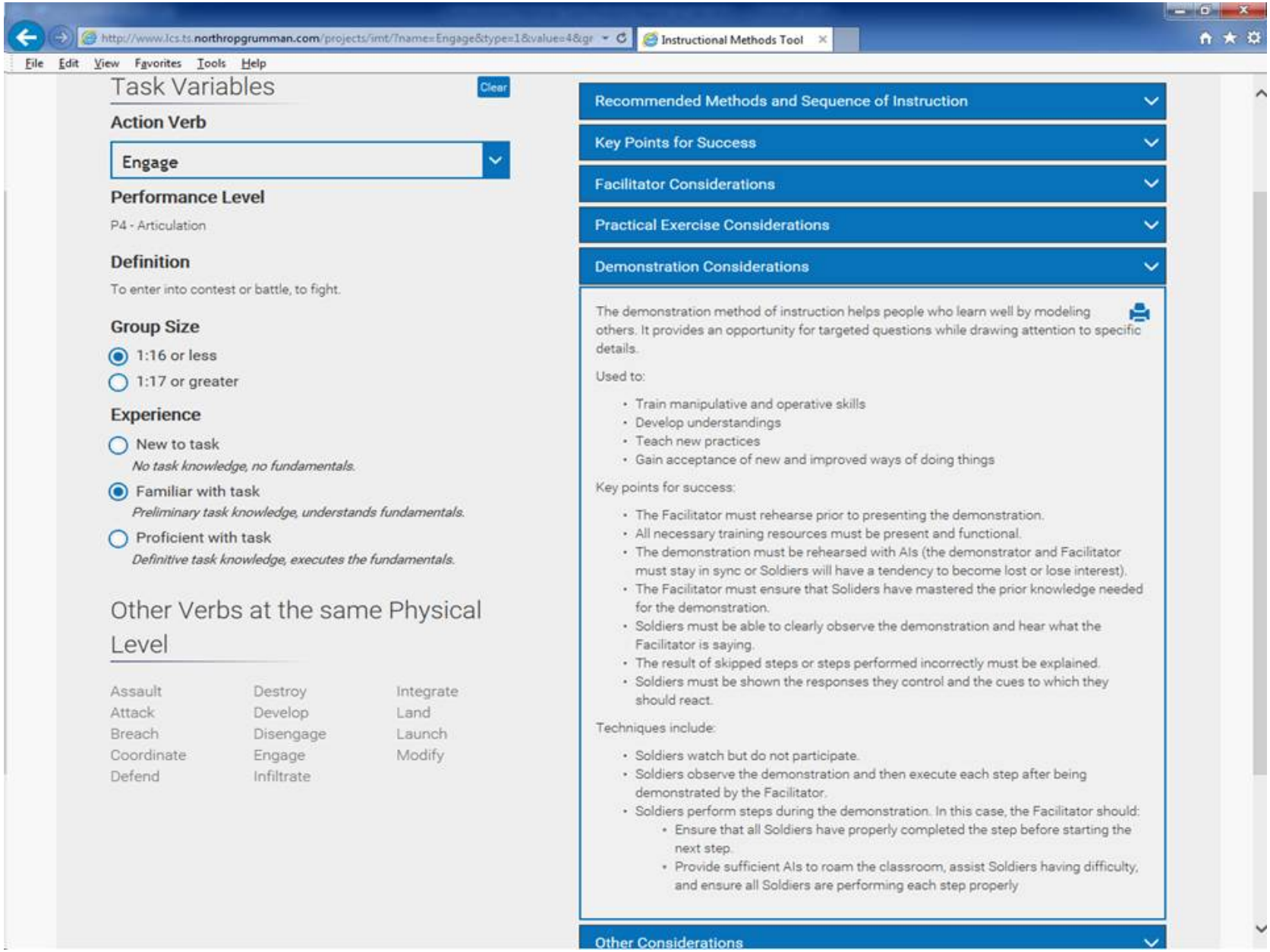
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Practical Exercises:
Should be demonstrated to the Soldiers to provide examples of how two or more tasks are combined as part of a system.
Could be provided to the Soldiers 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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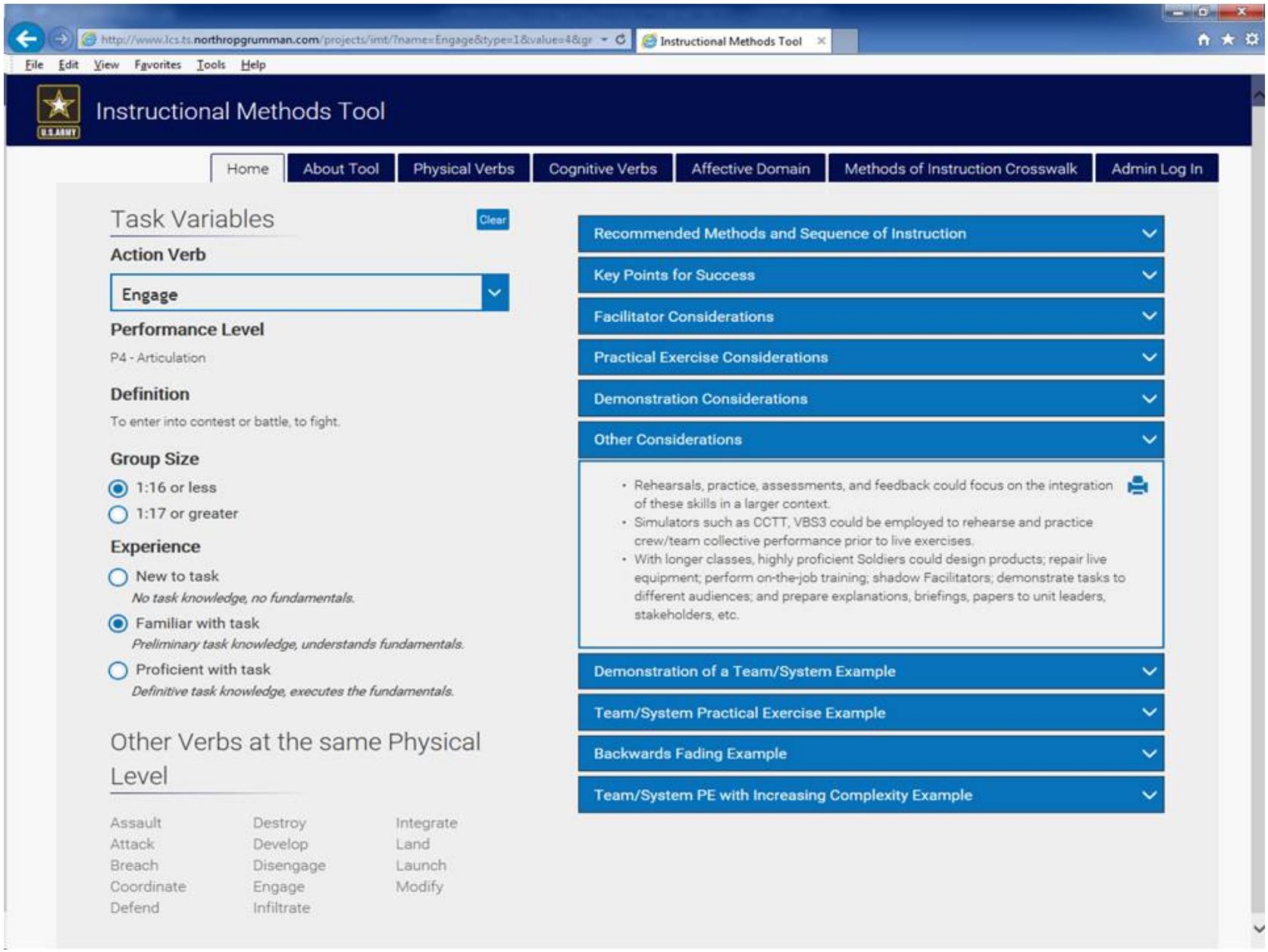
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while 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 Soliders 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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Facilitator Considerations
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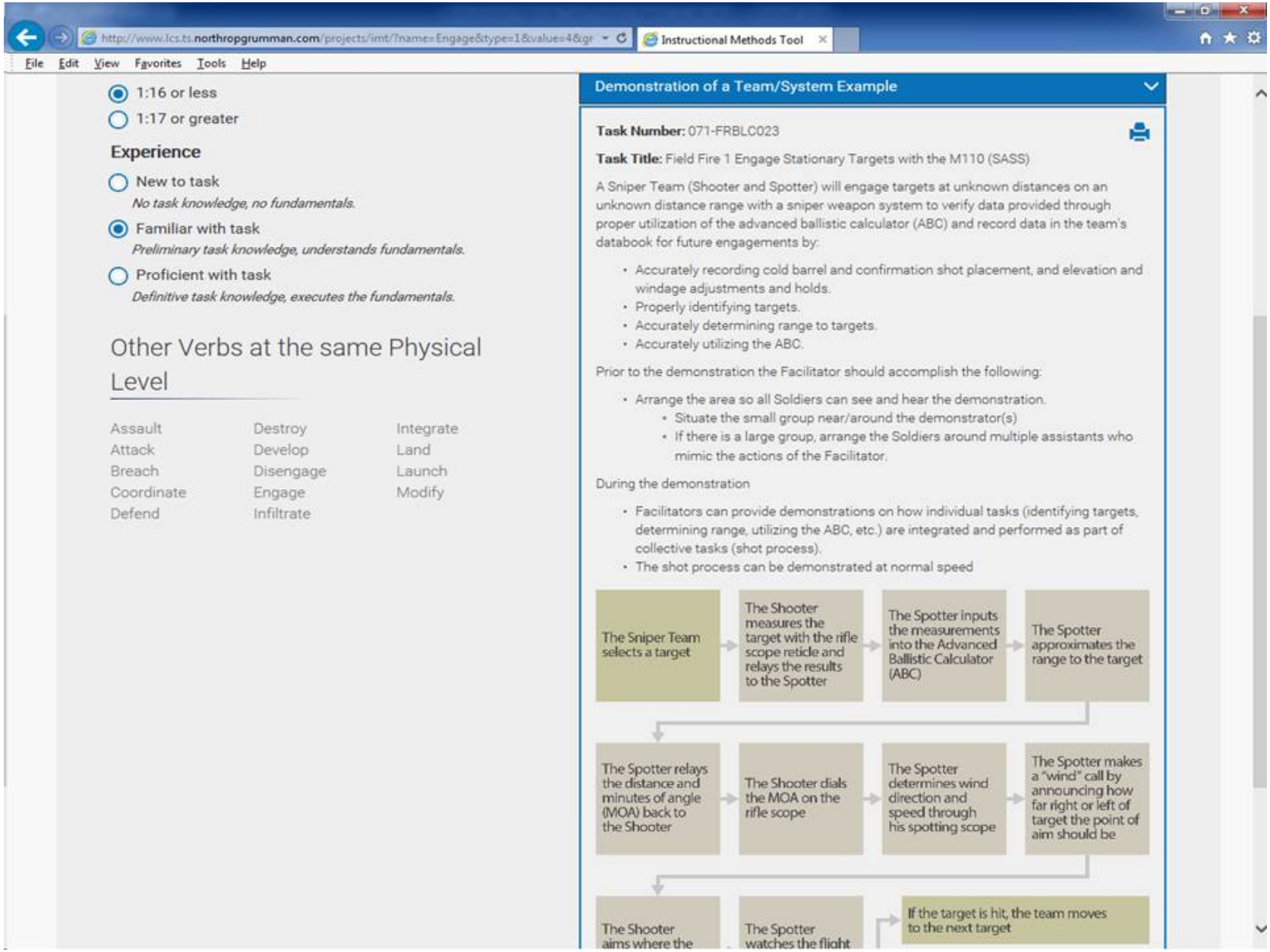
Demonstration Considerations
Other Considerations
• Rehearsals, practice, assessments, and feedback could focus on the integration of these skills in a larger context.
• Simulators such as CCTT, VBS3 could be employed to rehearse and practice crew/team collective performance prior to live exercises.
• 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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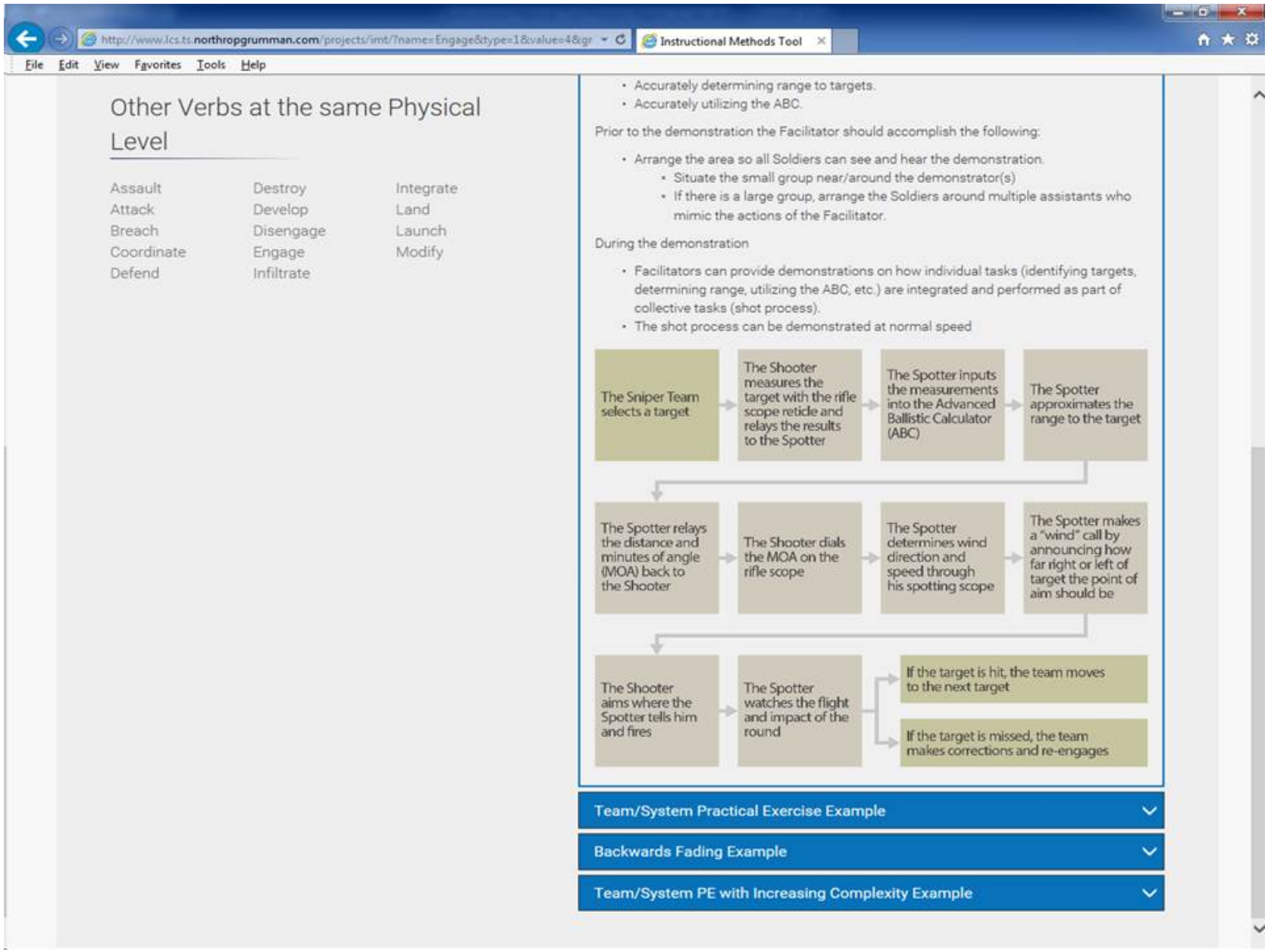
Instructional Methods Tool
File Edit View Favorites Tools Help
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other 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-FRBLC023
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
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 dials 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
The Spotter watches the flight
If the target is hit, the team moves to the next target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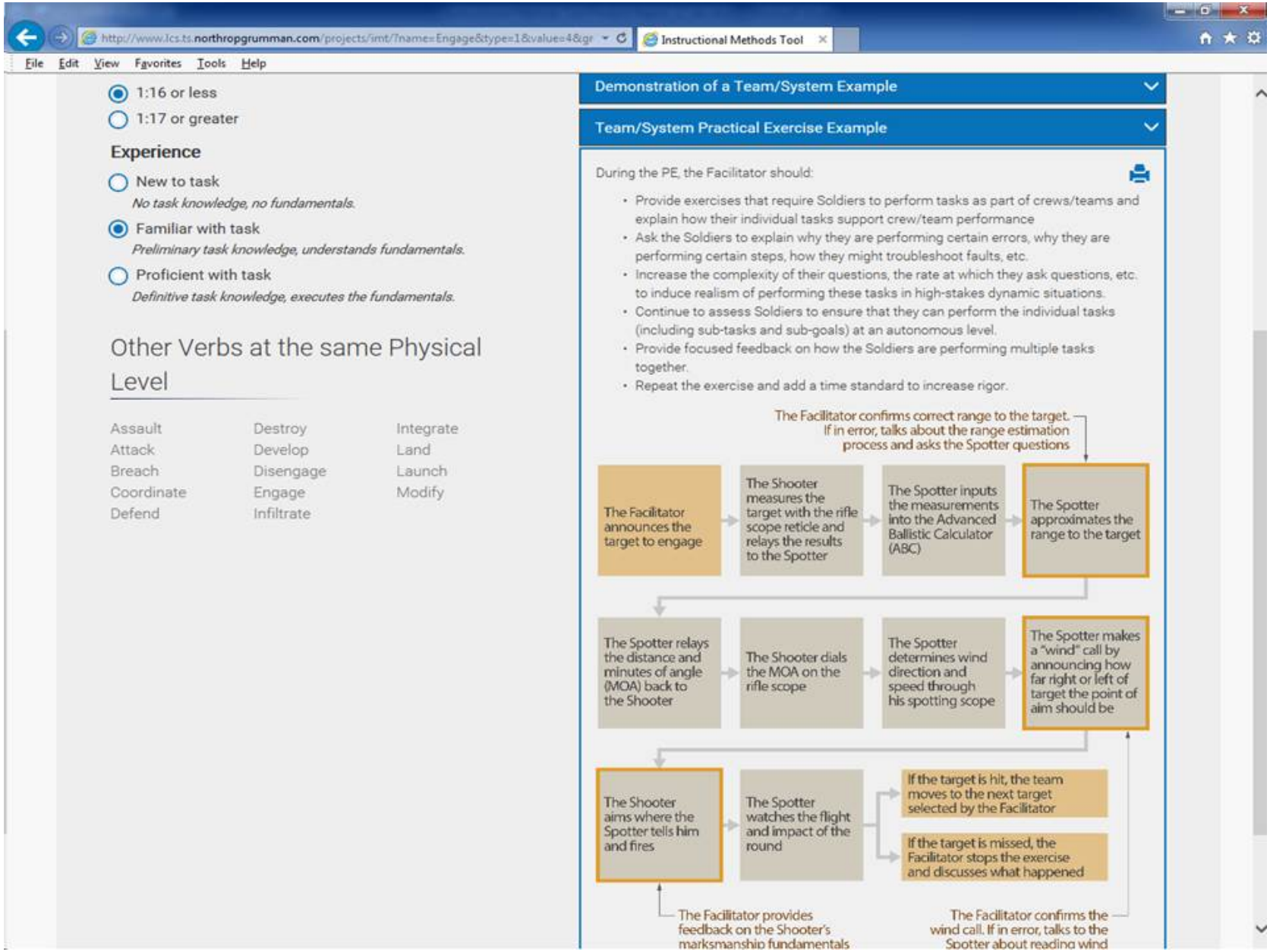
• Accurately determining range to targets.
• Accurately utilizing the ABC.
Prior to the demonstration the Facilitator should accomplish the following:
• Arrange the area so all Soldiers can see and hear the demonstration.
• Situate the small group near/around the demonstrator(s)
• If there is a large 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 relays the distance and minutes of angle (MOA) back to the Shooter
The Shooter dials 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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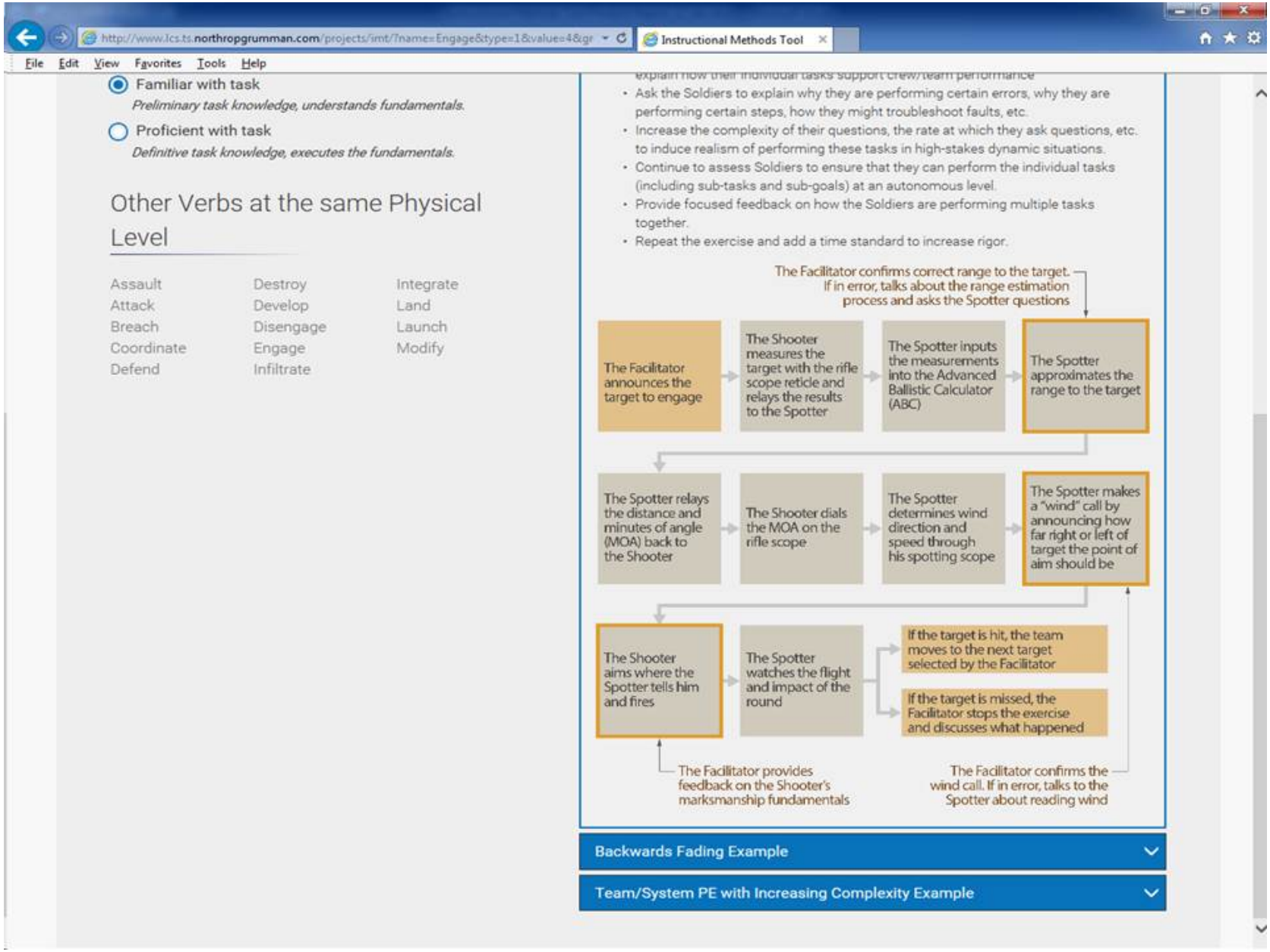
Demonstration of a Team/System Example
Team/System Practical Exercise Example
During the PE, the Facilitator should:
Provide exercises that require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance
Ask the Soldiers to explain why they are performing certain errors, why they are performing certain steps, how they might troubleshoot faults, etc.
Increase the complexity of 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 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 Facilitator announces the target to engage
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 dials 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 selected by the Facilitator
If the target is missed, the Facilitator stops the exercise and discusses what happened
The Facilitator provides feedback on the Shooter's marksmanship fundamentals
The Facilitator confirms the wind call. If in error, talks to the Spotter about reading wind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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.
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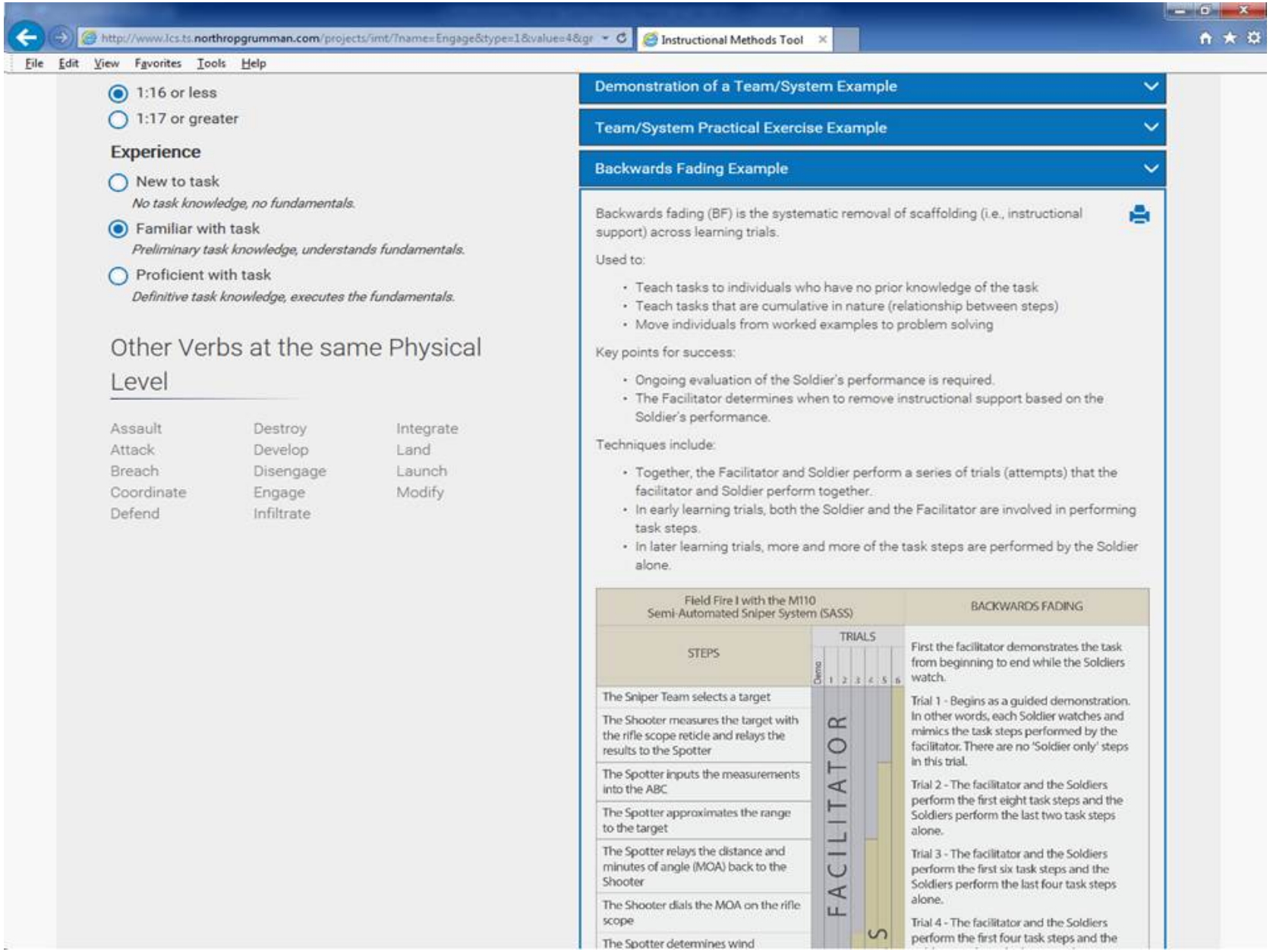
Continue to assess Soldiers to ensure that they can perform the individual tasks (including sub-tasks and sub-goals) at an autonomous level.
Provide focused feedback on how the Soldiers are performing multiple tasks together.
Repeat the exercise and add a time standard to increase rigor.
The Facilitator confirms correct range to the target. If in error, talks about the range estimation process and asks the Spotter questions
The Facilitator announces the target to engage
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 dials 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 selected by the Facilitator
If the target is missed, the Facilitator stops the exercise and discusses what happened
The Facilitator provides feedback on the Shooter's marksmanship fundamentals
The Facilitator confirms the wind call. If in error, talks to the Spotter about reading wind
Backwards Fading Example
Team/System PE with Increasing Complexity Example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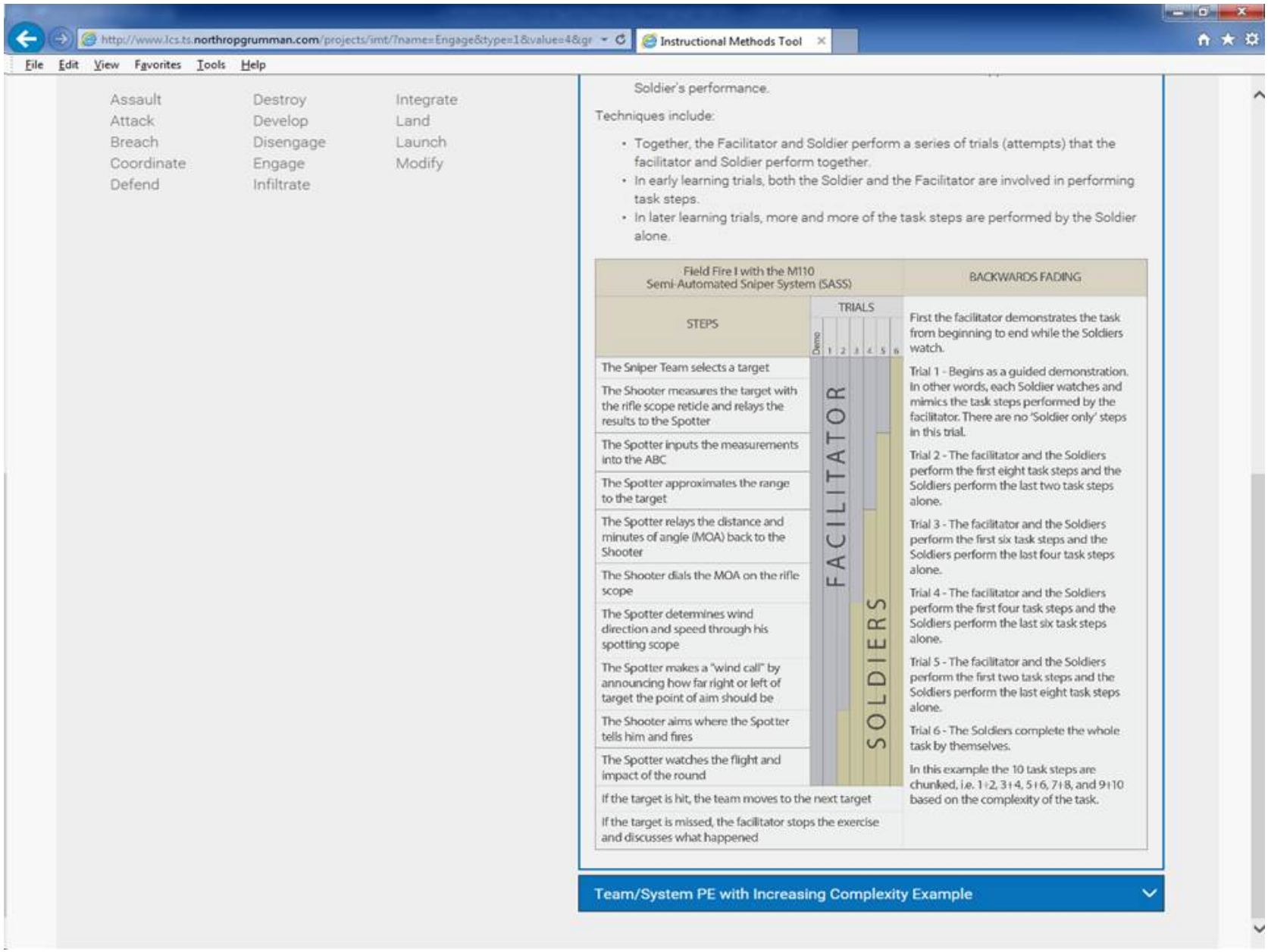
Integrate
Land
Launch
Modify
Demonstration of a Team/System Example
Team/System Practical Exercise Example
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.
Used to:
Teach tasks to individuals who have no prior 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.
Field Fire I with the M110 Semi-Automated Sniper System (SASS)
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
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 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 dials the MOA on the rifle scope
The Spotter determines wind
FACILITATOR
S
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 eight task steps and the Soldiers perform the last two task steps alone.
Trial 3 - The facilitator and the Soldiers perform the first six task steps and the Soldiers perform the last four task steps alone.
Trial 4 - The facilitator and the Soldiers perform the first four task steps and the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Instructional Methods Tool
File Edit View Favorites Tools Help
Assault
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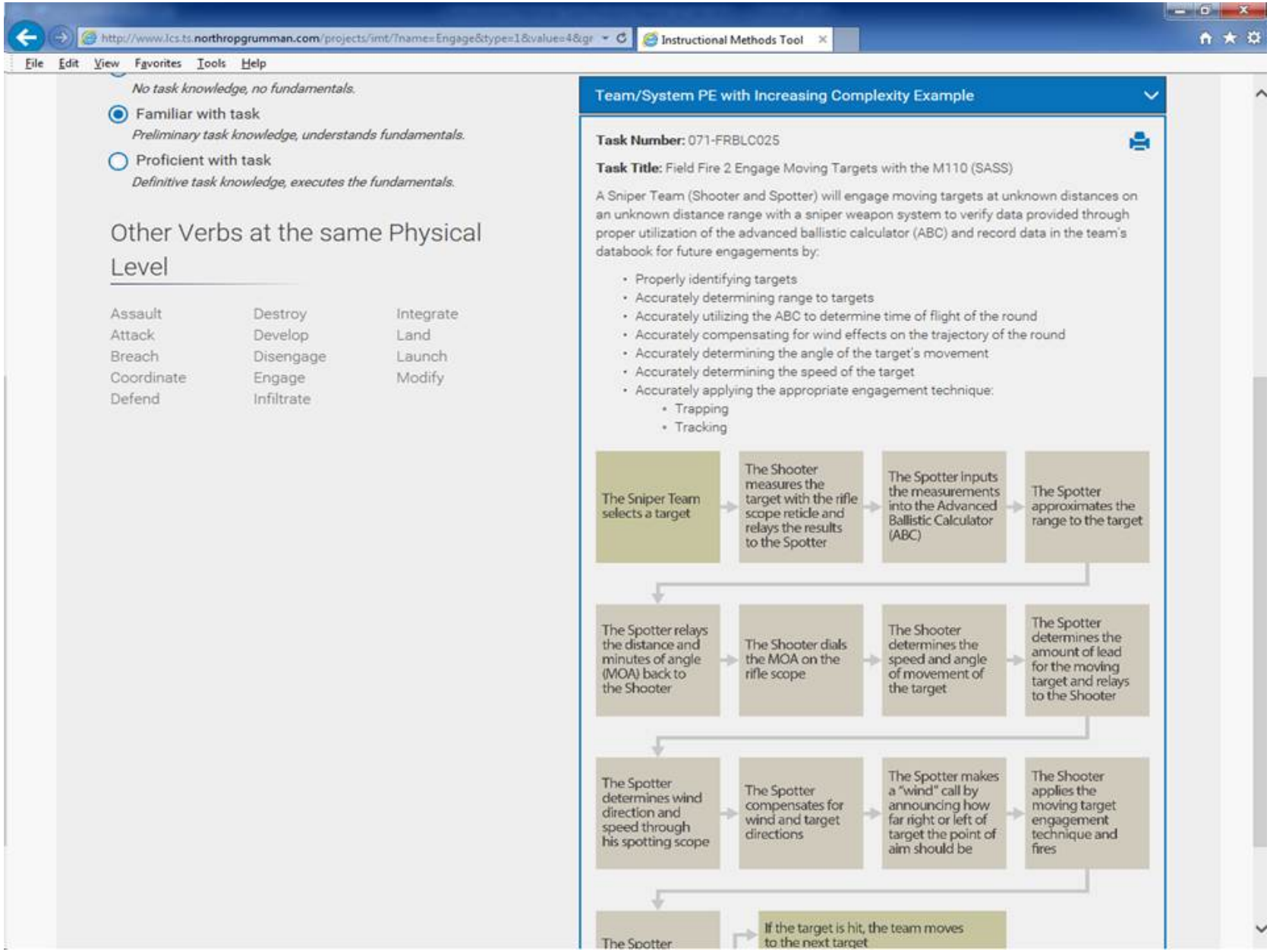
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
Soldier's performance.
Techniques include:
• Together, the Facilitator and Soldier perform a series of trials (attempts) that the facilitator and Soldier perform together.
• In early learning trials, both 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 I with the M110 Semi-Automated Sniper System (SASS)
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
FACILITATOR
SOLDIERS
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 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 dials 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 facilitator stops the exercise and discusses what happened
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 eight task steps and the Soldiers perform the last two task steps alone.
Trial 3 - The facilitator and the Soldiers perform the first six task steps and the Soldiers perform the last four task steps alone.
Trial 4 - The facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last six task steps alone.
Trial 5 - The facilitator and the Soldiers perform the first two task steps and the Soldiers perform the last eight task steps alone.
Trial 6 - The Soldiers complete the whole task by themselves.
In this example the 10 task steps are chunked, i.e. 1+2, 3+4, 5+6, 7+8, and 9+10 based on the complexity of the task.
Team/System PE with Increasing Complexity Example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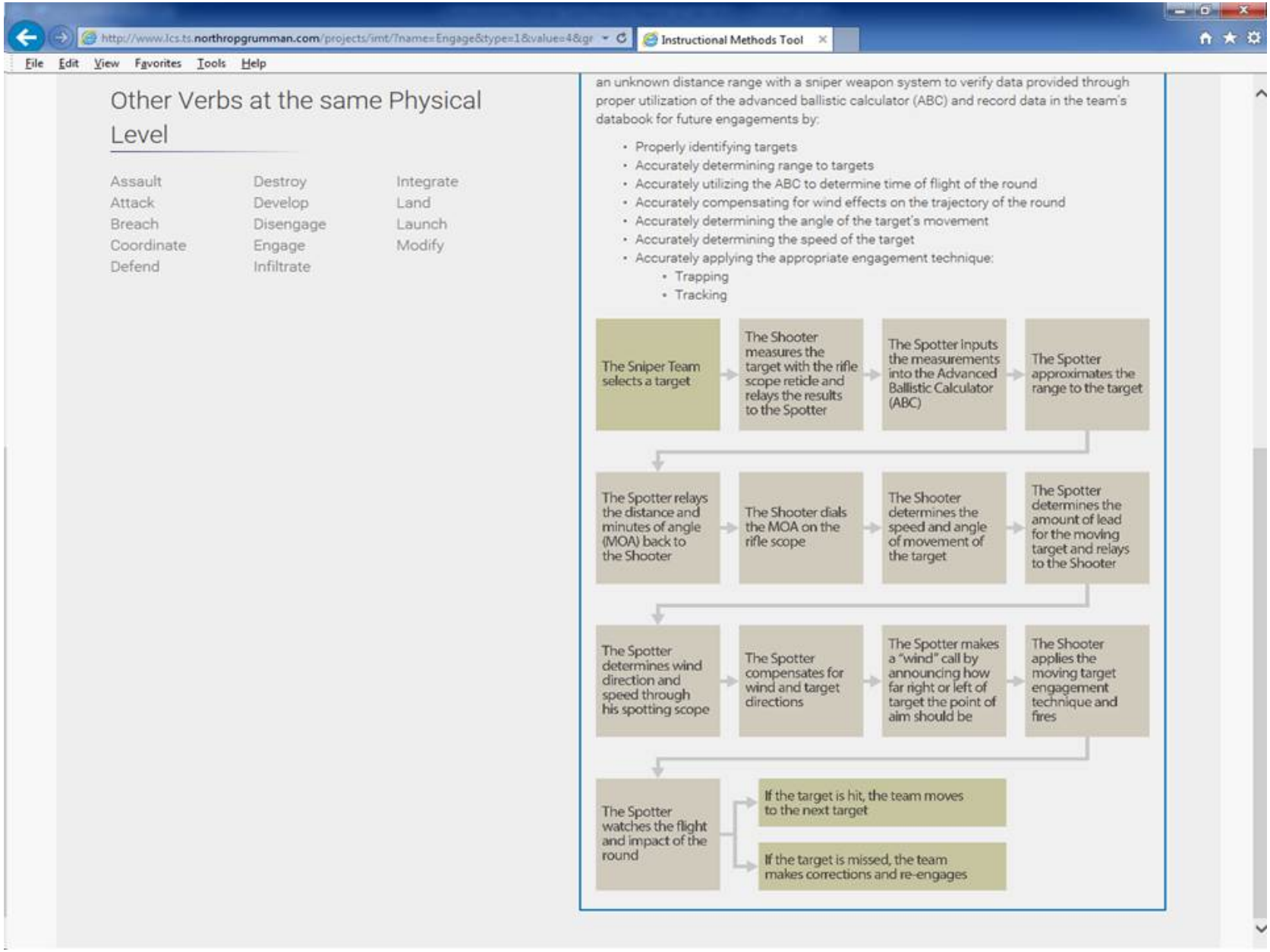
Instructional Methods Tool
File Edit View Favorites Tools Help
No task knowledge, no fundamentals.
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
Team/System PE with Increasing Complexity Example
Task Number: 071-FRBLC025
Task Title: Field Fire 2 Engage Moving Targets with the M110 (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 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 Spotter approximates the range to the target
The Spotter 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 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
The Spotter
If the target is hit, the team moves to the next target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Other Verbs at the same Physical Level
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Breach
Coordinate
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Destroy
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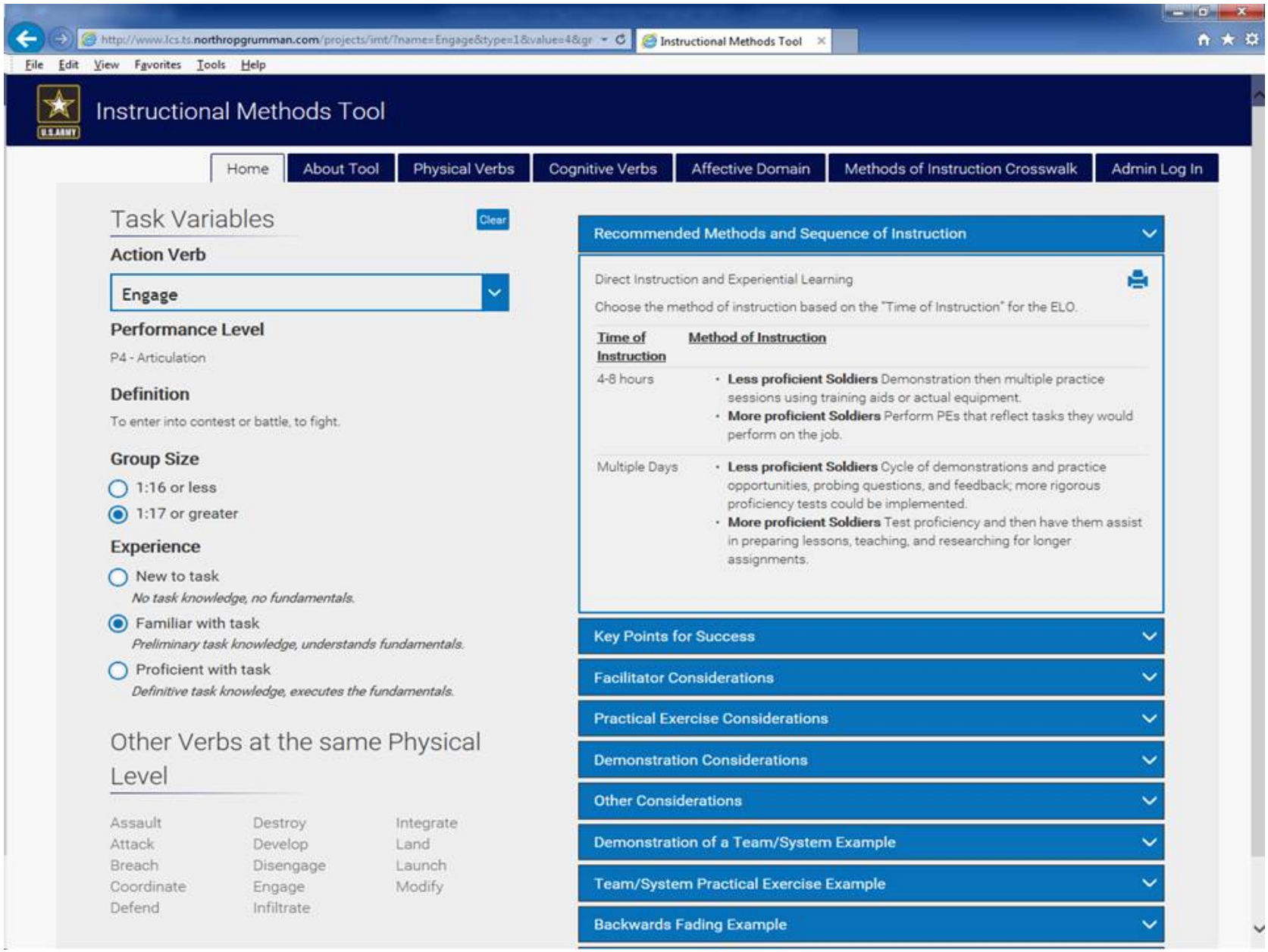
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's databook for future engagements by:
Properly identifying targets
Accurately 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 Spotter approximates the range to the target
The Spotter 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 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
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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Instructional Methods Tool
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About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
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
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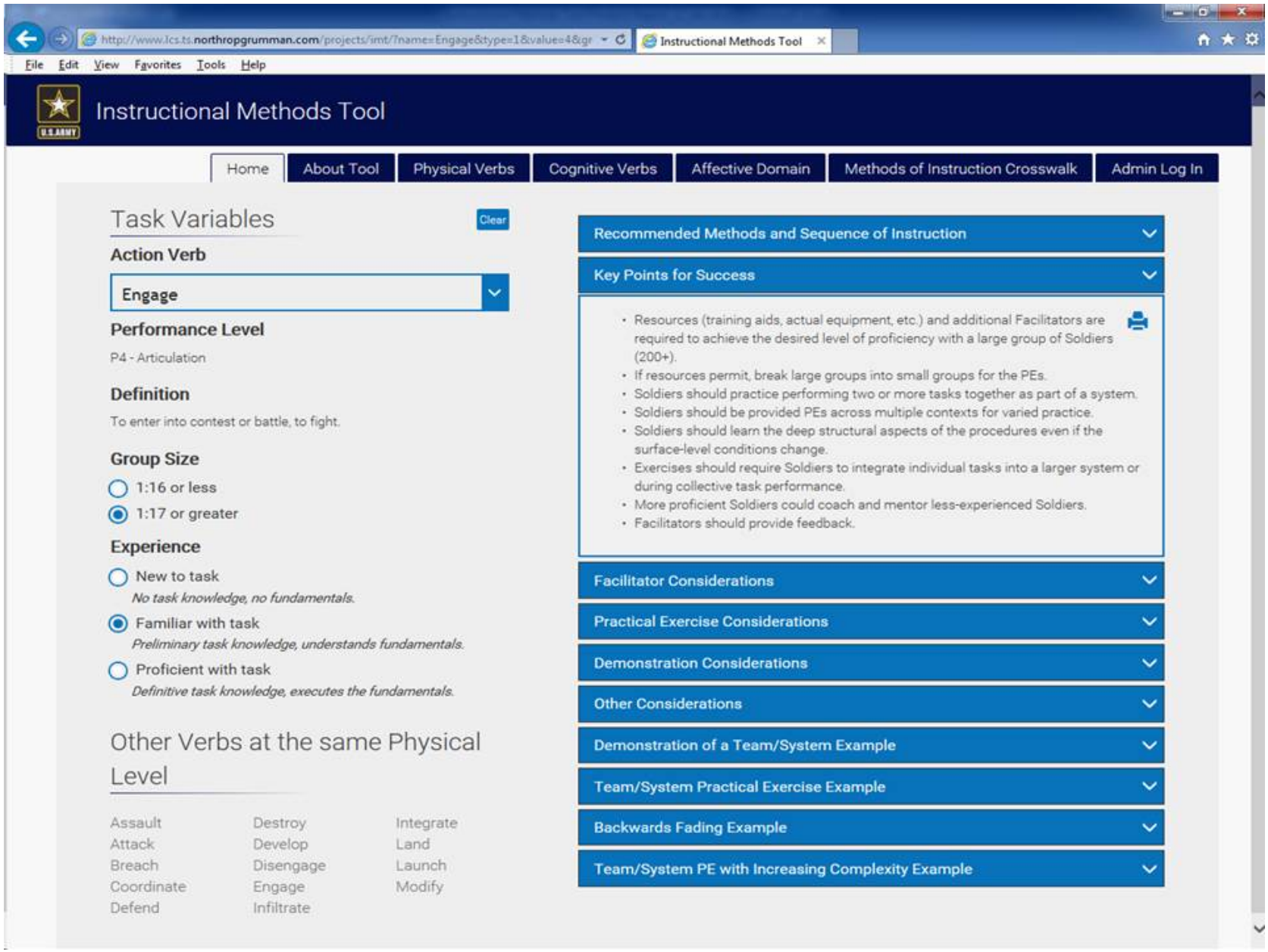
Modify
Recommended Methods and Sequence of Instruction
Direct Instruction and Experiential Learning
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-8 hours
Less proficient Soldiers Demonstration then multiple practice sessions 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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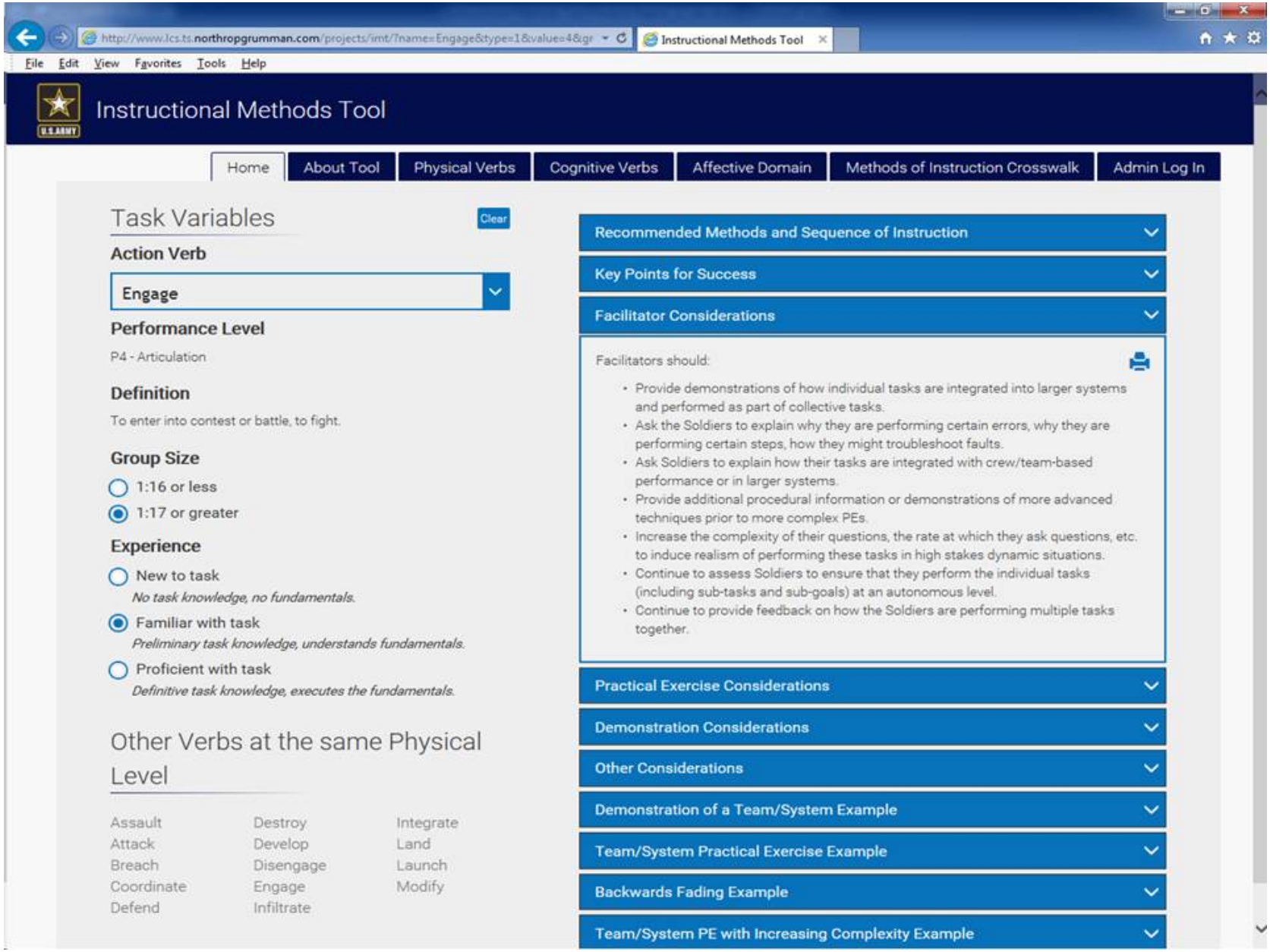
Recommended Methods and Sequence of Instruction
Key Points for Success
• Resources (training aids, actual equipment, etc.) and additional Facilitators are required to achieve the desired level of proficiency with a large group of Soldiers (200+).
• If resources permit, break large groups into small groups 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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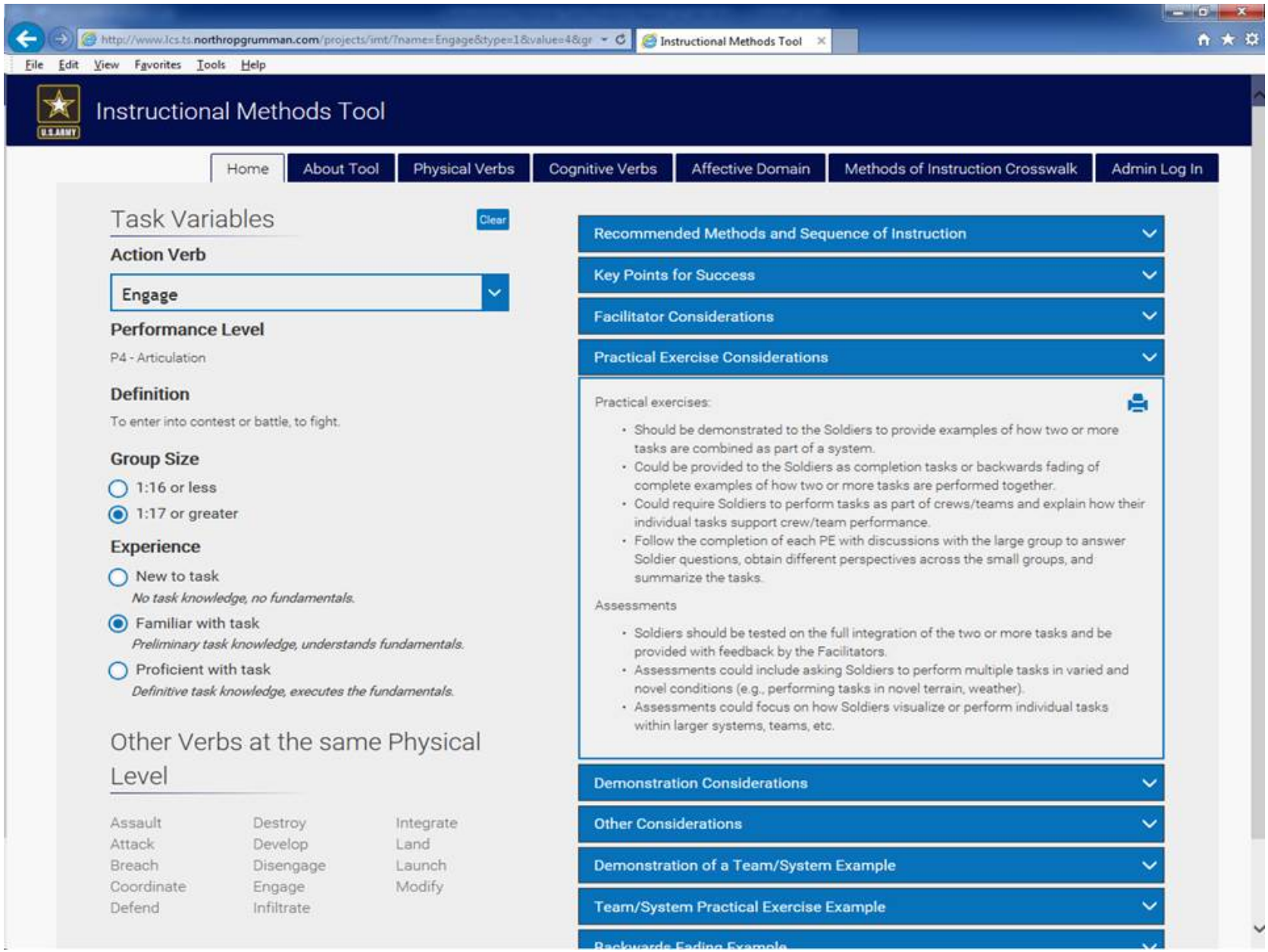
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Provide demonstrations of how individual tasks are integrated into larger systems and performed as part of collective tasks.
Ask the Soldiers to explain why they are performing certain 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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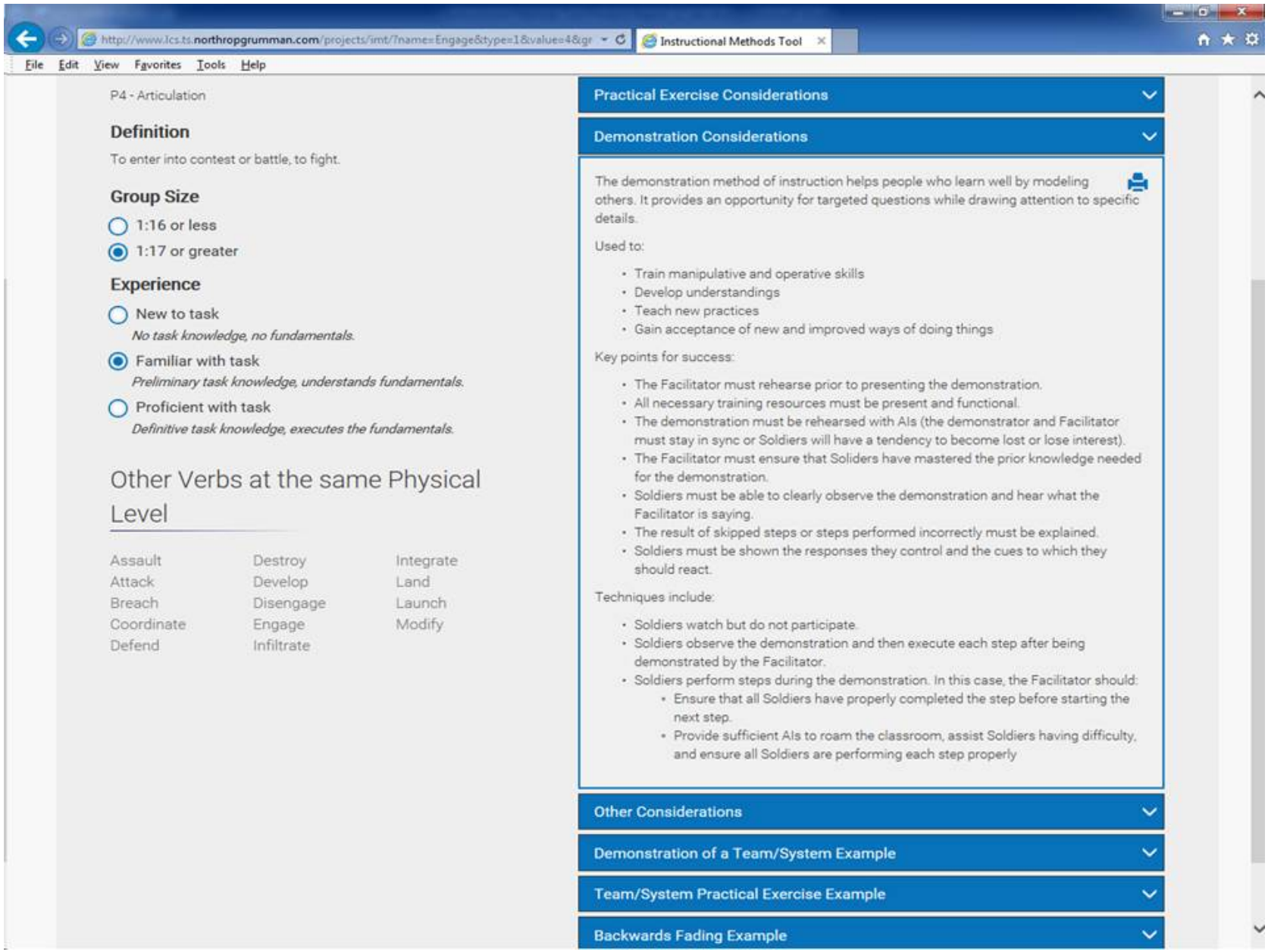
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Engage
Performance Level
P4 - Articulation
Definition
To enter into contest or battle, to fight.
Group Size
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
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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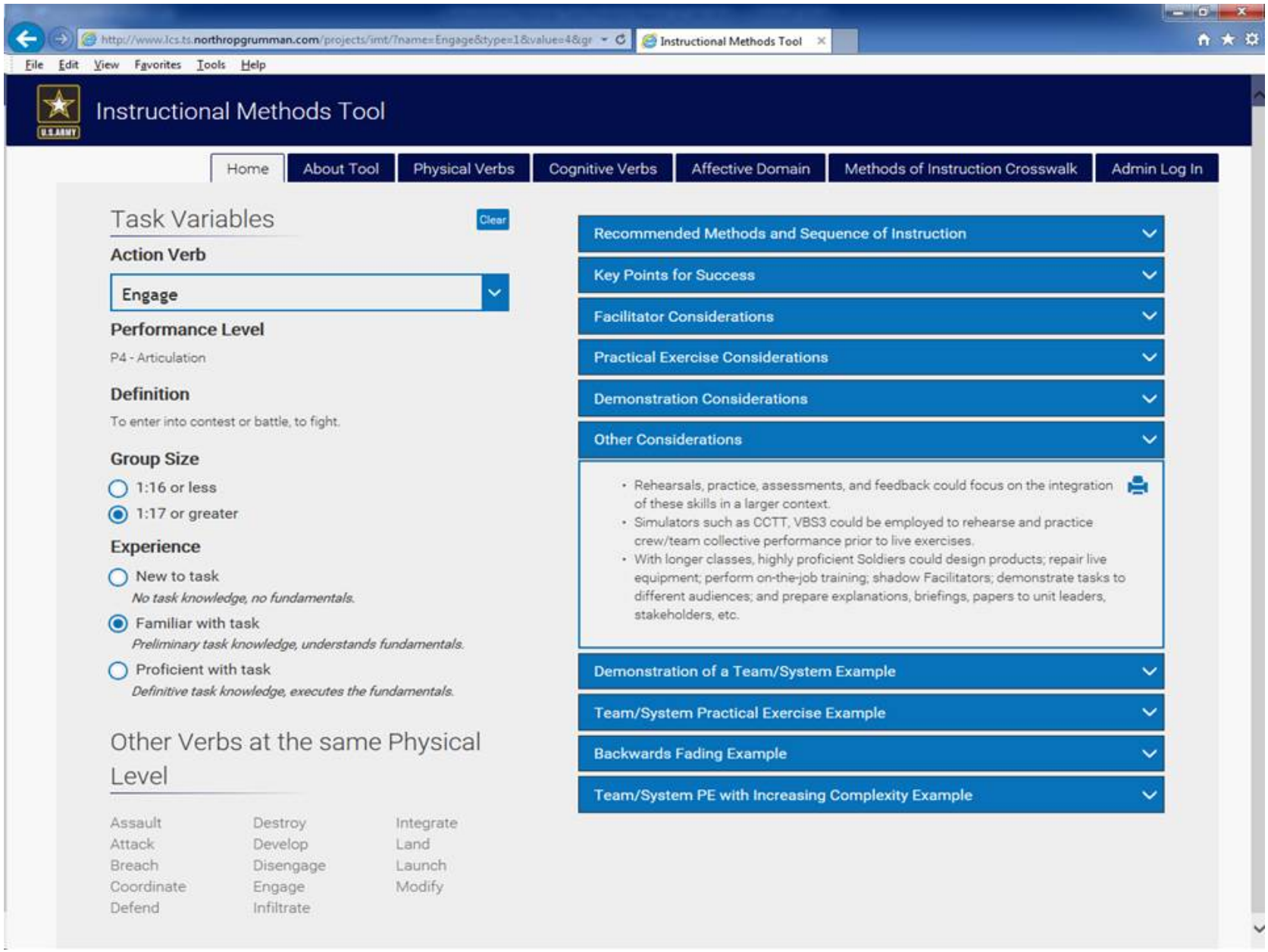
Practical Exercise Considerations
Demonstration Considerations
The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.
Used to:
Train manipulative and operative skills
Develop 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 Soliders 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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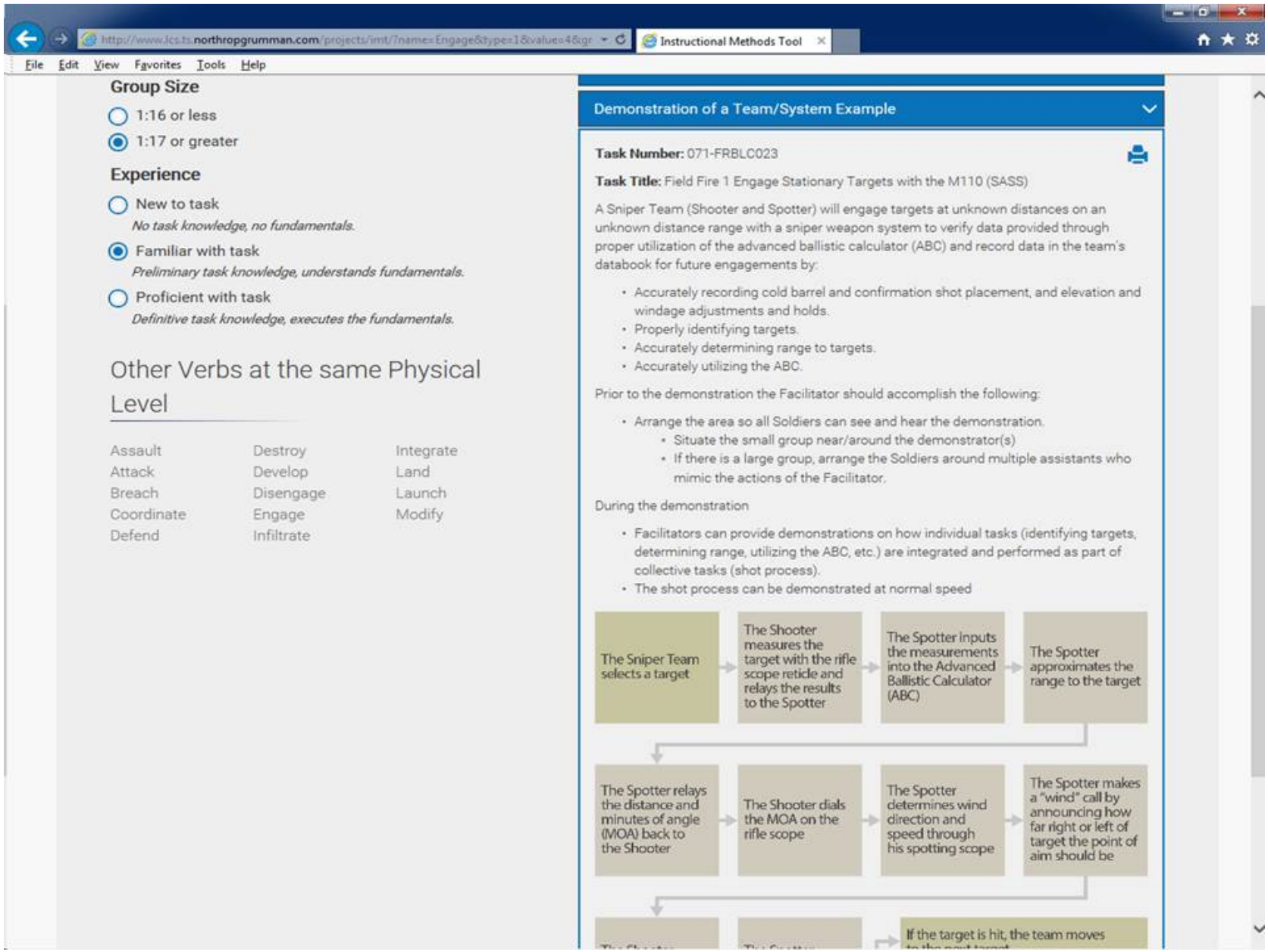
Demonstration Considerations
Other Considerations
• Rehearsals, practice, assessments, and feedback could focus on the integration of these skills in a larger context.
• Simulators such as CCTT, VBS3 could be employed to rehearse and practice crew/team collective performance prior to live exercises.
• 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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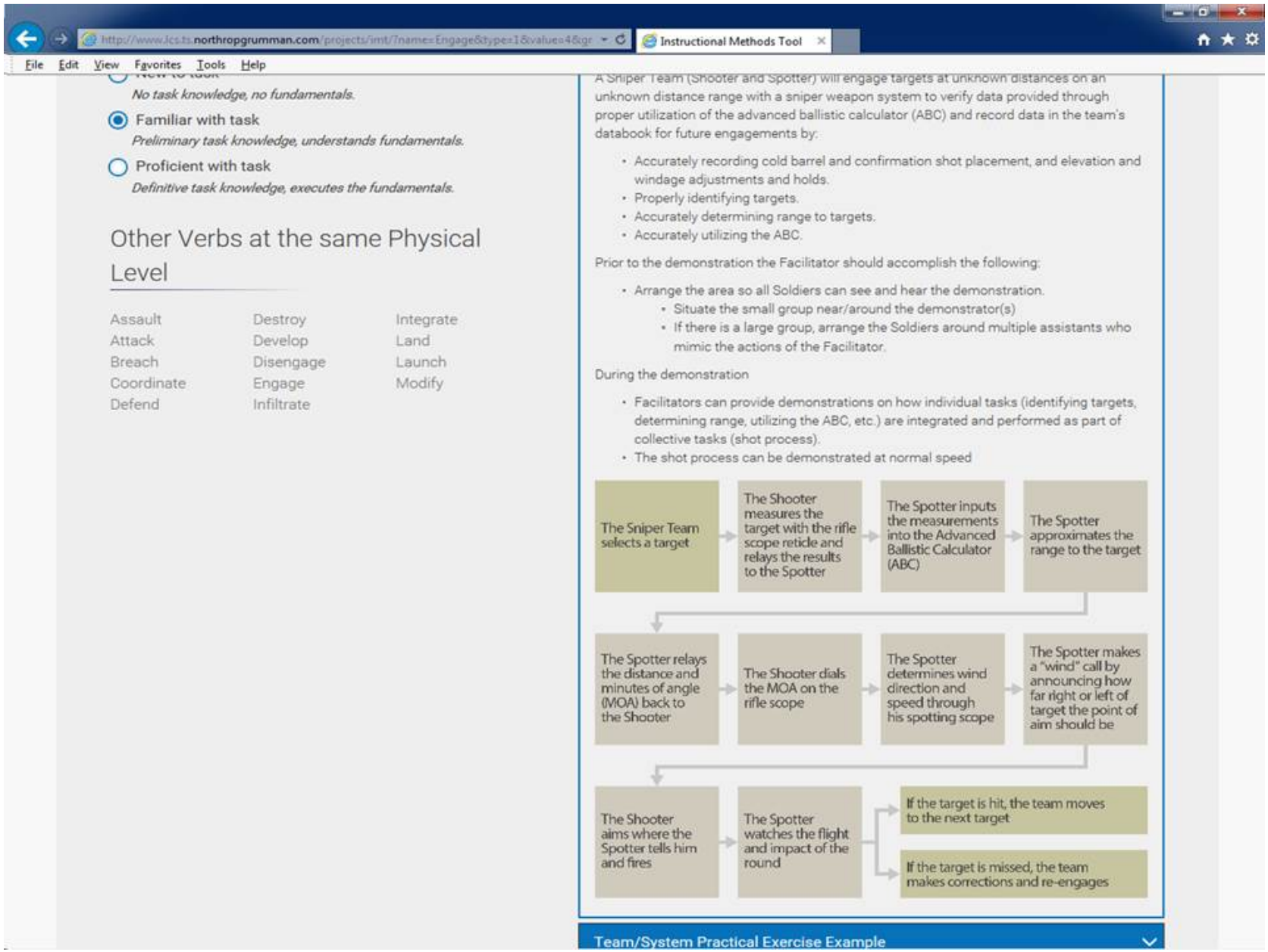
Demonstration of a Team/System Example
Task Number: 071-FRBLC023
Task Title: Field Fire 1 Engage Stationary Targets with the M110 (SASS)
A Sniper Team (Shooter and Spotter) will engage targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through 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
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 dials 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
If the target is hit, the team moves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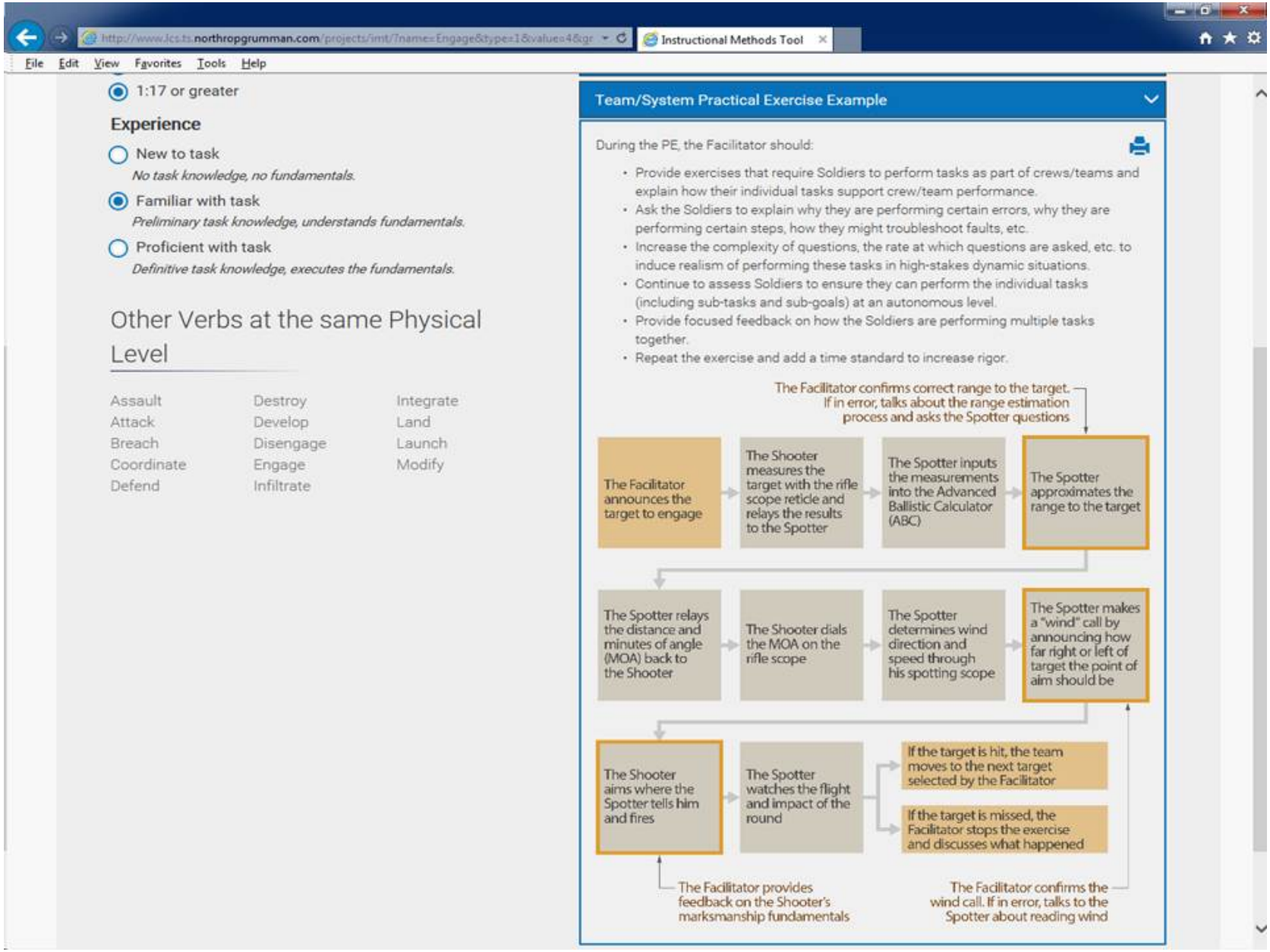
• Properly identifying targets.
• Accurately determining range to targets.
• Accurately utilizing the ABC.
Prior to the demonstration the Facilitator should accomplish the following:
• Arrange the area so all Soldiers can see and hear the demonstration.
• Situate the small group near/around the demonstrator(s)
• 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 relays the distance and minutes of angle (MOA) back to the Shooter
The Shooter dials 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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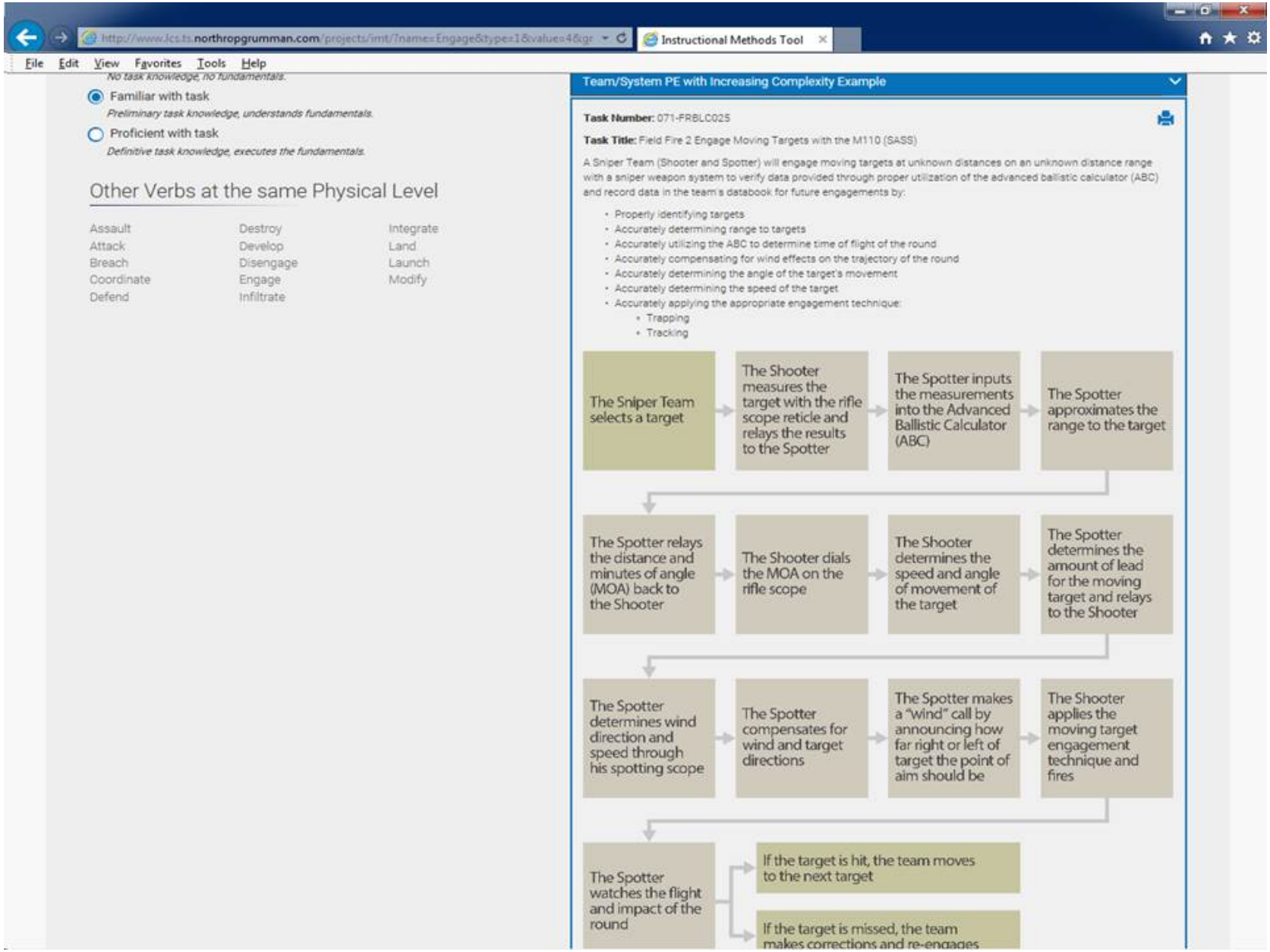
Modify
Team/System Practical Exercise Example
During the PE, the Facilitator should:
Provide exercises that require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance.
Ask the Soldiers to explain why they are performing certain errors, 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 Facilitator announces the target to engage
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 dials 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 selected by the Facilitator
If the target is missed, the Facilitator stops the exercise and discusses what happened
The Facilitator provides feedback on the Shooter's marksmanship fundamentals
The Facilitator confirms the wind call. If in error, talks to the Spotter about reading wind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Integrate
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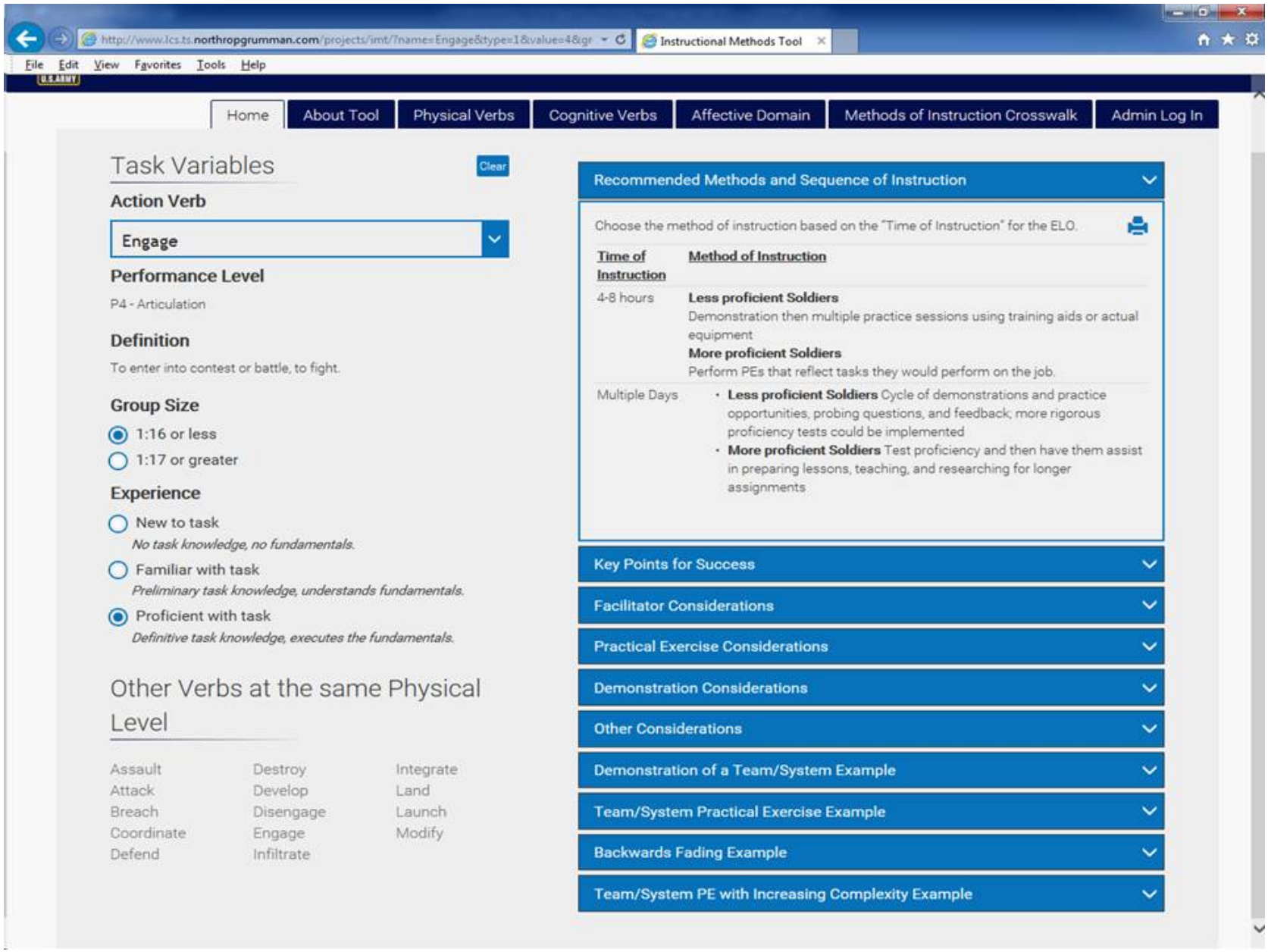
Launch
Modify
Team/System PE with Increasing Complexity Example
Task Number: 071-FRBLC025
Task Title: Field Fire 2 Engage Moving Targets with the M110 (SASS)
A Sniper Team (Shooter and Spotter) will engage moving targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's 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 Spotter approximates the range to the target
The Spotter 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 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
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 M

Military Task Examples
P4 - Articulation / Small Group / Proficient with Task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Modify
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method 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
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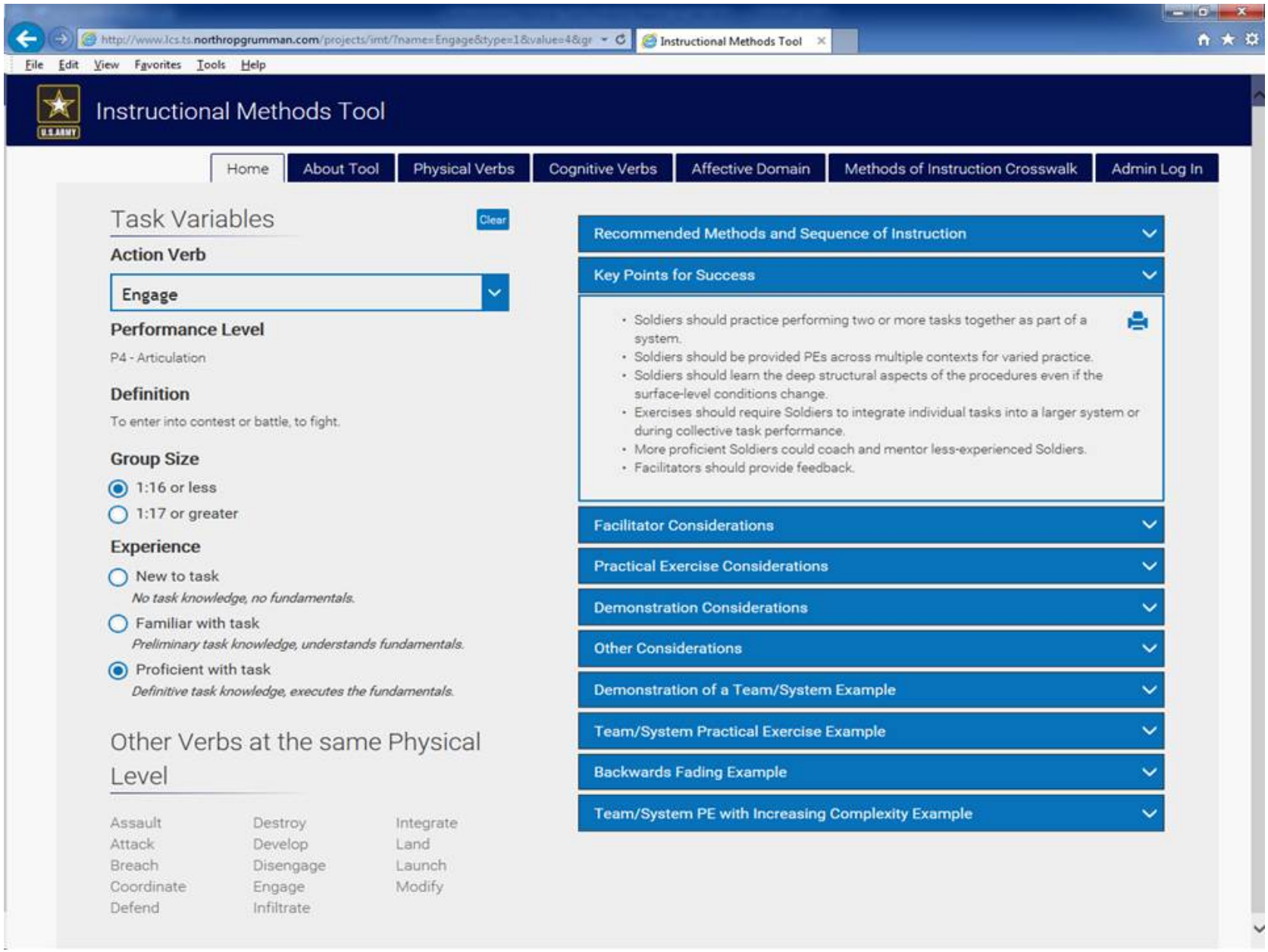
Team/System PE with Increasing Complexity Example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Recommended Methods and Sequence of Instruction
Key Points for Success
Soldiers should practice performing two or more tasks together as part of a system.
Soldiers should be provided PEs across multiple 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.
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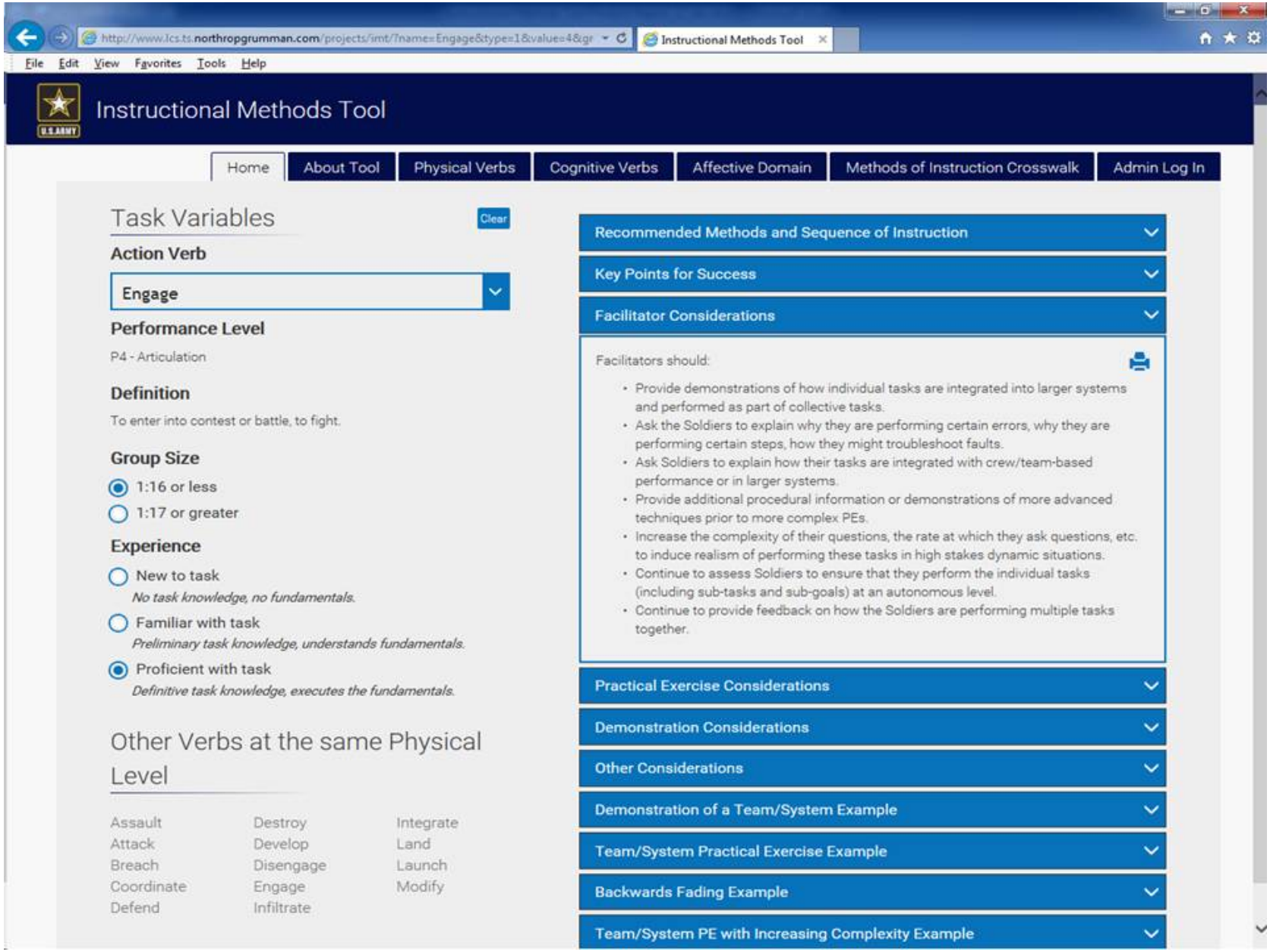
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Facilitators should:
Provide demonstrations of how individual tasks are integrated into larger systems and performed as part of collective tasks.
Ask the Soldiers to explain why they are performing certain errors, why they are performing certain steps, 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.
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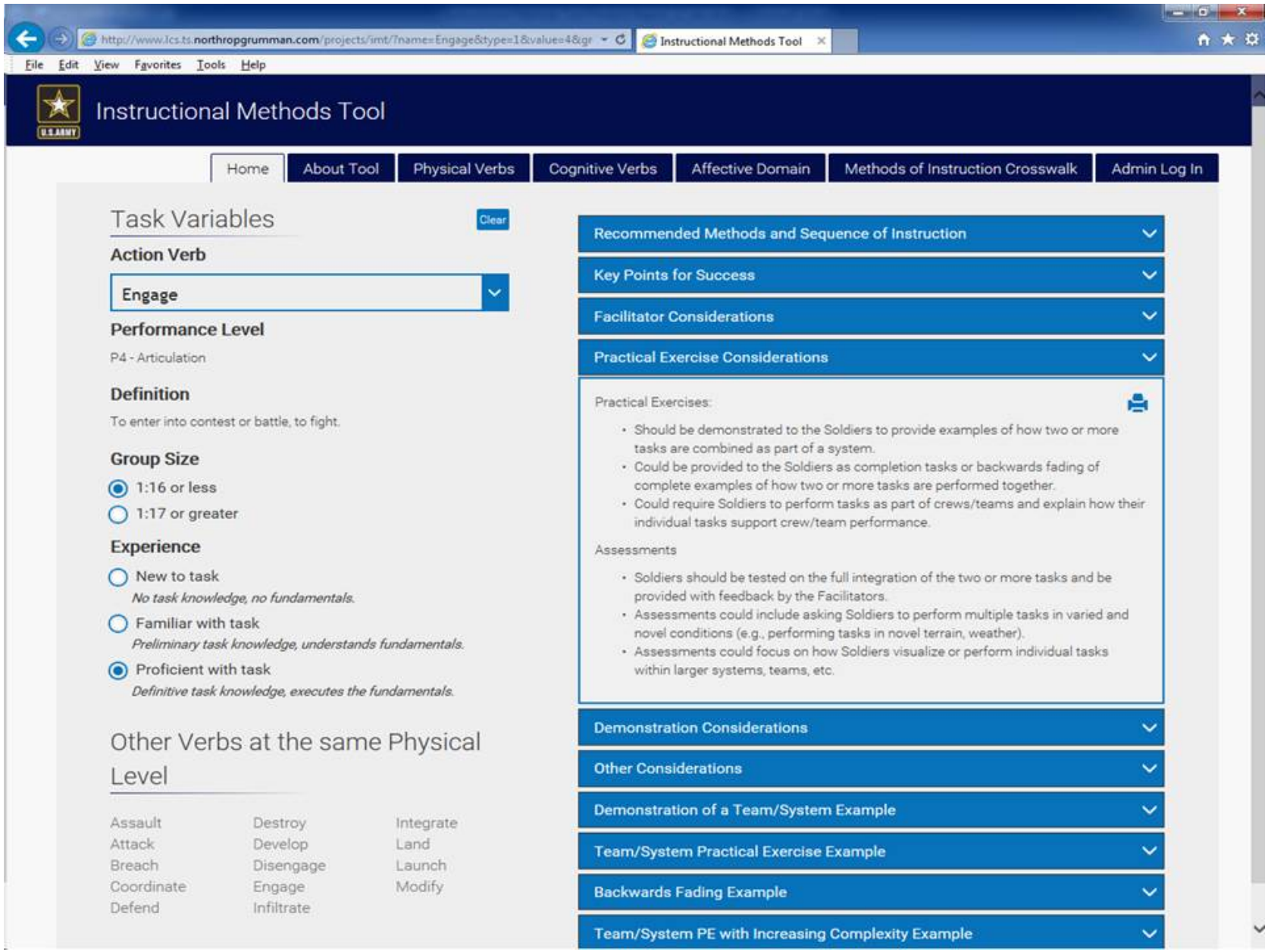
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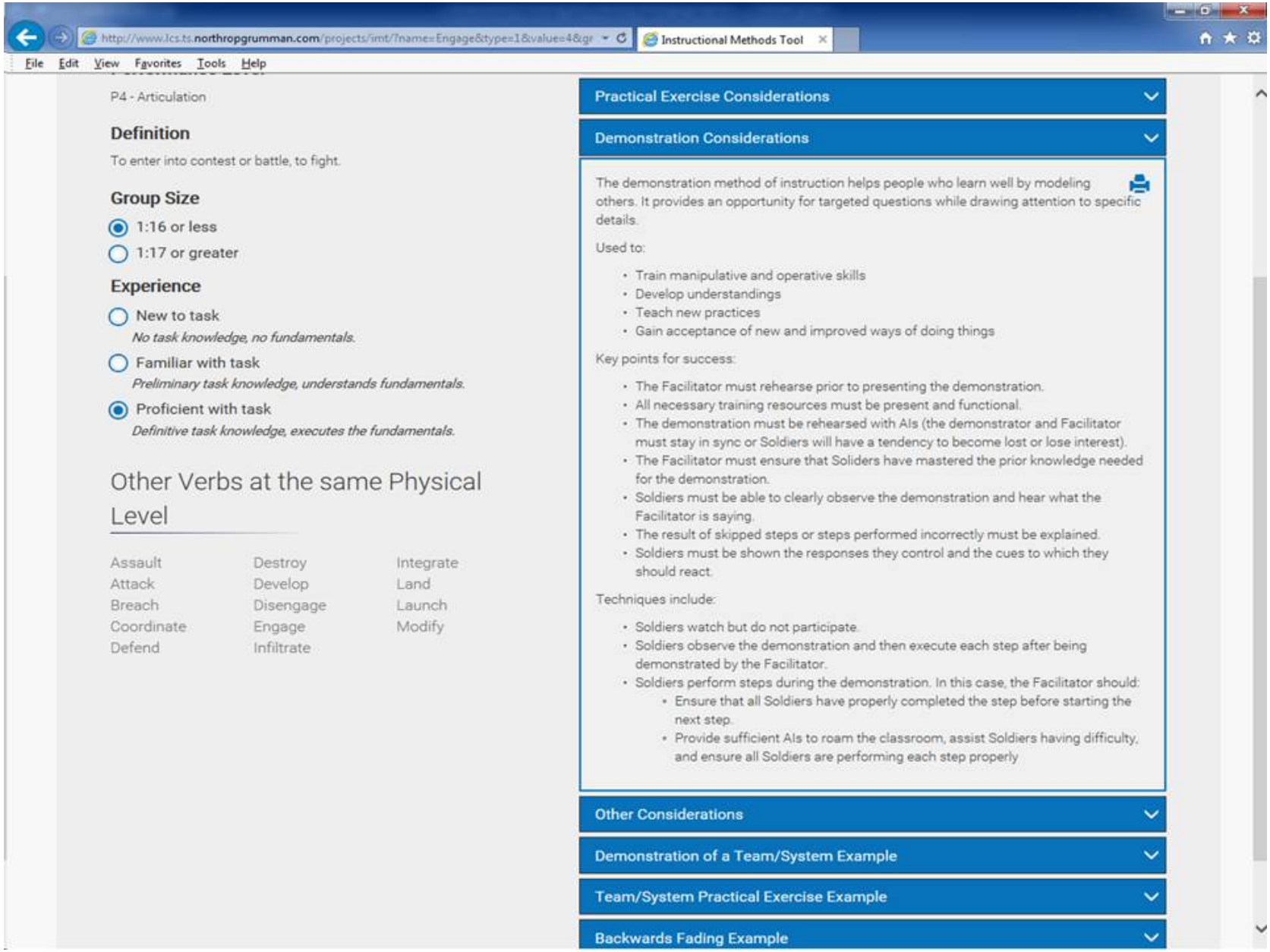
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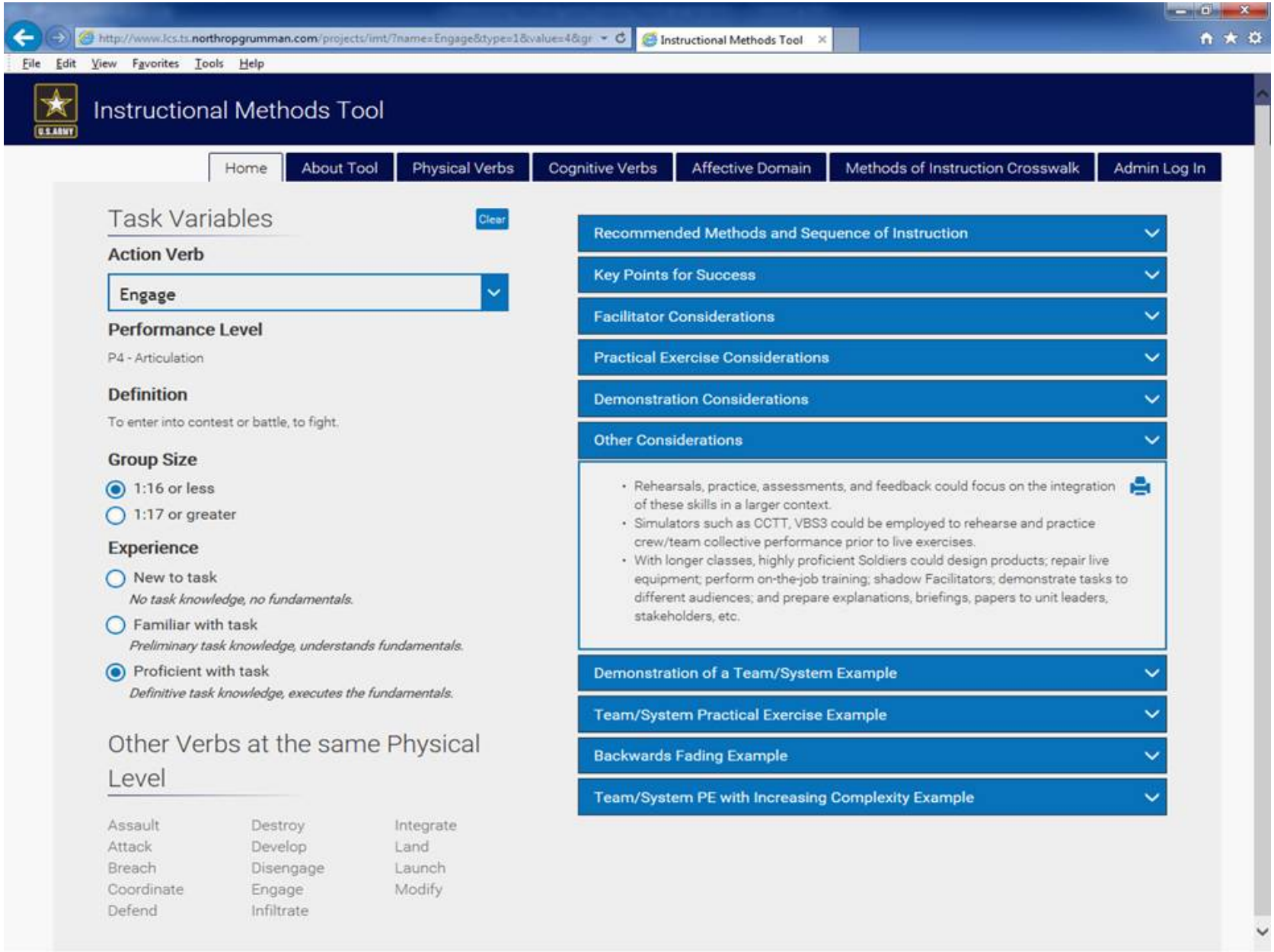
All necessary training resources must be present and functional.
The demonstration must be rehearsed with AIs (the demonstrator and Facilitator must stay in sync or Soldiers will have a tendency to become lost or lose interest).
The Facilitator must ensure that Soliders have mastered the prior knowledge 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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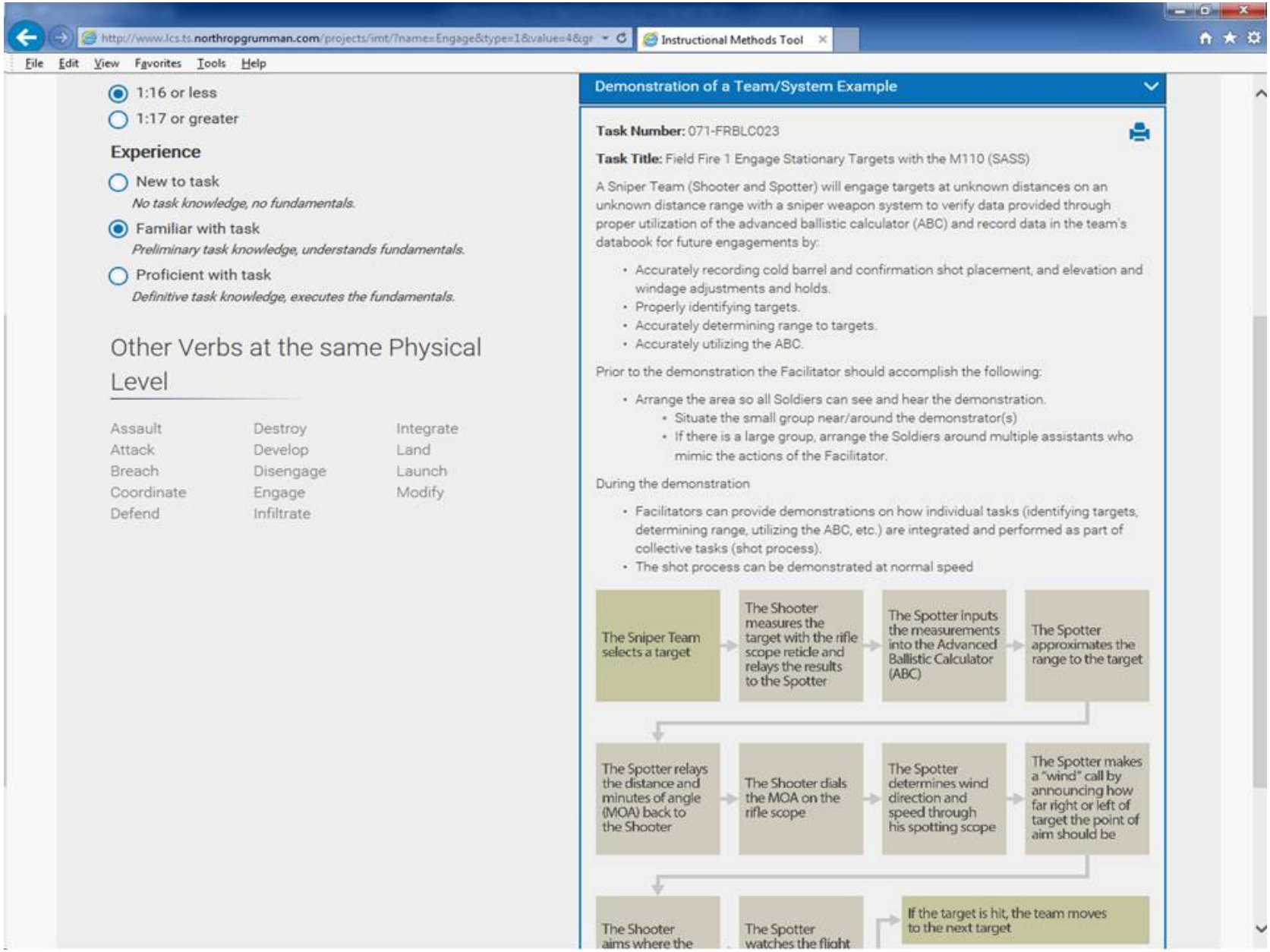
Instructional Methods Tool
File Edit View Favorites Tools Help
Instructional Methods Tool
Home
About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Engage
Performance Level
P4 - Articulation
Definition
To enter into 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
Other Considerations
• Rehearsals, practice, assessments, and feedback could focus on the integration of these skills in a larger context.
• Simulators such as CCTT, 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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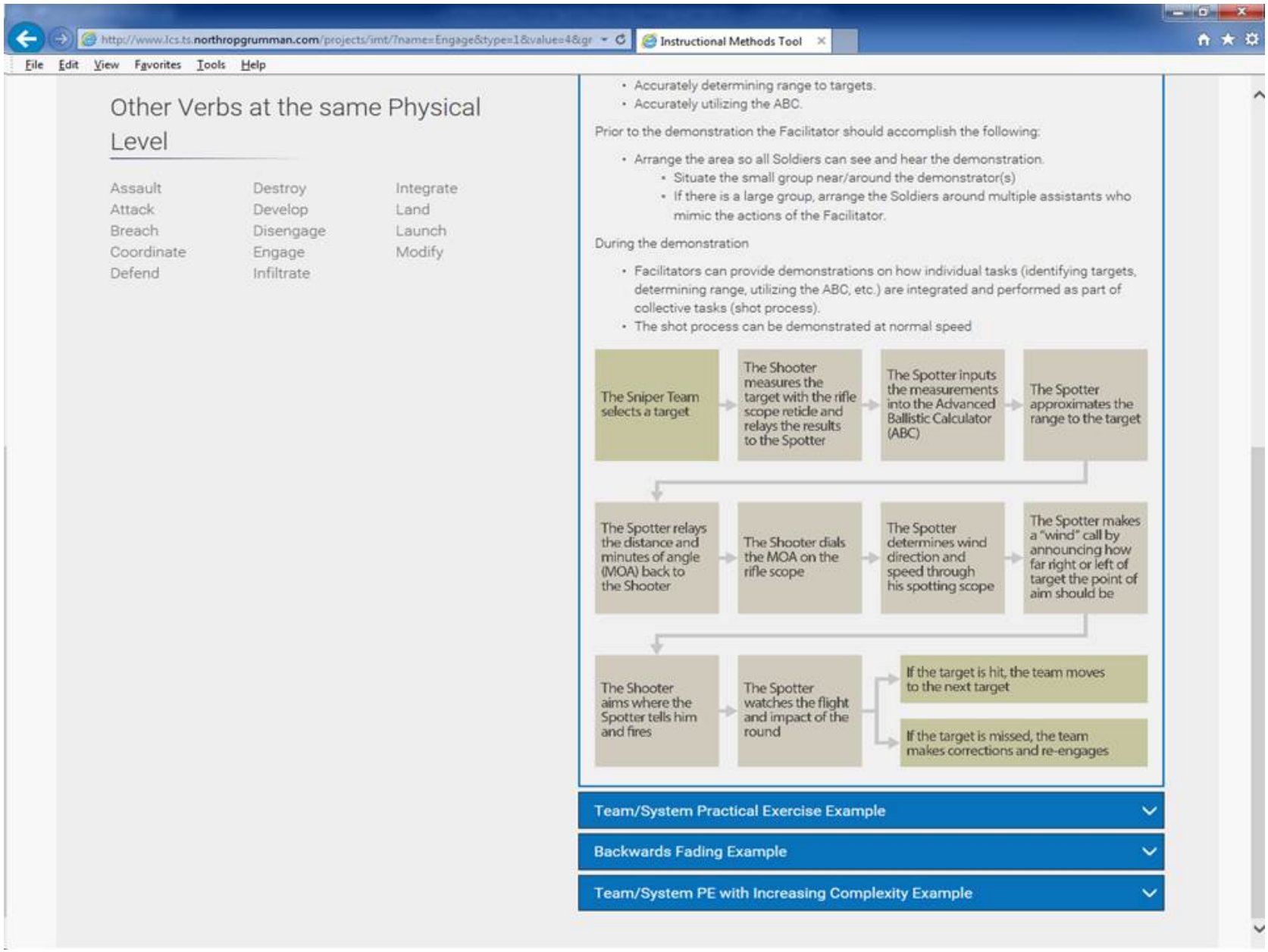
Other Verbs at the same Physical Level
Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
Demonstration of a Team/System Example
Task Number: 071-FRBLC023
Task Title: Field Fire 1 Engage Stationary Targets with the M110 (SASS)
A Sniper Team (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
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 dials 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
The Spotter watches the flight
If the target is hit, the team moves to the next target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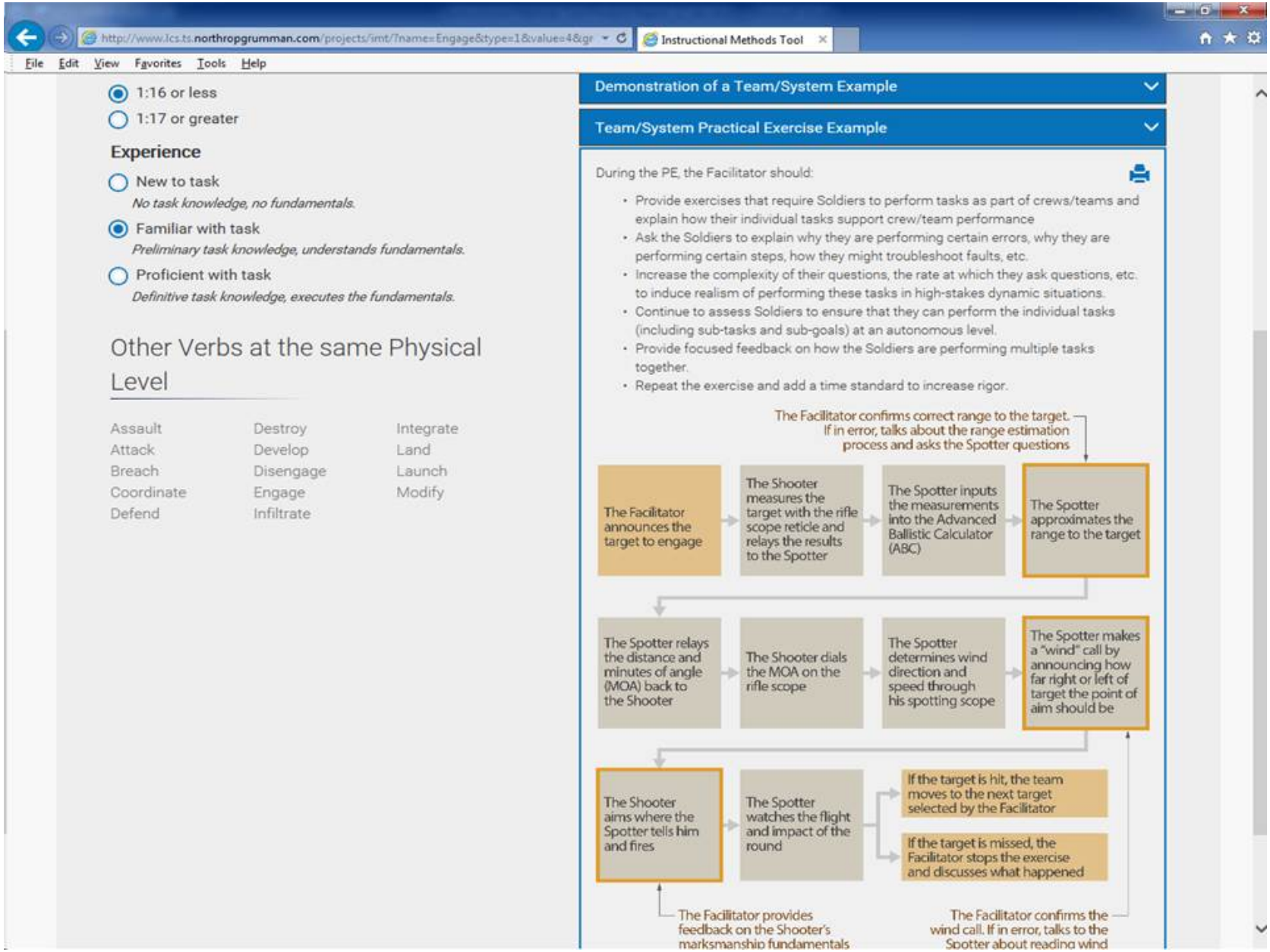
Instructional Methods Tool
File Edit View Favorites Tools Help
Other Verbs at the same Physical Level
Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
• Accurately determining range to targets.
• Accurately utilizing the ABC.
Prior to the 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)
• 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 relays the distance and minutes of angle (MOA) back to the Shooter
The Shooter dials 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


Instructional Methods Tool
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Land
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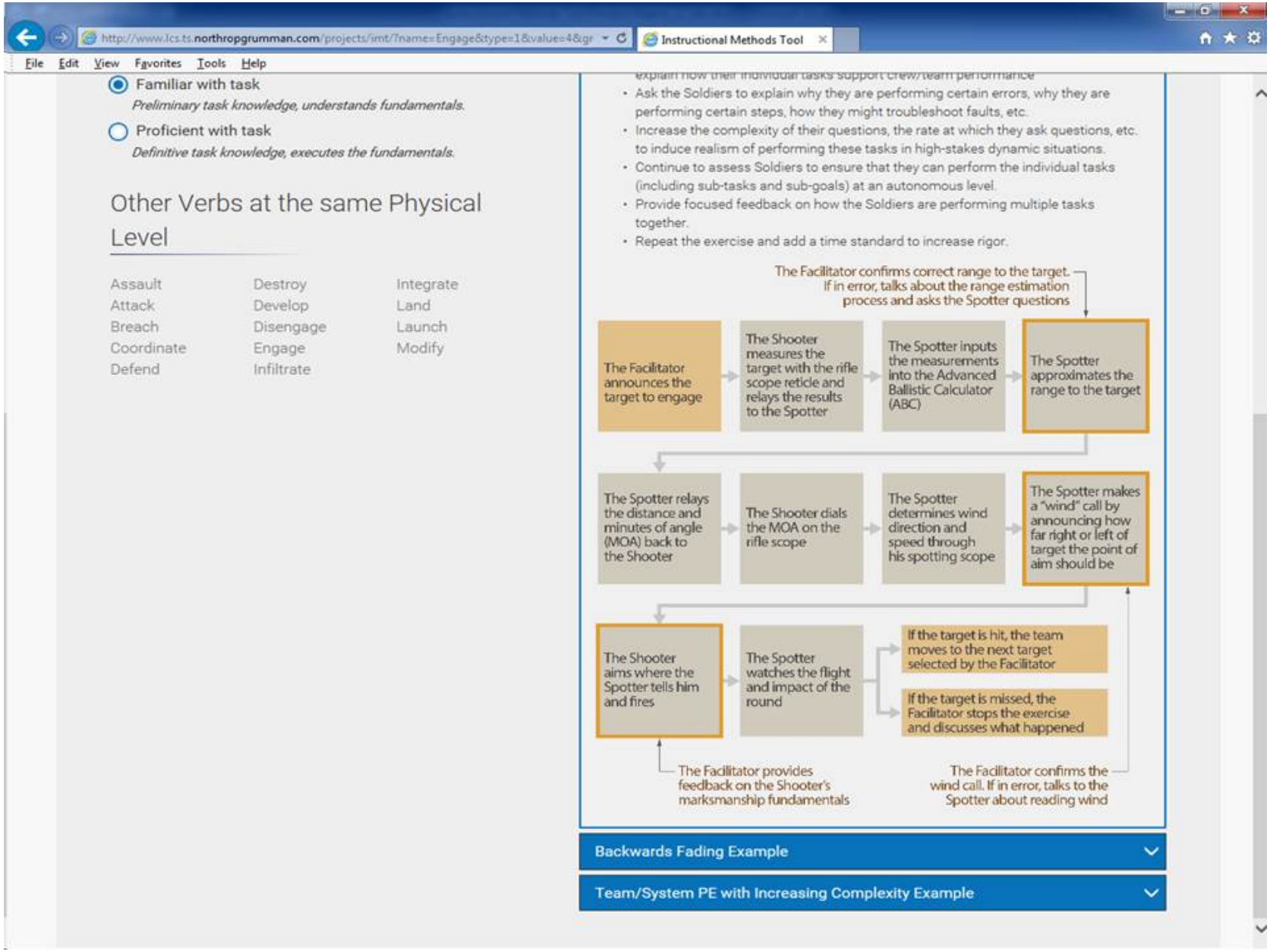
Modify
Demonstration of a Team/System Example
Team/System Practical Exercise Example
During the PE, the Facilitator should:
Provide exercises that require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance
Ask the Soldiers to explain why they are performing certain errors, why they are performing certain steps, how they might troubleshoot faults, etc.
Increase the complexity of 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 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 Facilitator announces the target to engage
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 dials 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 selected by the Facilitator
If the target is missed, the Facilitator stops the exercise and discusses what happened
The Facilitator provides feedback on the Shooter's marksmanship fundamentals
The Facilitator confirms the wind call. If in error, talks to the Spotter about reading wind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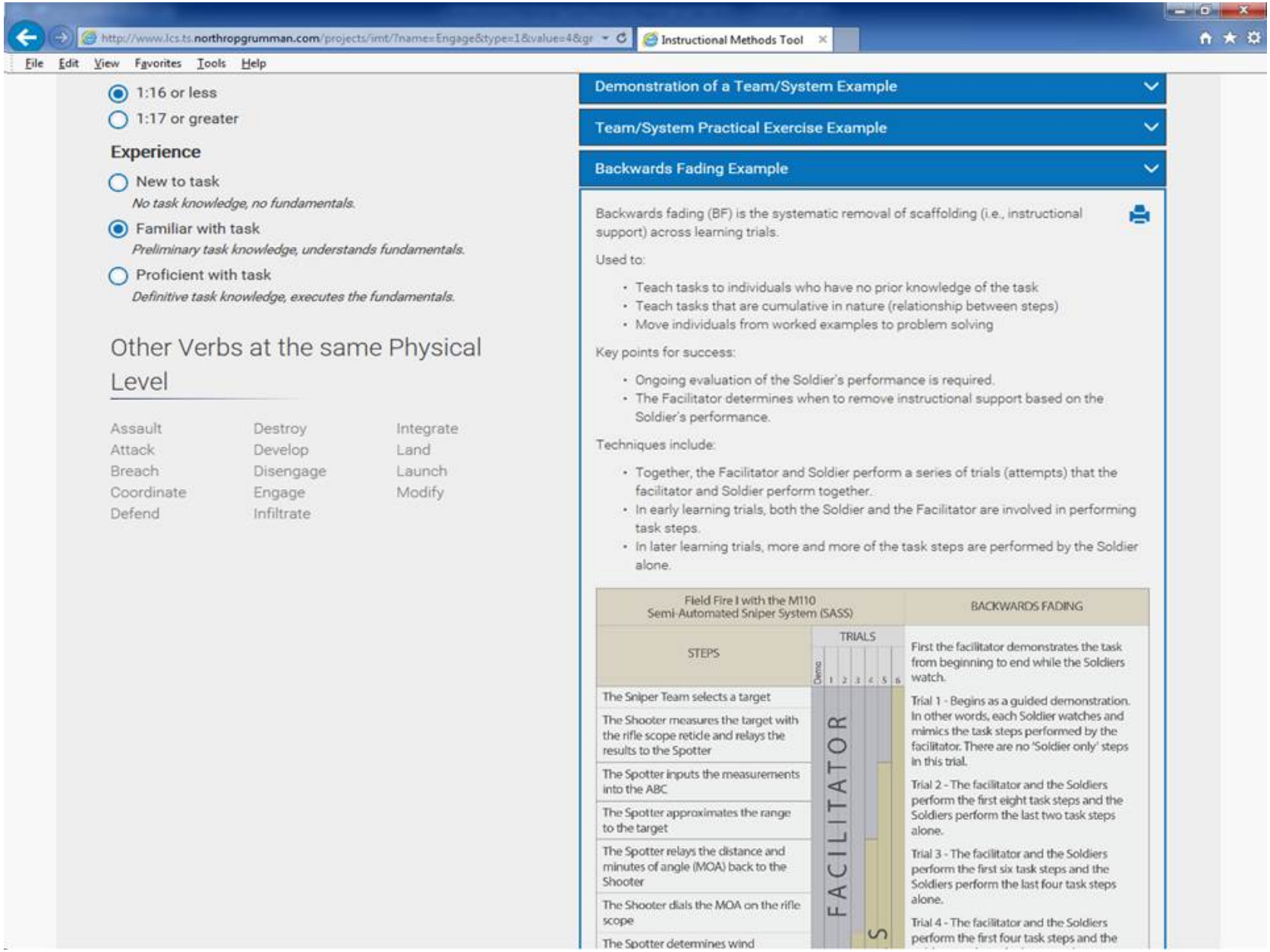
Engage
Infiltrate
Integrate
Land
Launch
Modify
explain how their individual tasks support crew/team performance
Ask the Soldiers to explain why they are performing certain errors, why they are performing certain steps, how they might troubleshoot faults, etc.
Increase the complexity of their questions, 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 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 Facilitator announces the target to engage
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 dials 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 selected by the Facilitator
If the target is missed, the Facilitator stops the exercise and discusses what happened
The Facilitator provides feedback on the Shooter's marksmanship fundamentals
The Facilitator confirms the wind call. If in error, talks to the Spotter about reading wind
Backwards Fading Example
Team/System PE with Increasing Complexity Example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Definitive task knowledge, executes the fundamentals.
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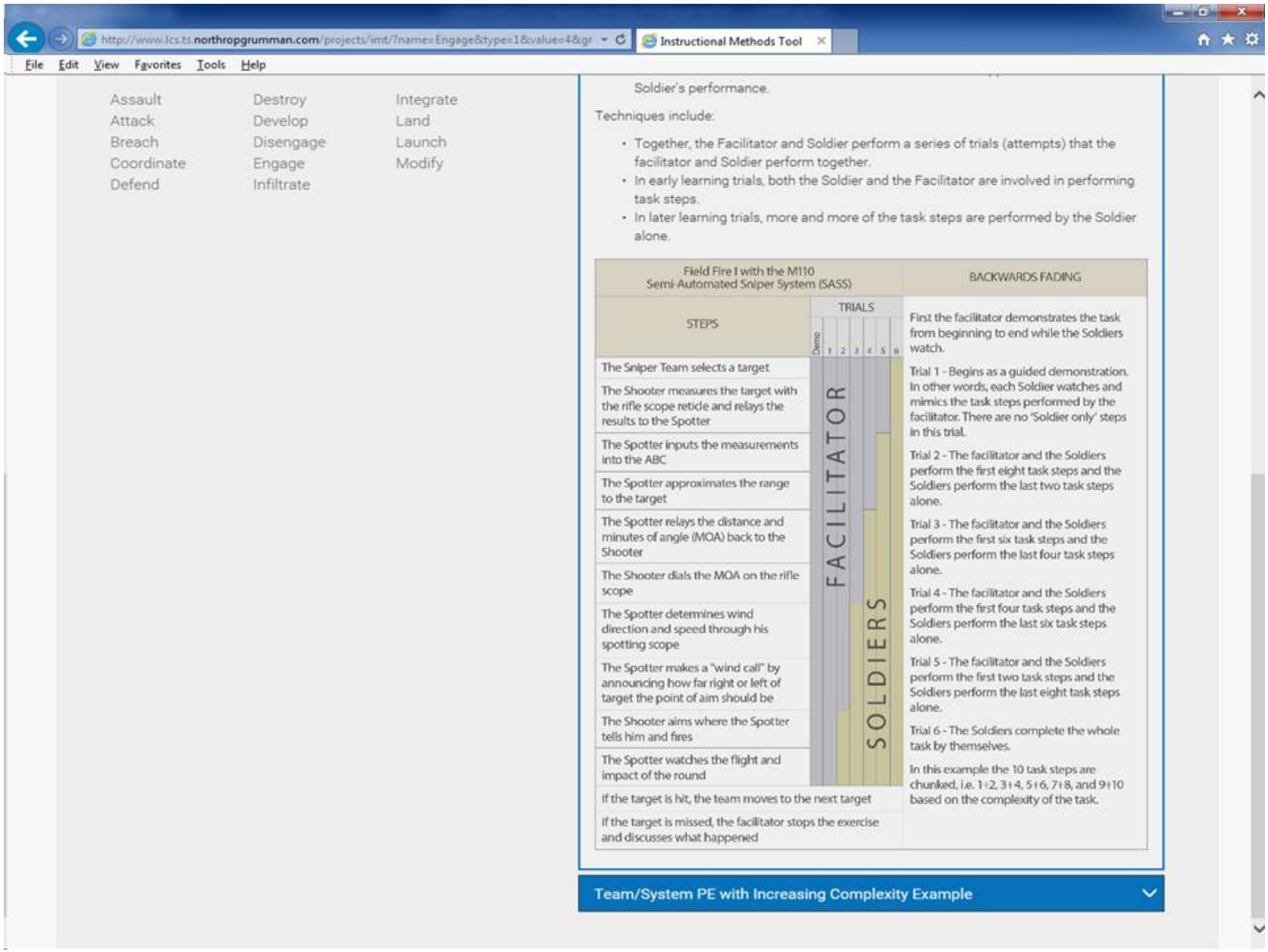
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
Demonstration of a Team/System Example
Team/System Practical Exercise Example
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning 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.
Field Fire I with the M110 Semi-Automated Sniper System (SASS)
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
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 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 dials the MOA on the rifle scope
The Spotter determines wind
FACILITATOR
S
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 eight task steps and the Soldiers perform the last two task steps alone.
Trial 3 - The facilitator and the Soldiers perform the first six task steps and the Soldiers perform the last four task steps alone.
Trial 4 - The facilitator and the Soldiers perform the first four task steps and the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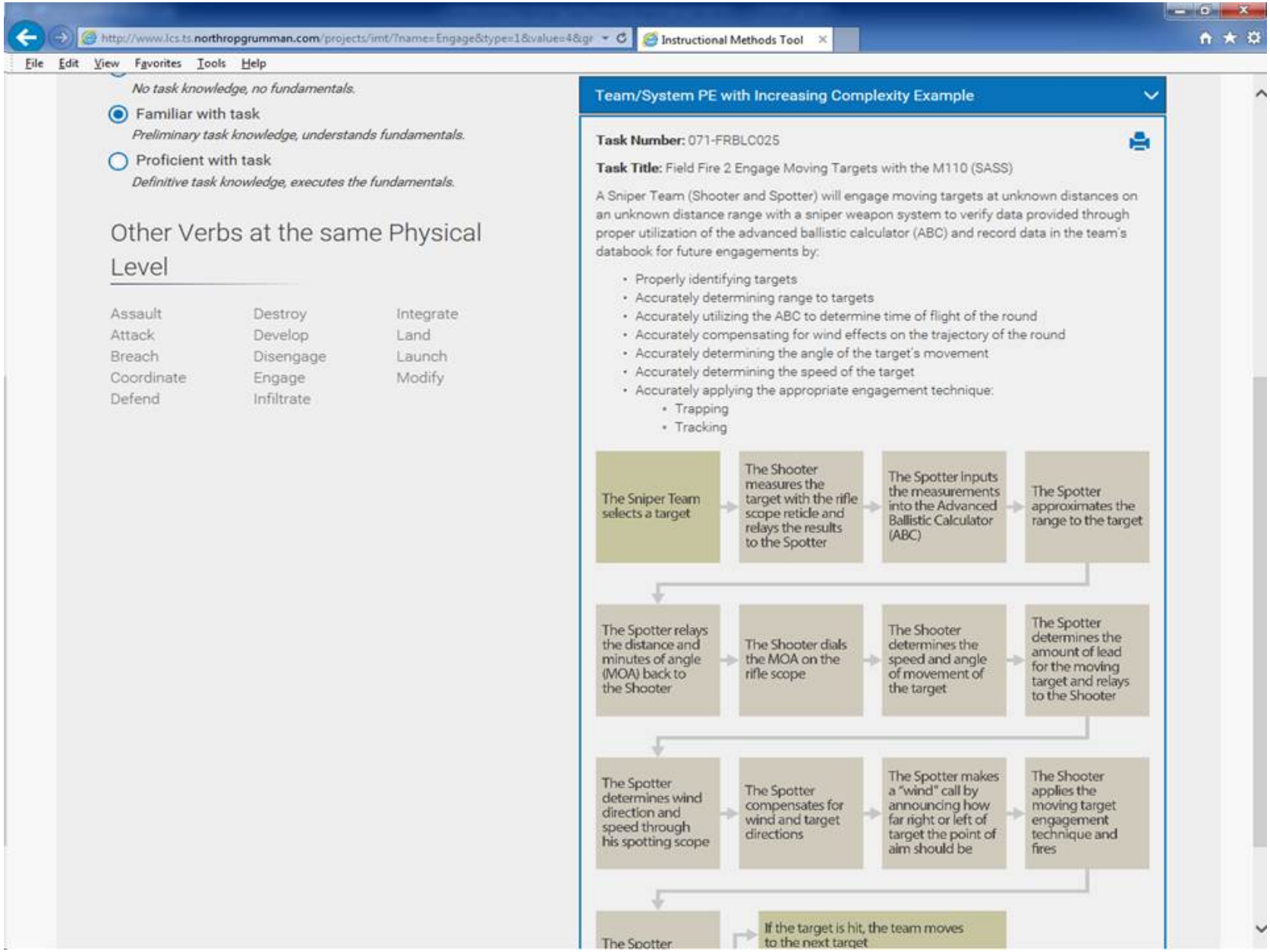
Instructional Methods Tool
File Edit View Favorites Tools Help
Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
Soldier's performance.
Techniques include:
• Together, the Facilitator and Soldier perform a series of trials (attempts) that 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 I with the M110 Semi-Automated Sniper System (SASS)
BACKWARDS FADING
STEPS
TRIALS
Demo 1 2 3 4 5 6
FACILITATOR
SOLDIERS
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 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 dials 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 facilitator stops the exercise and discusses what happened
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 eight task steps and the Soldiers perform the last two task steps alone.
Trial 3 - The facilitator and the Soldiers perform the first six task steps and the Soldiers perform the last four task steps alone.
Trial 4 - The facilitator and the Soldiers perform the first four task steps and the Soldiers perform the last six task steps alone.
Trial 5 - The facilitator and the Soldiers perform the first two task steps and the Soldiers perform the last eight task steps alone.
Trial 6 - The Soldiers complete the whole task by themselves.
In this example the 10 task steps are chunked, i.e. 1+2, 3+4, 5+6, 7+8, and 9+10 based on the complexity of the task.
Team/System PE with Increasing Complexity Example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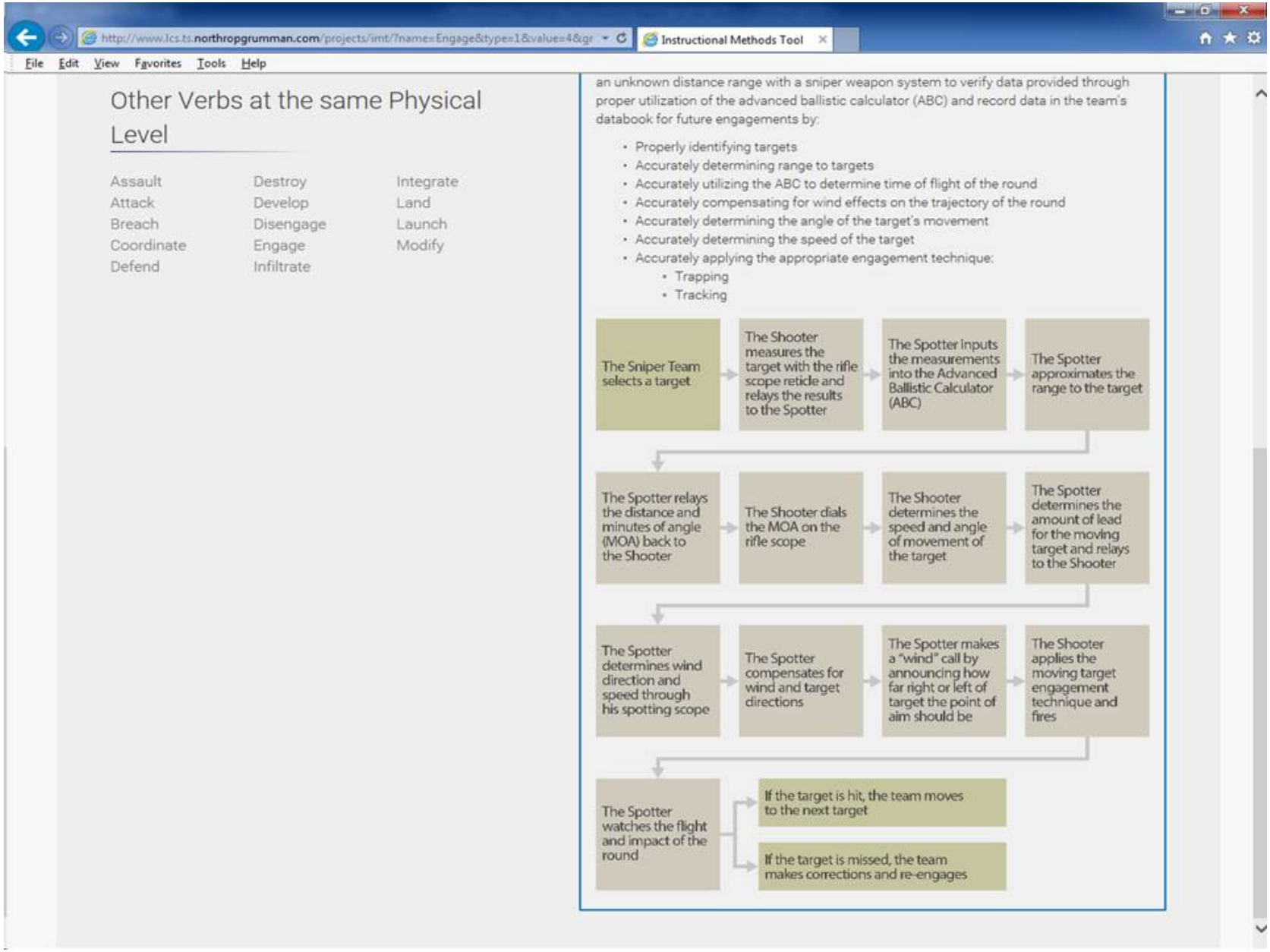
Familiar with task
Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
Other Verbs at the same Physical Level
Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
Team/System PE with Increasing Complexity Example
Task Number: 071-FRBLC025
Task Title: Field Fire 2 Engage Moving Targets with the M110 (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 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 Spotter approximates the range to the target
The Spotter 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 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
The Spotter
If the target is hit, the team moves to the next target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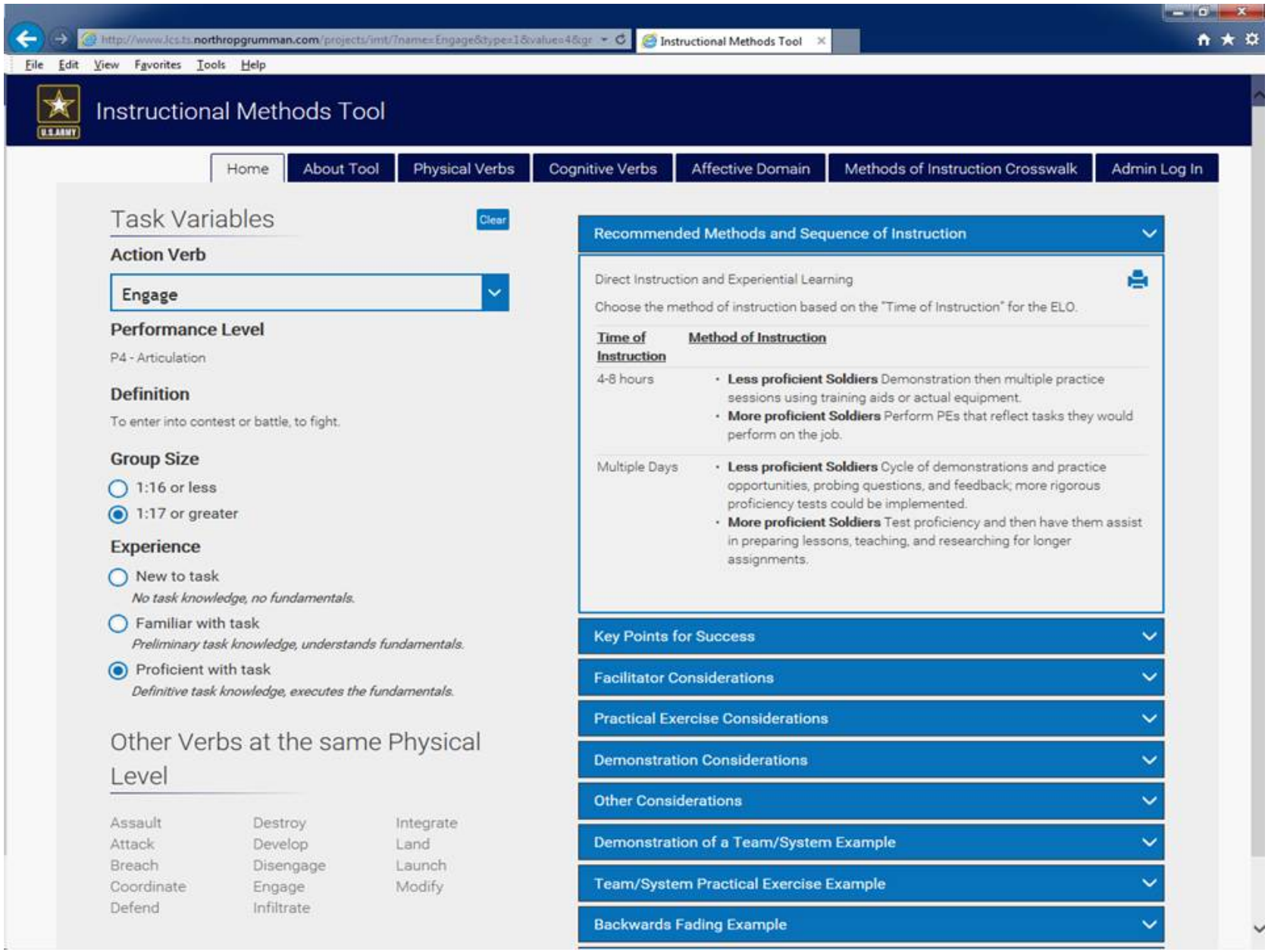
Instructional Methods Tool
File Edit View Favorites Tools Help
Other Verbs at the same Physical Level
Assault
Attack
Breach
Coordinate
Defend
Destroy
Develop
Disengage
Engage
Infiltrate
Integrate
Land
Launch
Modify
an unknown distance range with a sniper weapon system to verify data provided through 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 Spotter approximates the range to the target
The Spotter 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 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
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 N

Military Task Examples
P4-Articulation / Large Group / Proficient with Task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P4 - Articulation
Definition
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1:17 or greater
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Familiar with task
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Proficient with task
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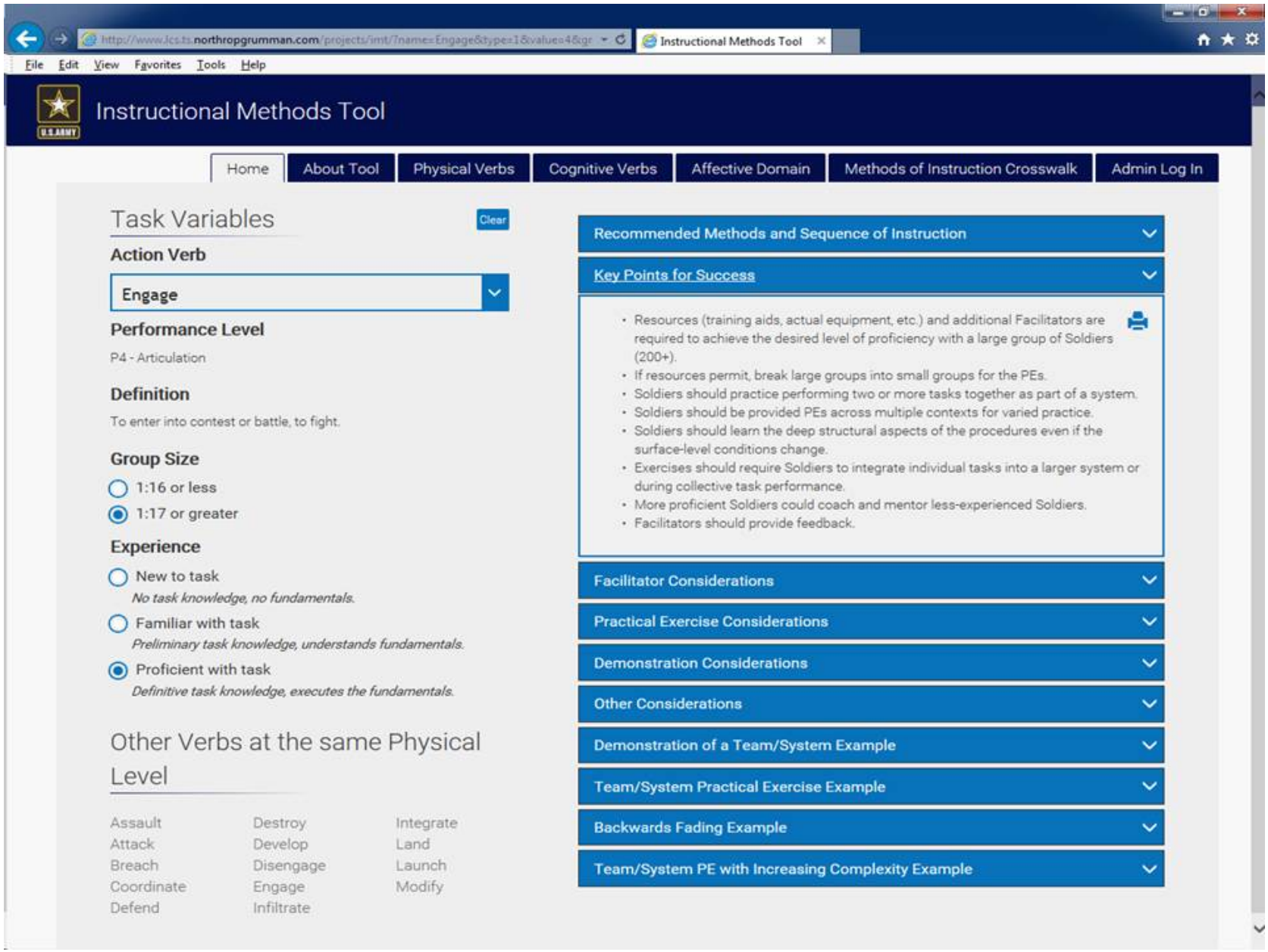
Land
Launch
Modify
Recommended Methods and Sequence of Instruction
Direct Instruction and Experiential Learning
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-8 hours
Less proficient Soldiers Demonstration then multiple practice 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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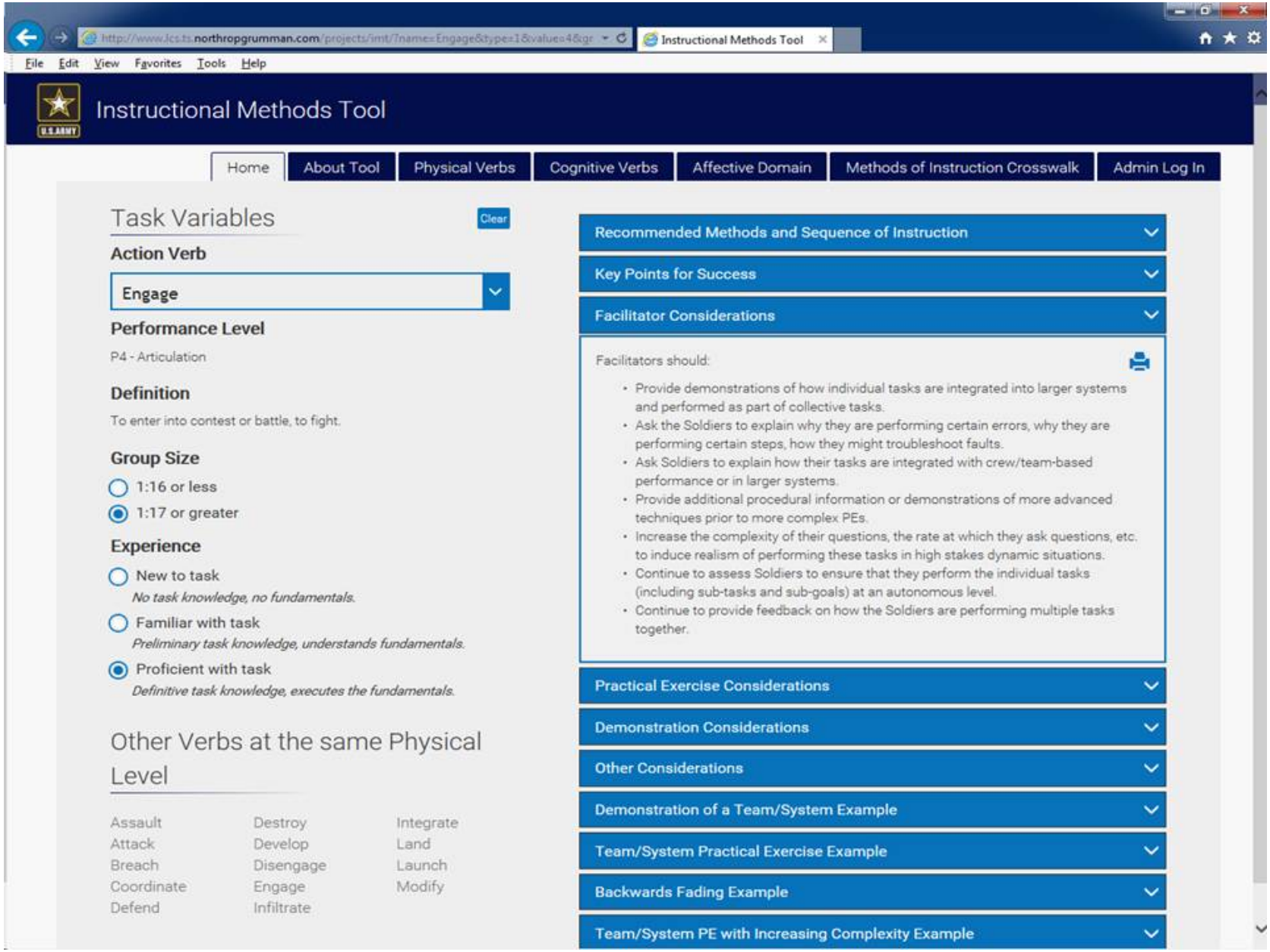
Modify
Recommended Methods and Sequence of Instruction
Key Points for Success
Resources (training aids, actual equipment, etc.) and additional Facilitators are required to achieve the desired level of proficiency with a large group of Soldiers (200+).
If resources permit, break large groups into small 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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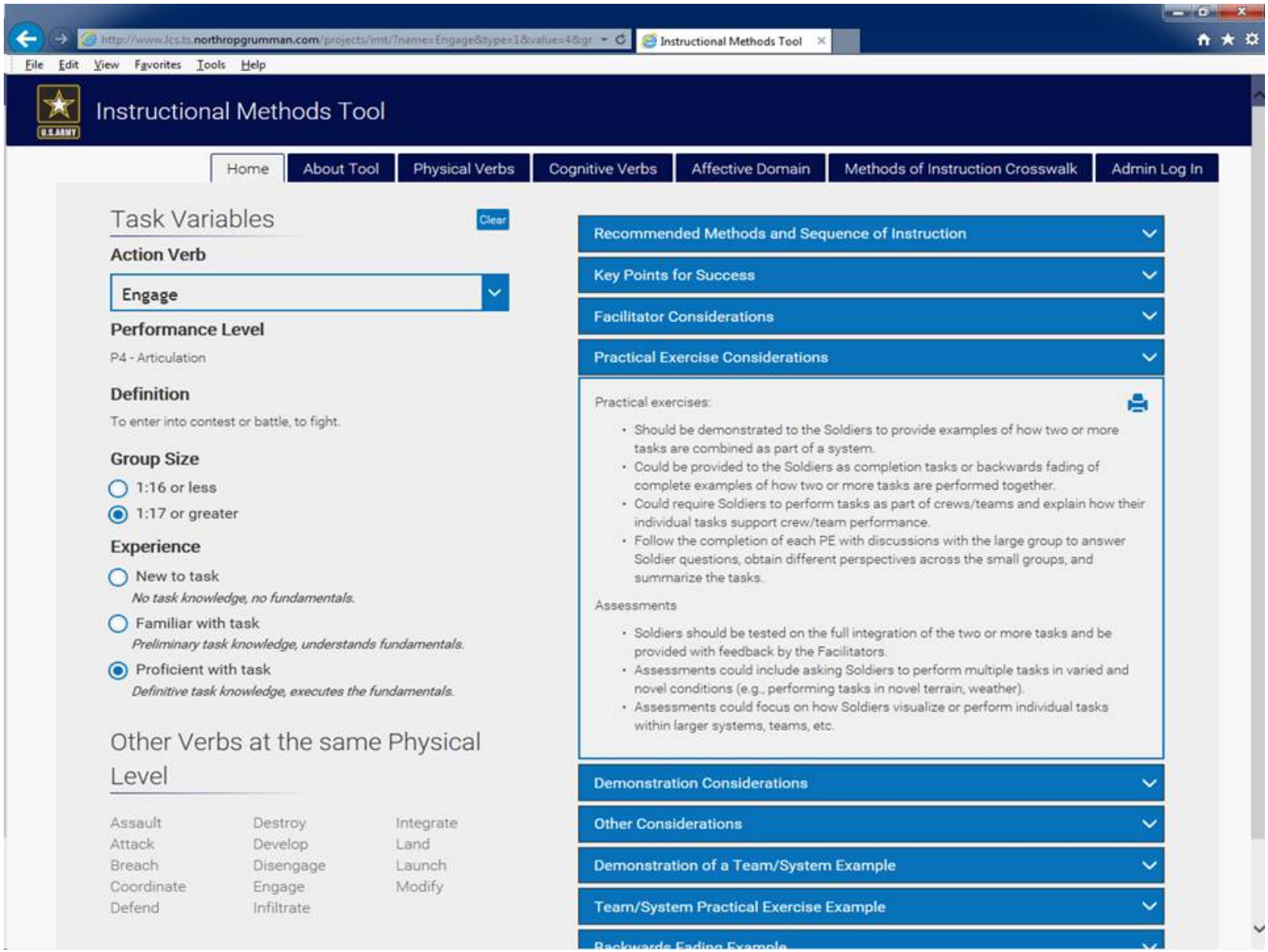
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Engage
Performance Level
P4 - Articulation
Definition
To enter into contest or battle, to fight.
Group Size
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
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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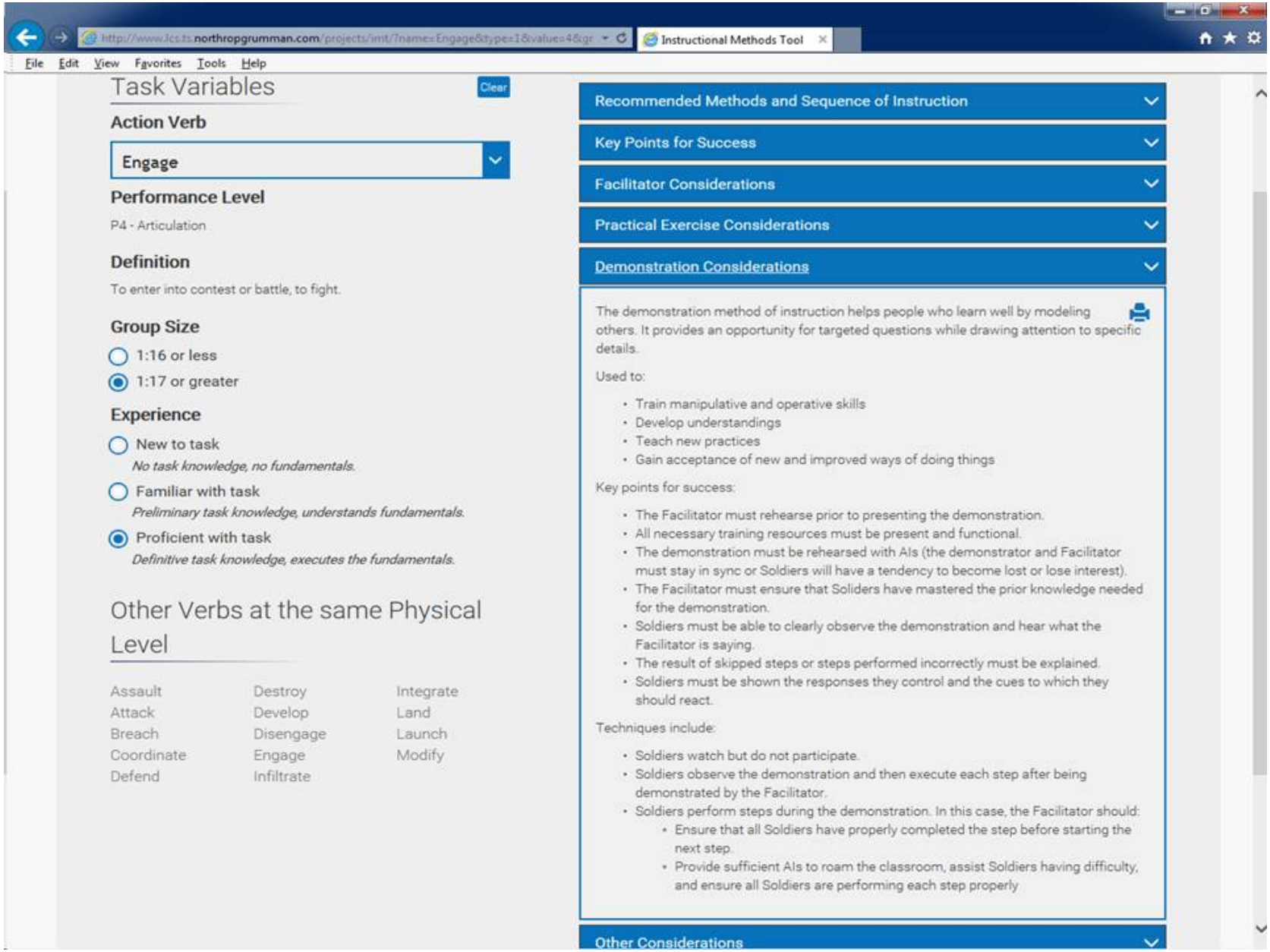
Facilitator Considerations
Practical Exercise Considerations
Practical exercises:
Should be demonstrated to the Soldiers to provide examples of how two or more tasks are combined as part of a system.
Could be provided to the Soldiers as completion tasks or backwards fading of complete examples of how 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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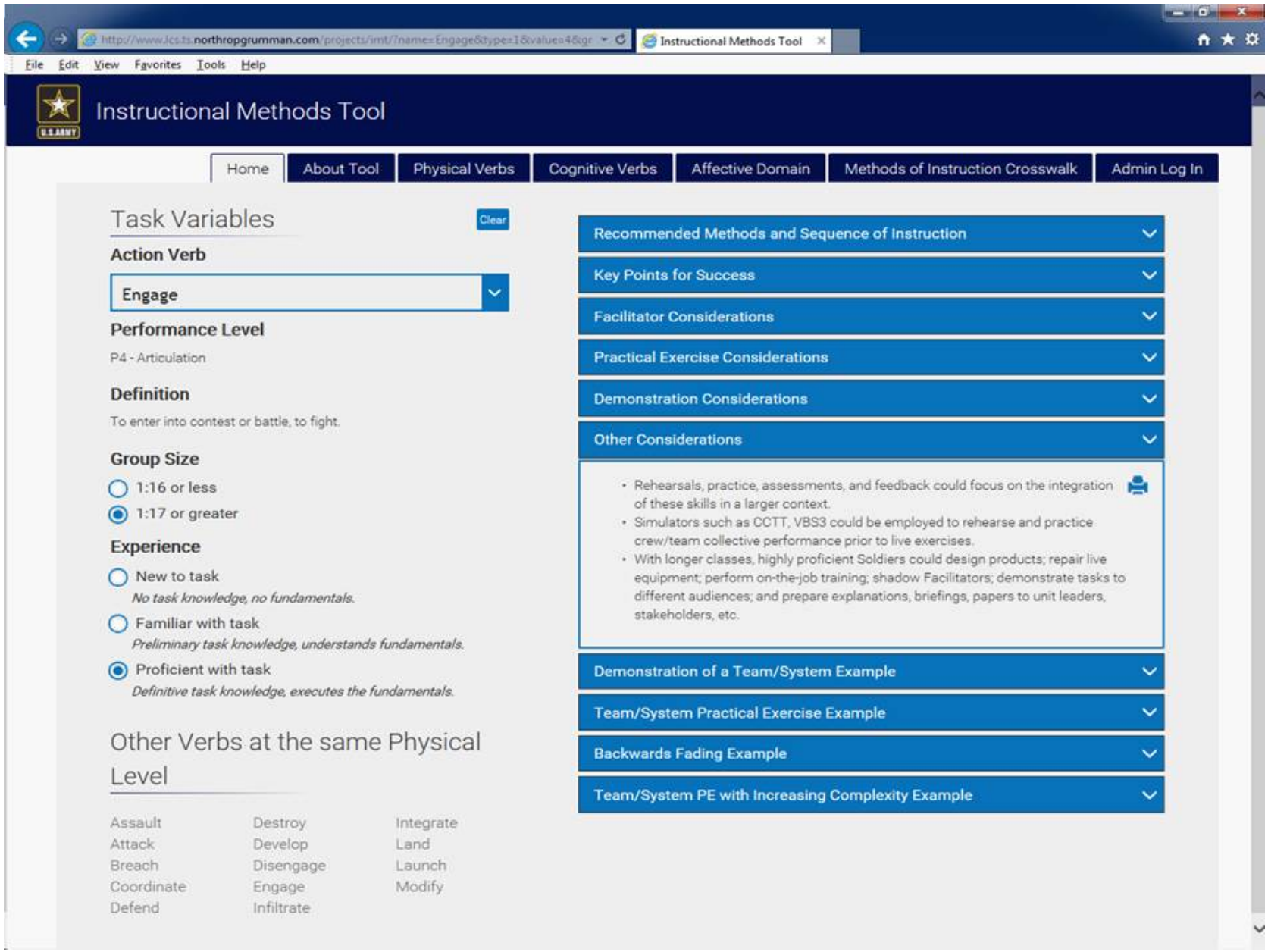
Facilitator Considerations
Practical Exercise Considerations
Demonstration Considerations
The demonstration method of instruction helps people who learn well by modeling others. It provides an opportunity for targeted questions while drawing attention to specific details.
Used to:
Train manipulative 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 Soliders 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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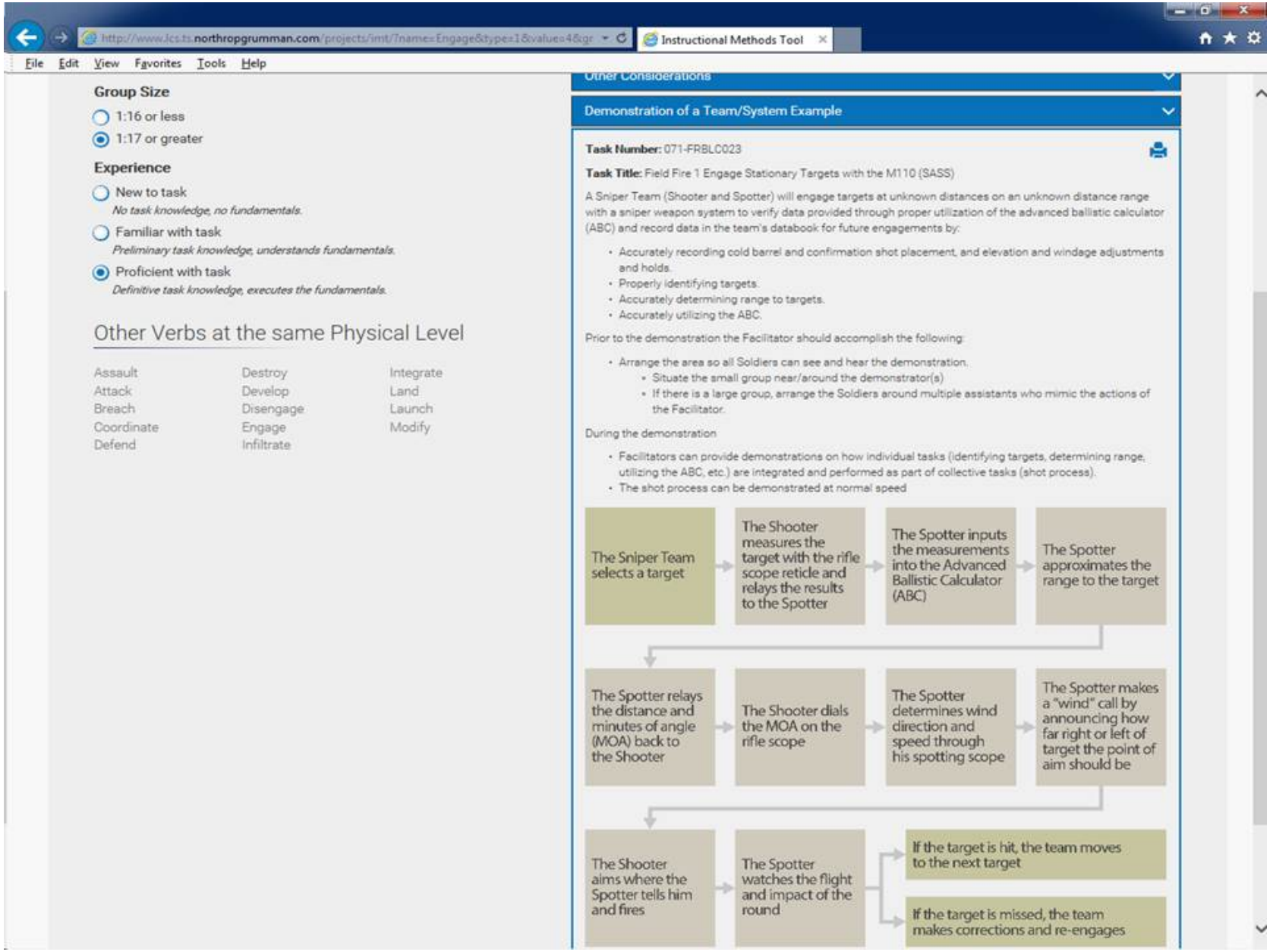
Practical Exercise Considerations
Demonstration Considerations
Other Considerations
• Rehearsals, practice, assessments, and feedback could focus on the integration of these skills in a larger context.
• Simulators such as CCTT, VBS3 could be employed to rehearse and practice crew/team collective performance 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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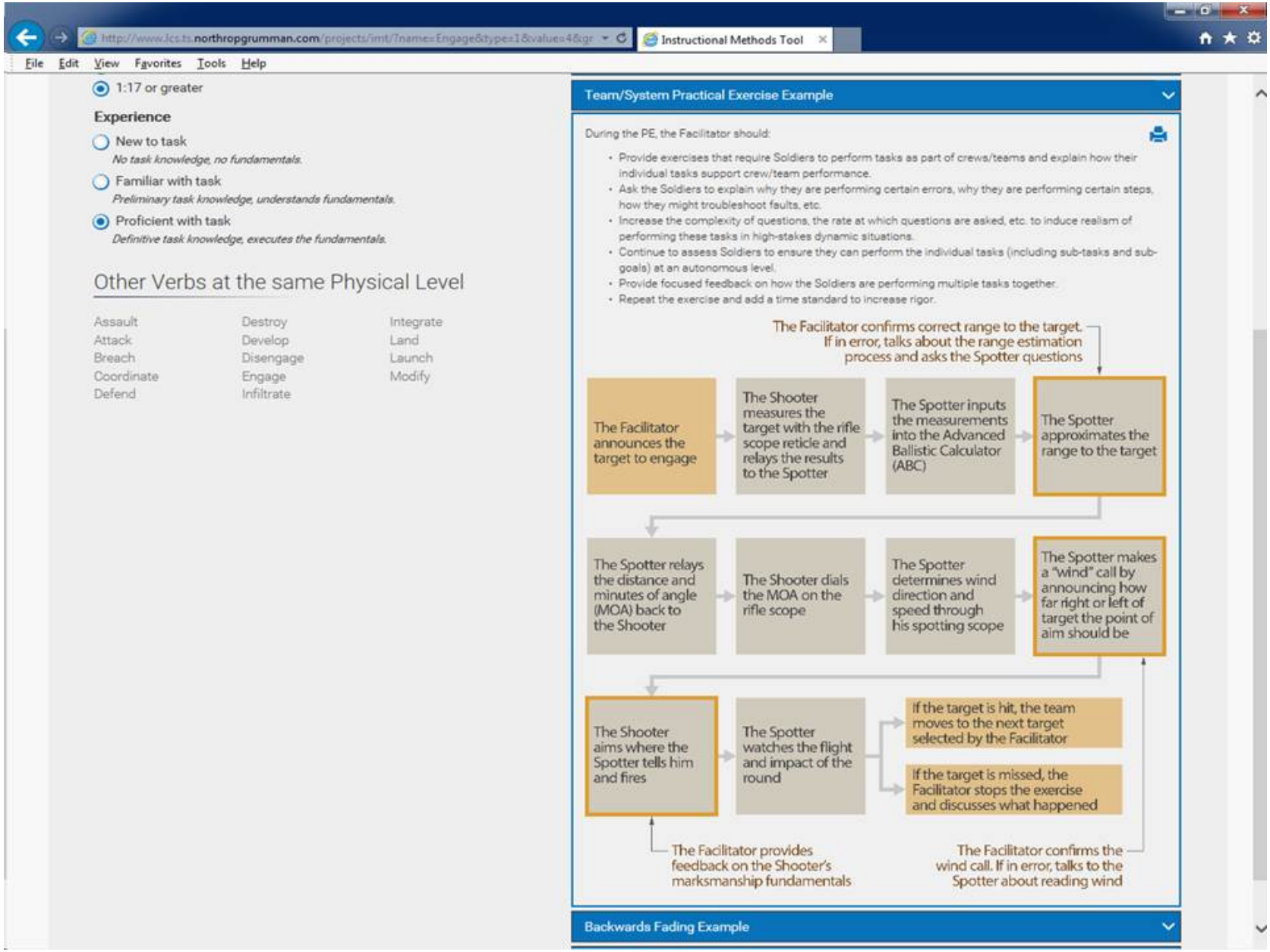
Other Considerations
Demonstration of a Team/System Example
Task Number: 071-FRBLC023
Task Title: Field Fire 1 Engage Stationary Targets with the M110 (SASS)
A Sniper Team (Shooter and Spotter) will engage targets at unknown distances on an unknown distance range with a sniper weapon system to verify 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
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 dials 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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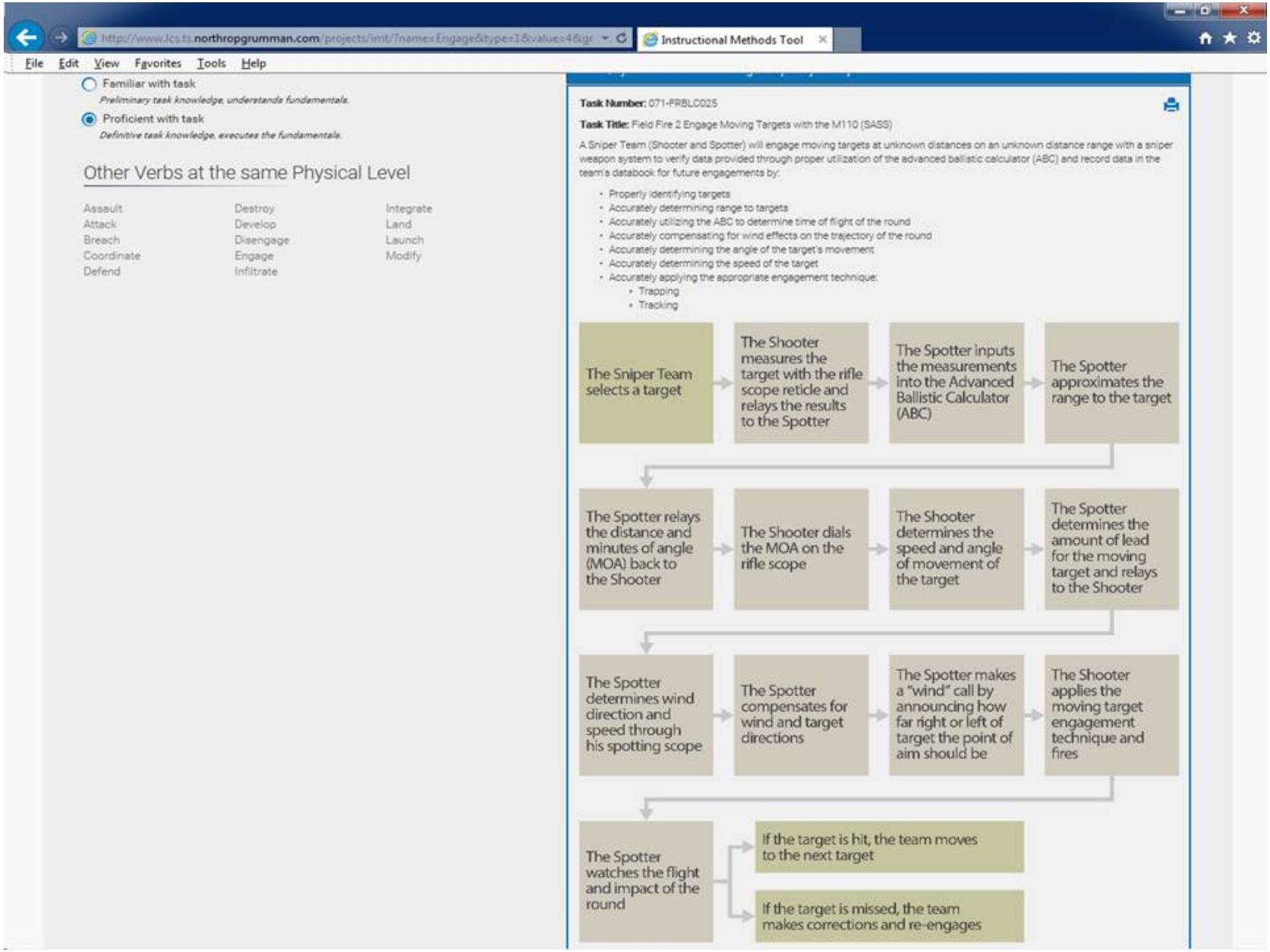
Launch
Modify
Team/System Practical Exercise Example
During the PE, the Facilitator should:
Provide exercises that require Soldiers to perform tasks as part of crews/teams and explain how their individual tasks support crew/team performance.
Ask the Soldiers to explain why they are performing certain 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 Facilitator announces the target to engage
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 dials 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 selected by the Facilitator
If the target is missed, the Facilitator stops the exercise and discusses what happened
The Facilitator provides feedback on the Shooter's marksmanship fundamentals
The Facilitator confirms the wind call. If in error, talks to the Spotter about reading wind
Backwards Fading Example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Infiltrate
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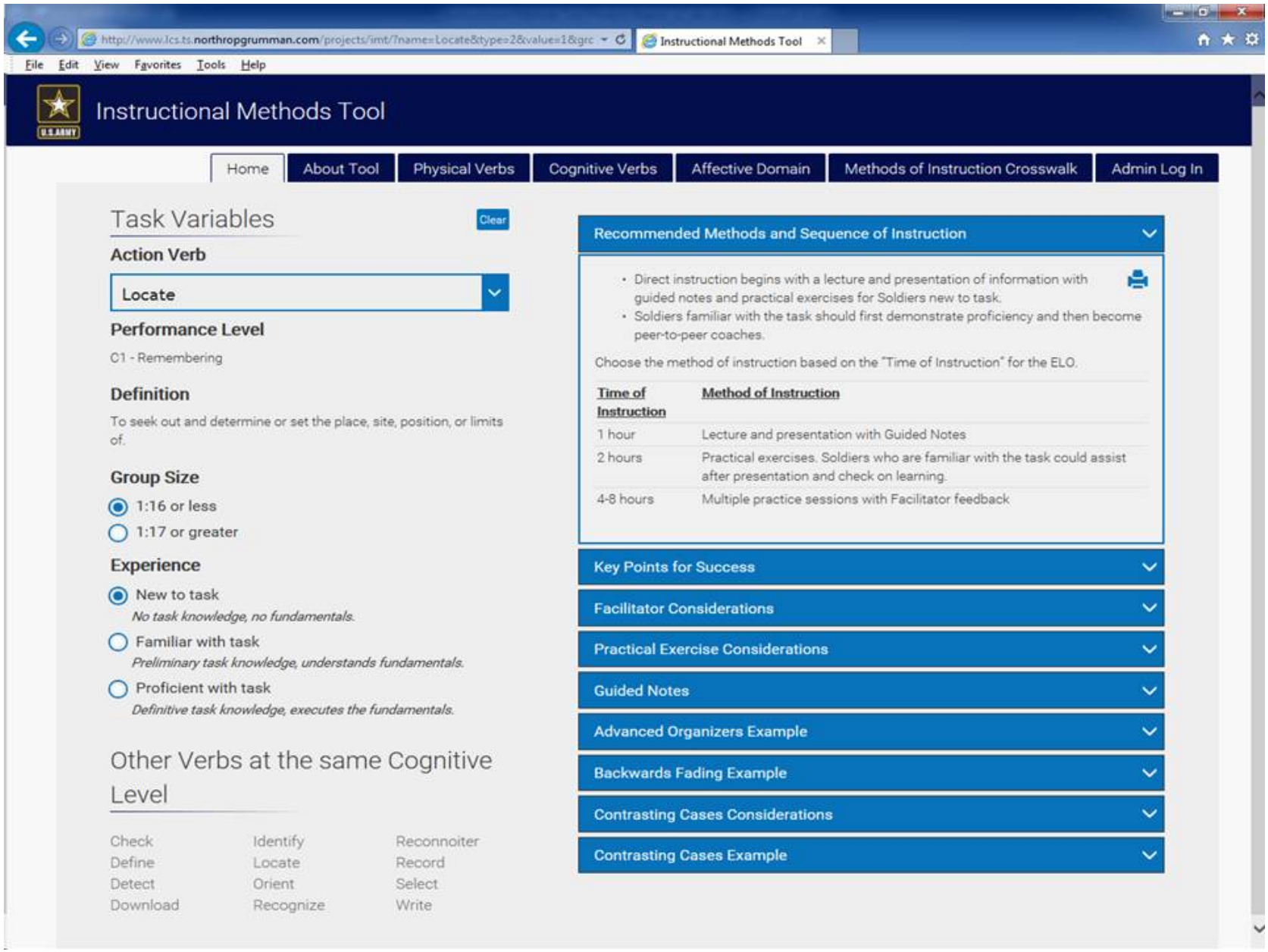
Land
Launch
Modify
Task Number: 071-FRBLC025
Task Title: Field Fire 2 Engage Moving Targets with the M110 (SASS)
A Sniper Team (Shooter and Spotter) will engage moving targets at unknown distances on an unknown distance range with a sniper weapon system to verify data provided through proper utilization of the advanced ballistic calculator (ABC) and record data in the team's 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 Spotter approximates the range to the target
The Spotter 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 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
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 O

Military Task Examples
C1-Remembering / Small Group / New to Task and Familiar with Task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C1 - Remembering
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Other Verbs at the same Cognitive Level
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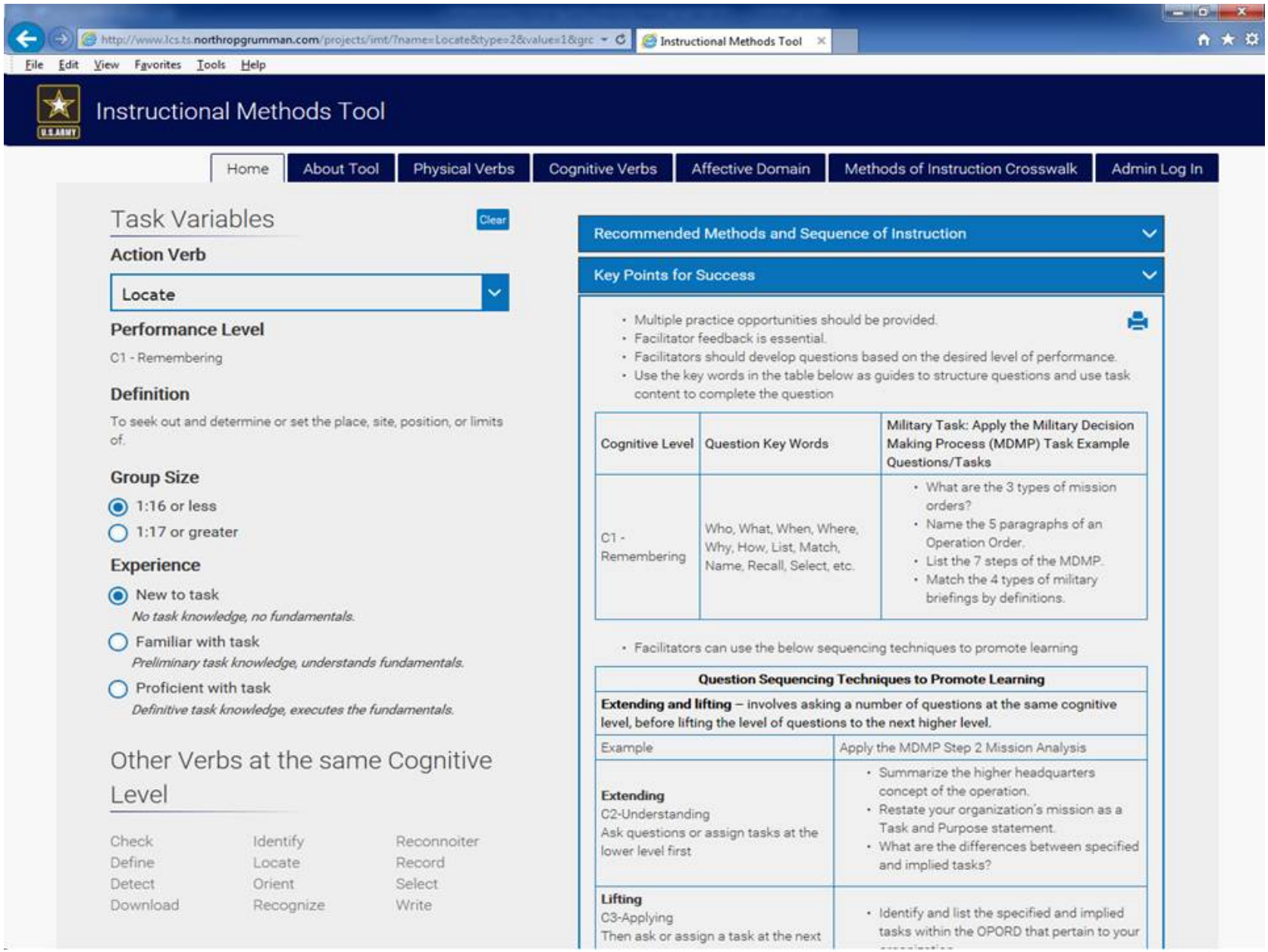
Define
Detect
Download
Identify
Locate
Orient
Recognize
Reconnoiter
Record
Select
Write
Recommended Methods and Sequence of Instruction
• Direct instruction begins with a lecture and presentation of information with guided notes and practical exercises for Soldiers new to task.
• Soldiers familiar with the task should first demonstrate proficiency and then become peer-to-peer coaches.
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
1 hour
Lecture and presentation with Guided Notes
2 hours
Practical exercises. Soldiers who are familiar with the task could assist after presentation and check on learning.
4-8 hours
Multiple practice sessions with Facilitator feedback
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Guided Notes
Advanced Organizers Example
Backwards Fading Example
Contrasting Cases Considerations
Contrasting Cases Example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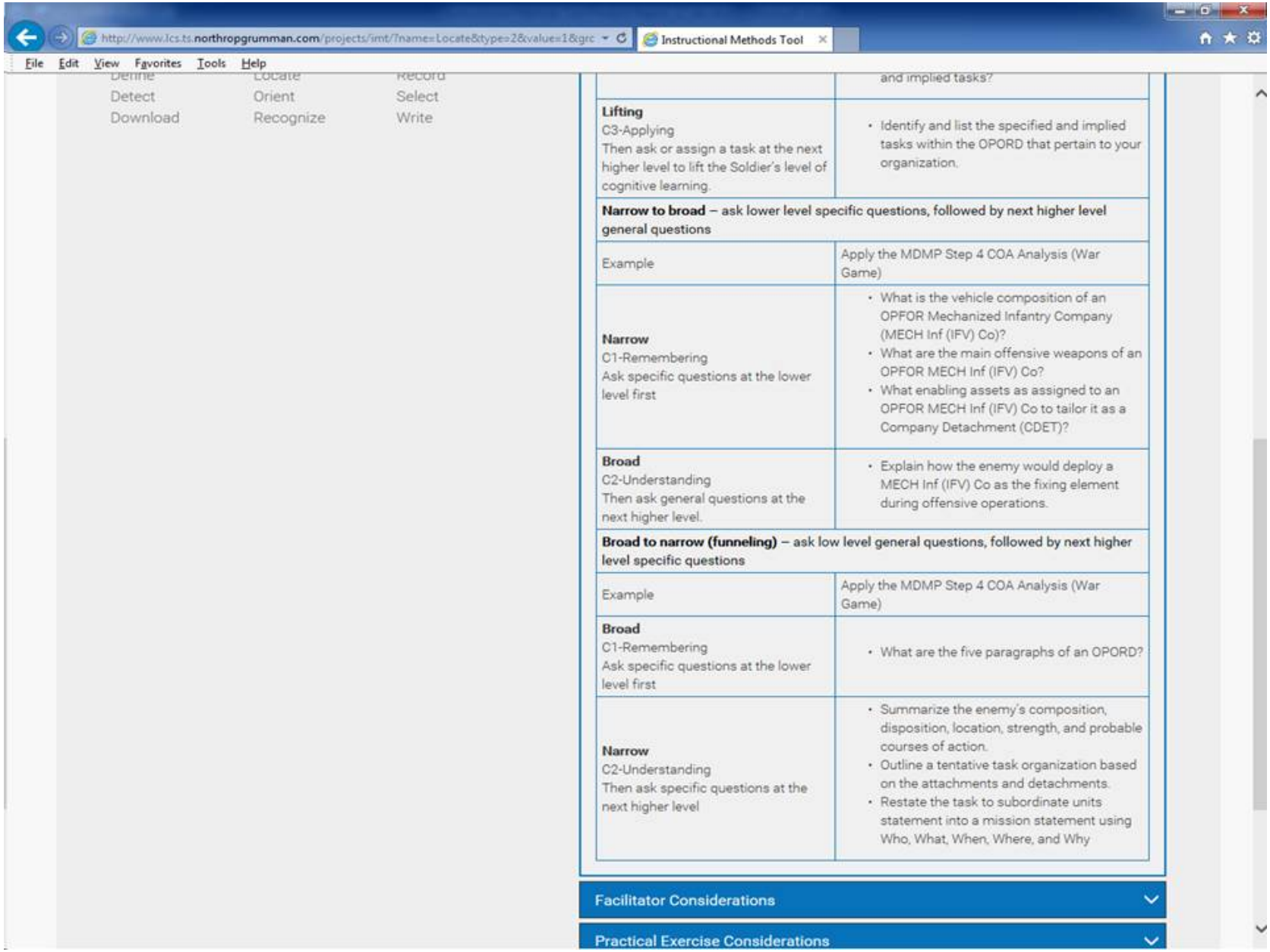
Recommended Methods and Sequence of Instruction
Key Points for Success
• Multiple practice opportunities should be provided.
• Facilitator feedback is essential.
• Facilitators should develop questions based on the desired level of performance.
• Use the key words in the table below as guides to structure questions and use task content to complete the question
Cognitive Level
Question Key Words
Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks
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 7 steps of the MDMP.
• Match the 4 types of military briefings by definitions.
• 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.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-Applying
Then ask or assign a task at the next
• Identify and list the specified and implied tasks within the OPORD that pertain to your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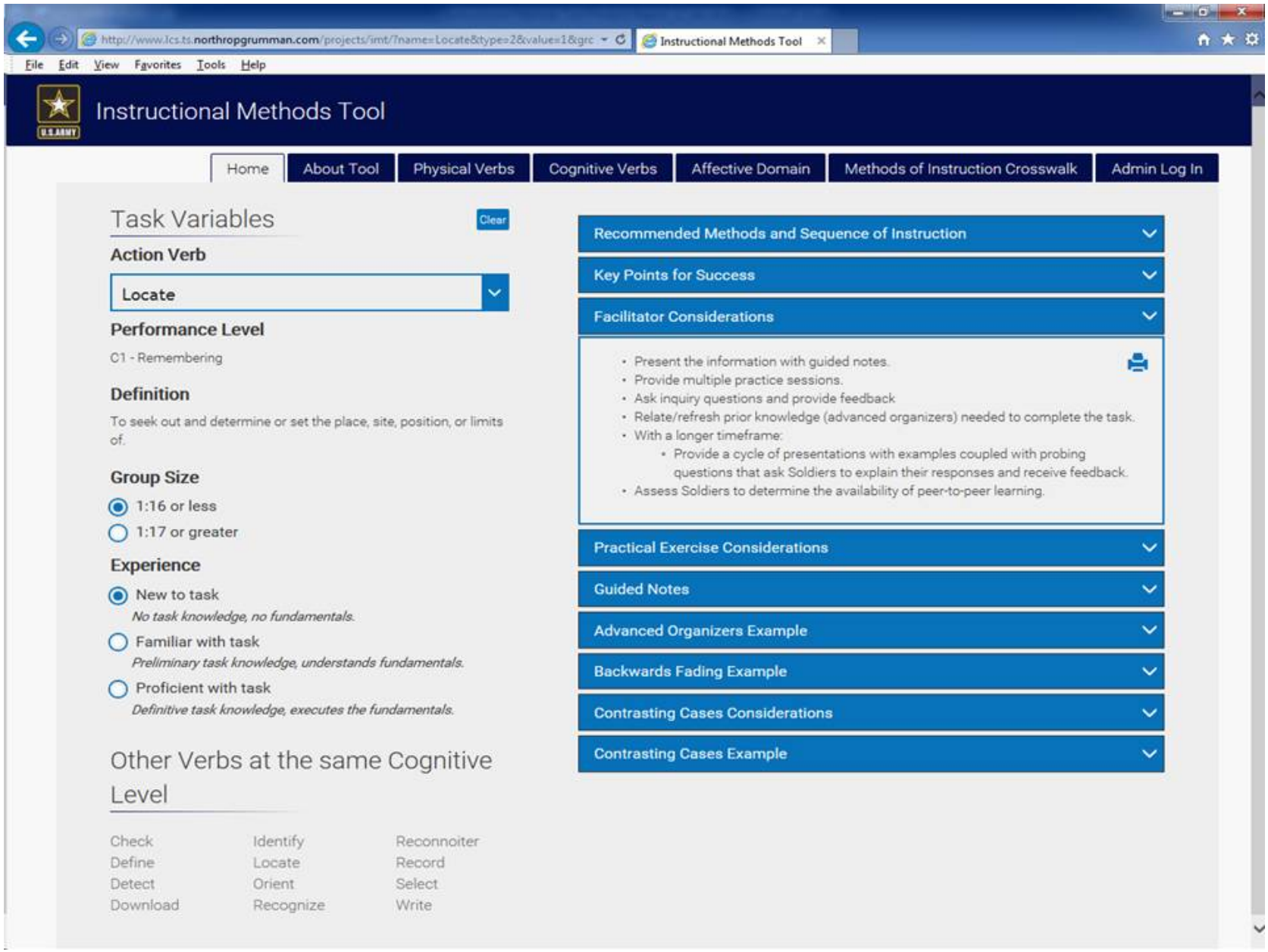
and implied tasks?
Lifting
C3-Applying
Then ask or assign a task at the next higher level to lift the Soldier's level of cognitive learning.
• Identify and list the specified and implied tasks within the OPORD that pertain to your organization.
Narrow to broad – ask lower level specific questions, followed by next higher level general questions
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 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
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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Key Points for Success
Facilitator Considerations
Present the information with guided notes.
Provide multiple practice sessions.
Ask inquiry questions and provide feedback
Relate/refresh prior knowledge (advanced organizers) needed to complete the task.
With a longer timeframe:
Provide a cycle of presentations with examples coupled with probing questions that ask Soldiers to explain their responses and receive feedback.
Assess Soldiers to determine the availability of peer-to-peer learning.
Practical Exercise Considerations
Guided Notes
Advanced Organizers Example
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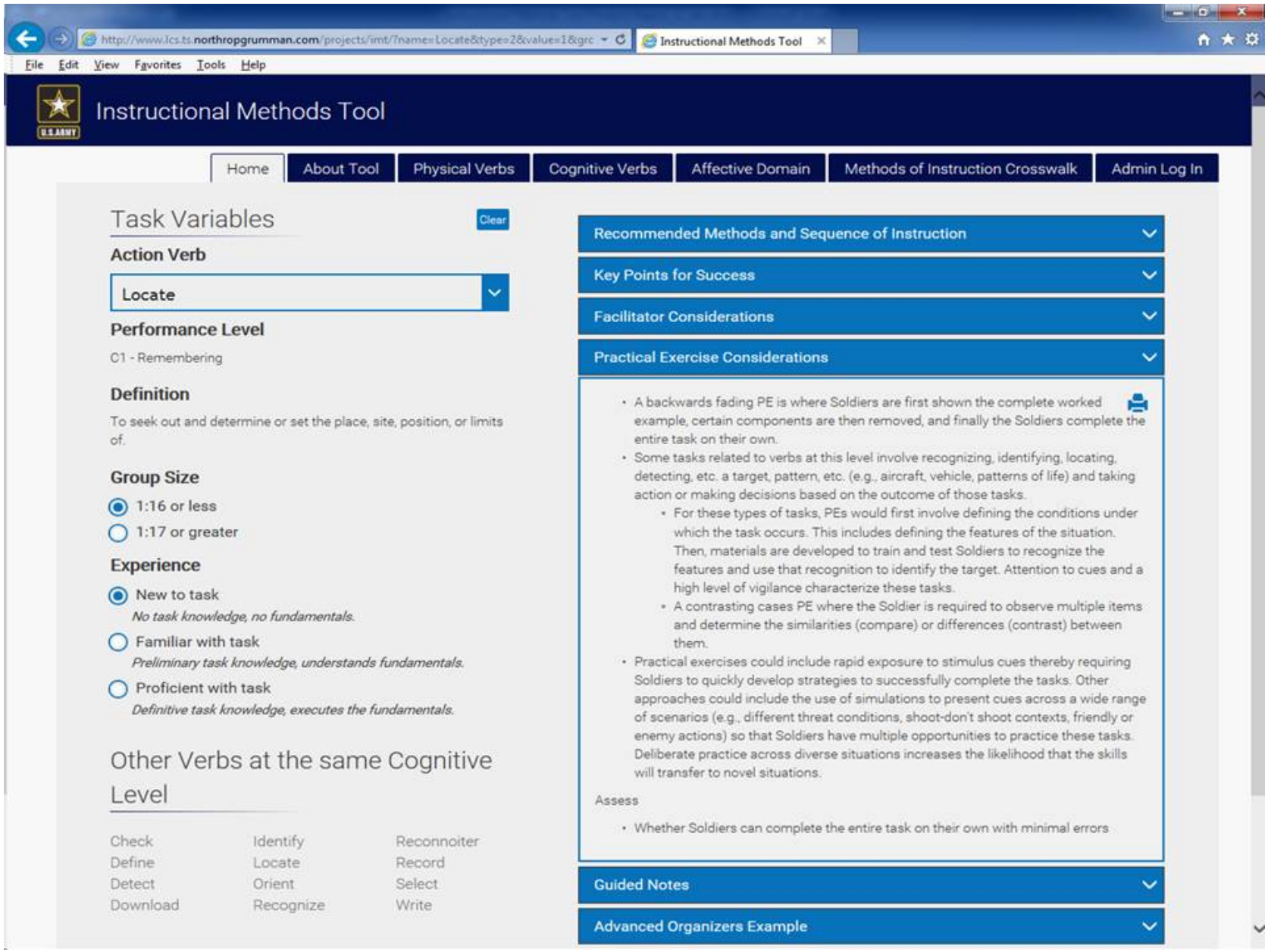
Contrasting Cases Considerations
Contrasting Cases Example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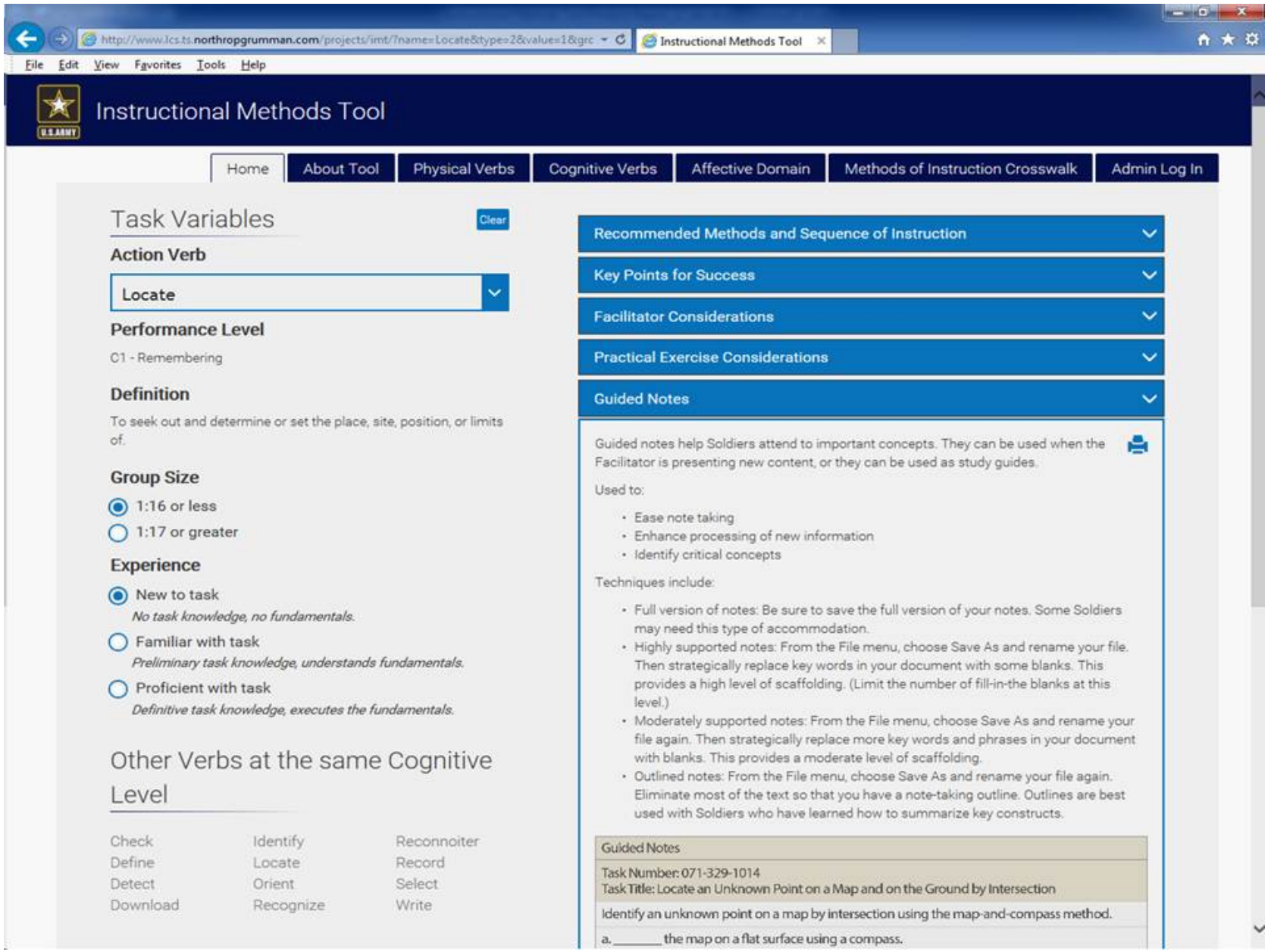
A backwards fading PE is where Soldiers are first shown the complete worked example, certain components are then removed, and finally the Soldiers complete the entire task on their own.
Some tasks related to verbs at this level involve recognizing, identifying, locating, detecting, etc. a target, pattern, 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.
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
Advanced Organizers Example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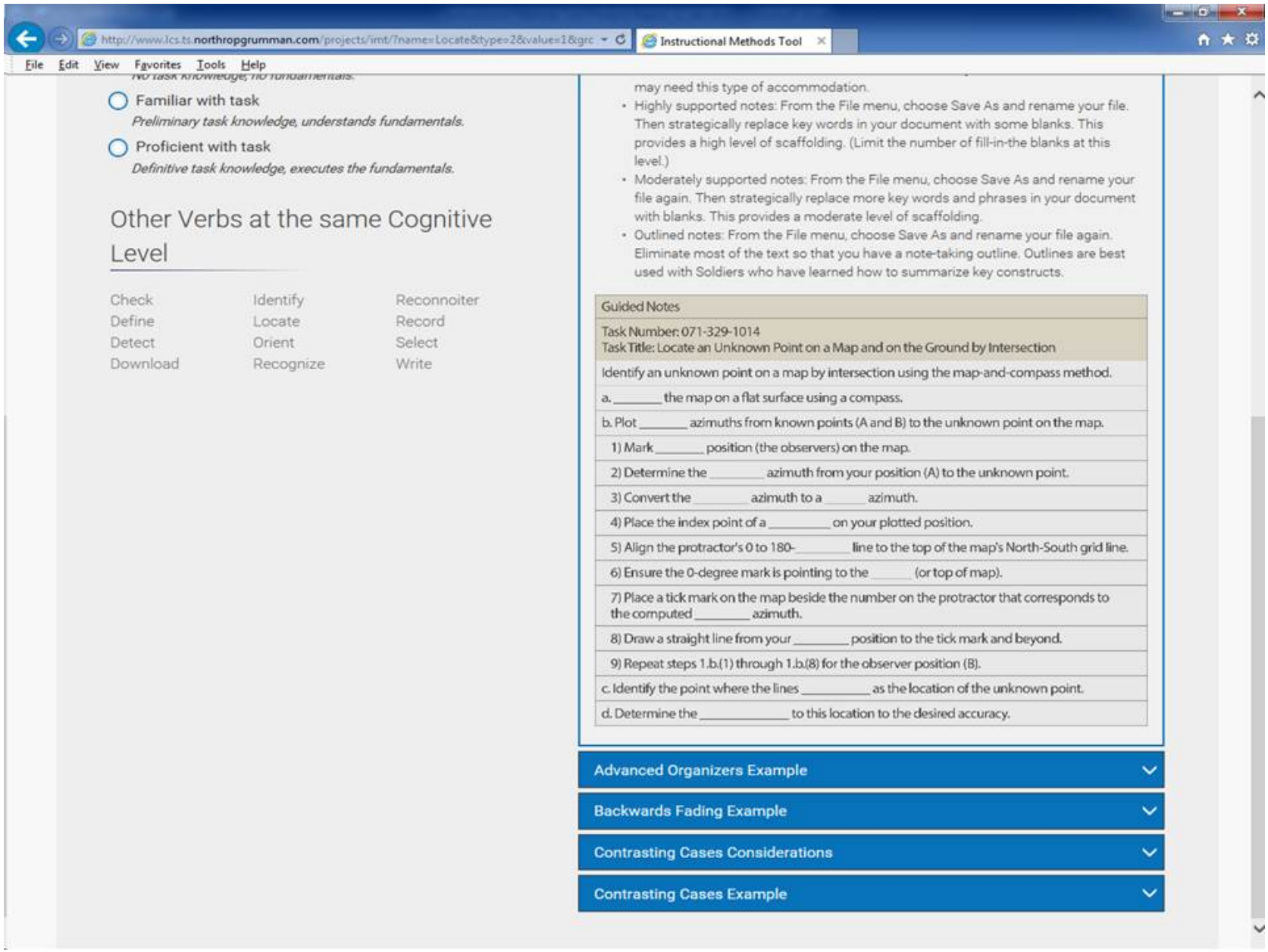
Admin Log In
Task Variables
Clear
Action Verb
Locate
Performance Level
C1 - Remembering
Definition
To seek out and determine or set the place, site, position, or limits of.
Group Size
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
Familiar with task
Preliminary 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
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 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.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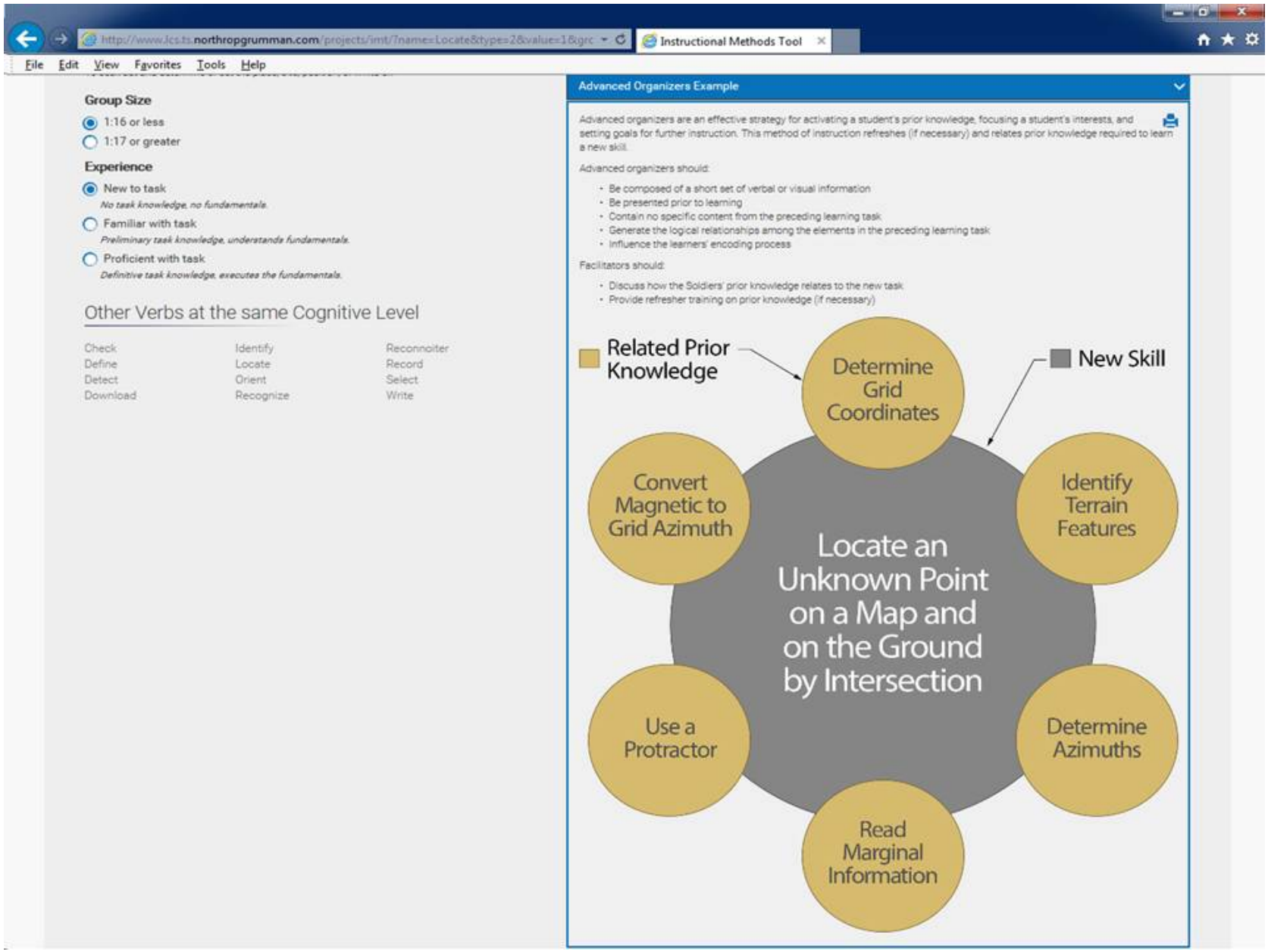
Guided Notes
Task Number: 071-329-1014
Task Title: Locate an Unknown Point on a Map and on the Ground by Intersection
Identify an unknown point on a map by intersection using the map-and-compass method.
a. _____ the map on a flat surface using a compass.
b. Plot _____ azimuths from known points (A and B) to the unknown point on the map.
1) Mark _____ position (the observers) 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.
Advanced Organizers Example
Backwards Fading Example
Contrasting Cases Considerations
Contrasting Cases Example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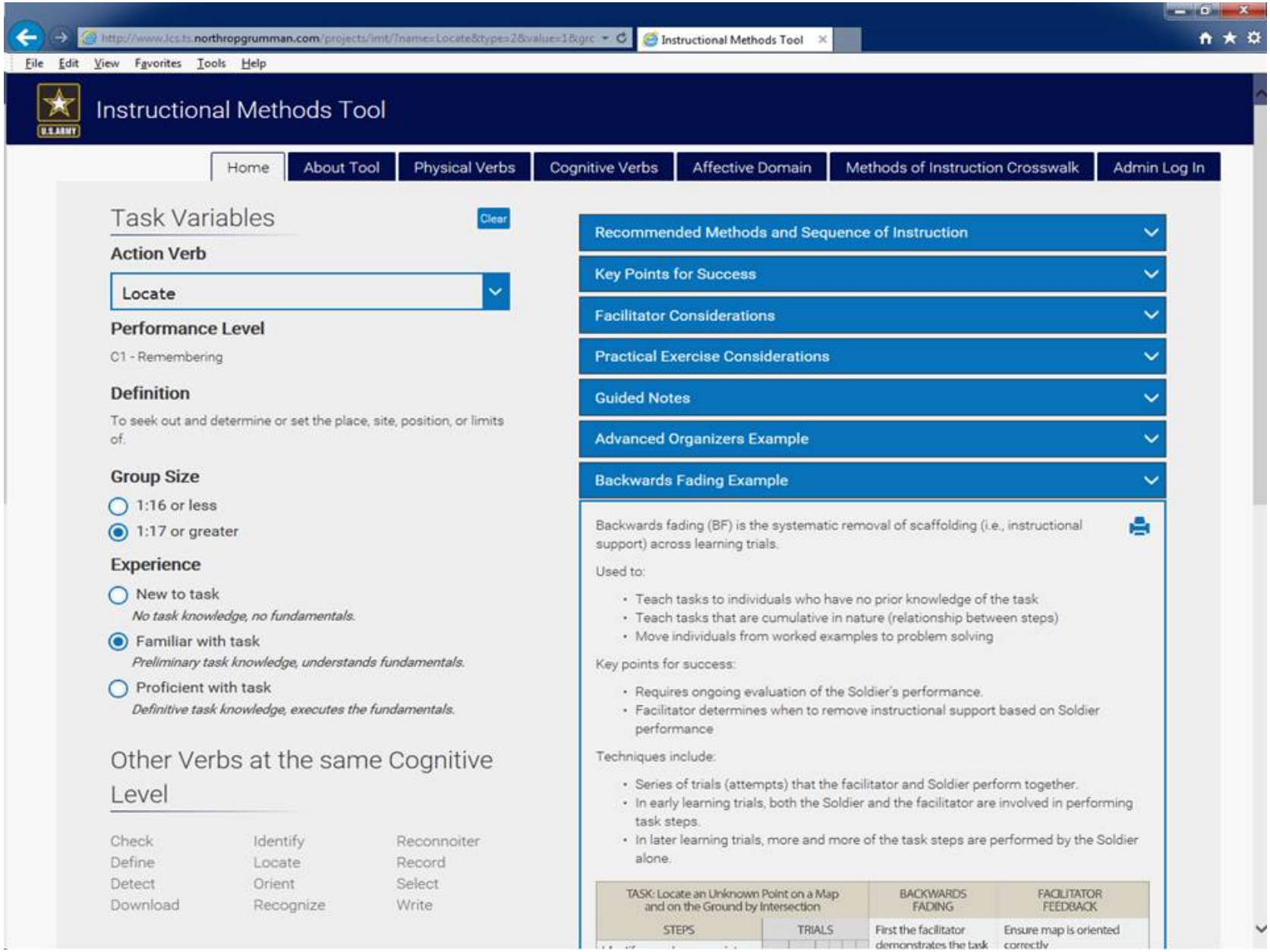
Write
Advanced Organizers Example
Advanced organizers are an effective strategy for activating a student's prior knowledge, focusing a student's interests, and setting goals for further instruction. This method of instruction refreshes (if necessary) and relates prior knowledge required to learn a new 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 Soldiers' prior knowledge relates to the new task
Provide refresher training on prior knowledge (if necessary)
Related Prior Knowledge
New Skill
Determine Grid Coordinates
Identify Terrain Features
Determine Azimuths
Read Marginal Information
Use a Protractor
Convert Magnetic to Grid Azimuth
Locate an Unknown Point on a Map and on the Ground by Intersection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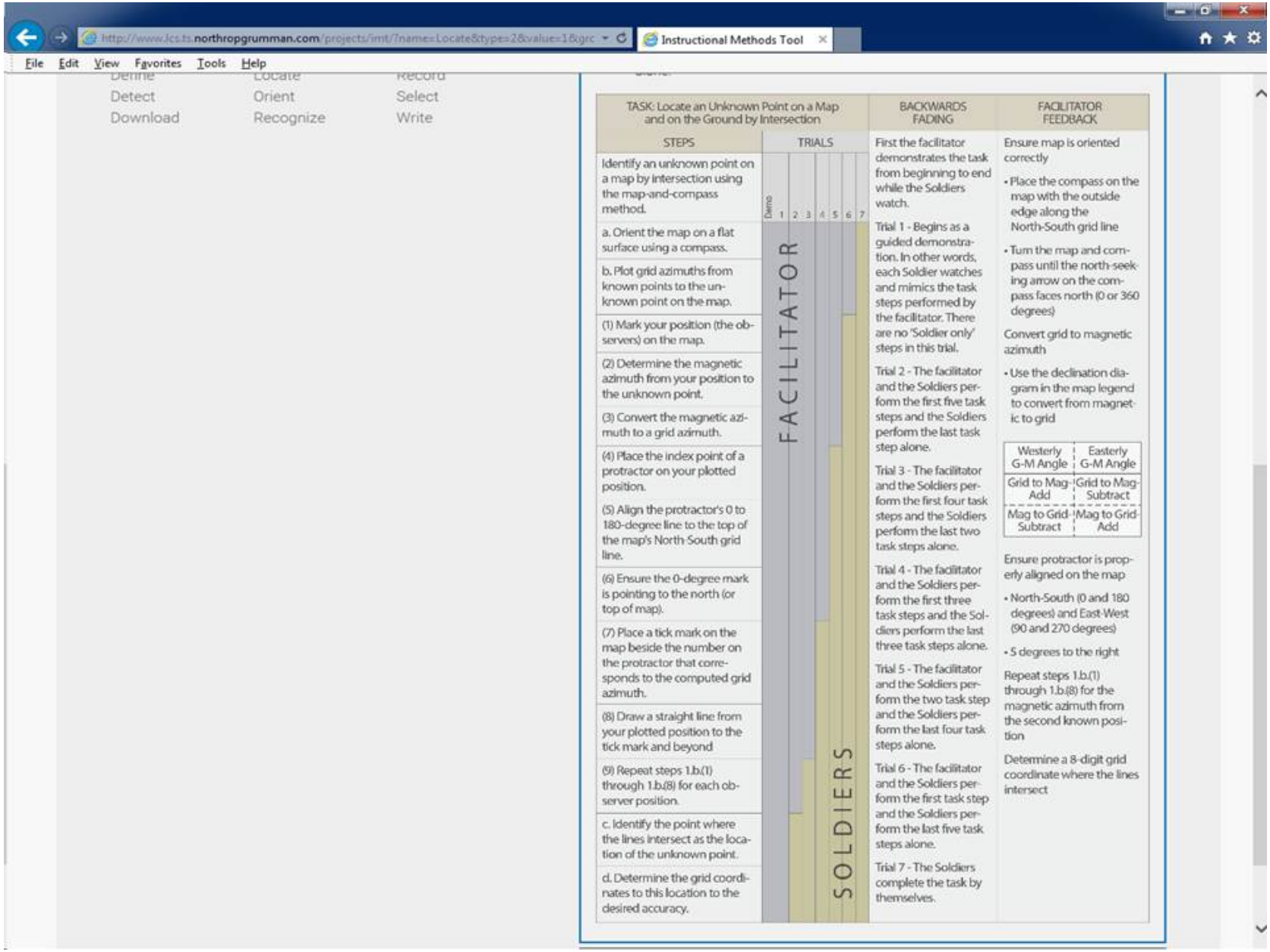
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Guided Notes
Advanced Organizers Example
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.
Used to:
Teach tasks to individuals 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 Intersection
BACKWARDS FADING
FACILITATOR FEEDBACK
STEPS
TRIALS
First the facilitator demonstrates the task
Ensure map is oriented correctly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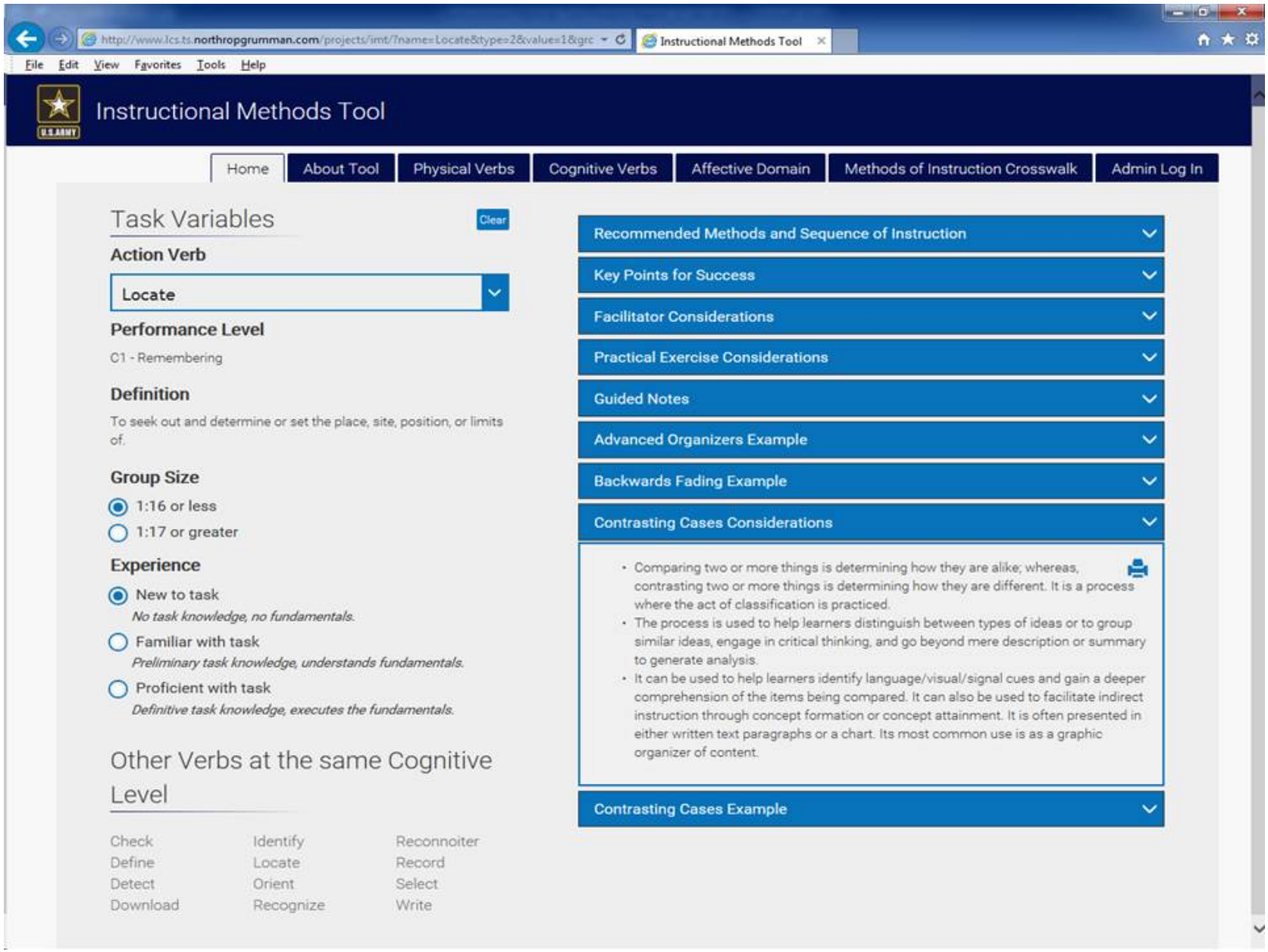
Define Locate Record
Detect Orient Select
Download Recognize Write
TASK: Locate an Unknown Point on a Map and on the Ground by Intersection
STEPS
TRIALS
Demo 1 2 3 4 5 6 7
FACILITATOR
SOLDIERS
Identify an unknown point on a map by intersection using the map-and-compass method.
a. Orient the map on a flat surface using a compass.
b. Plot grid azimuths from known points to the unknown point on the map.
(1) Mark your position (the observers) 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 0-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.b.(1) through 1.b.(8) for each observer position.
c. Identify the point where the lines intersect as the location of the unknown point.
d. Determine the grid coordinates to this location to the desired accuracy.
BACKWARDS FADING
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 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 two task step 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
• Place 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
Westerly G-M Angle
Easterly G-M Angle
Grid to Mag-Add
Grid to Mag-Subtract
Mag to Grid-Subtract
Mag to Grid-Add
Ensure protractor is properly aligned on the map
• North-South (0 and 180 degrees) and East-West (90 and 270 degrees)
• 5 degrees to the right
Repeat steps 1.b.(1) through 1.b.(8) for the magnetic azimuth from the second known position
Determine a 8-digit grid coordinate where the lines intersect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1:17 or greater
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Reconnoiter
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Write
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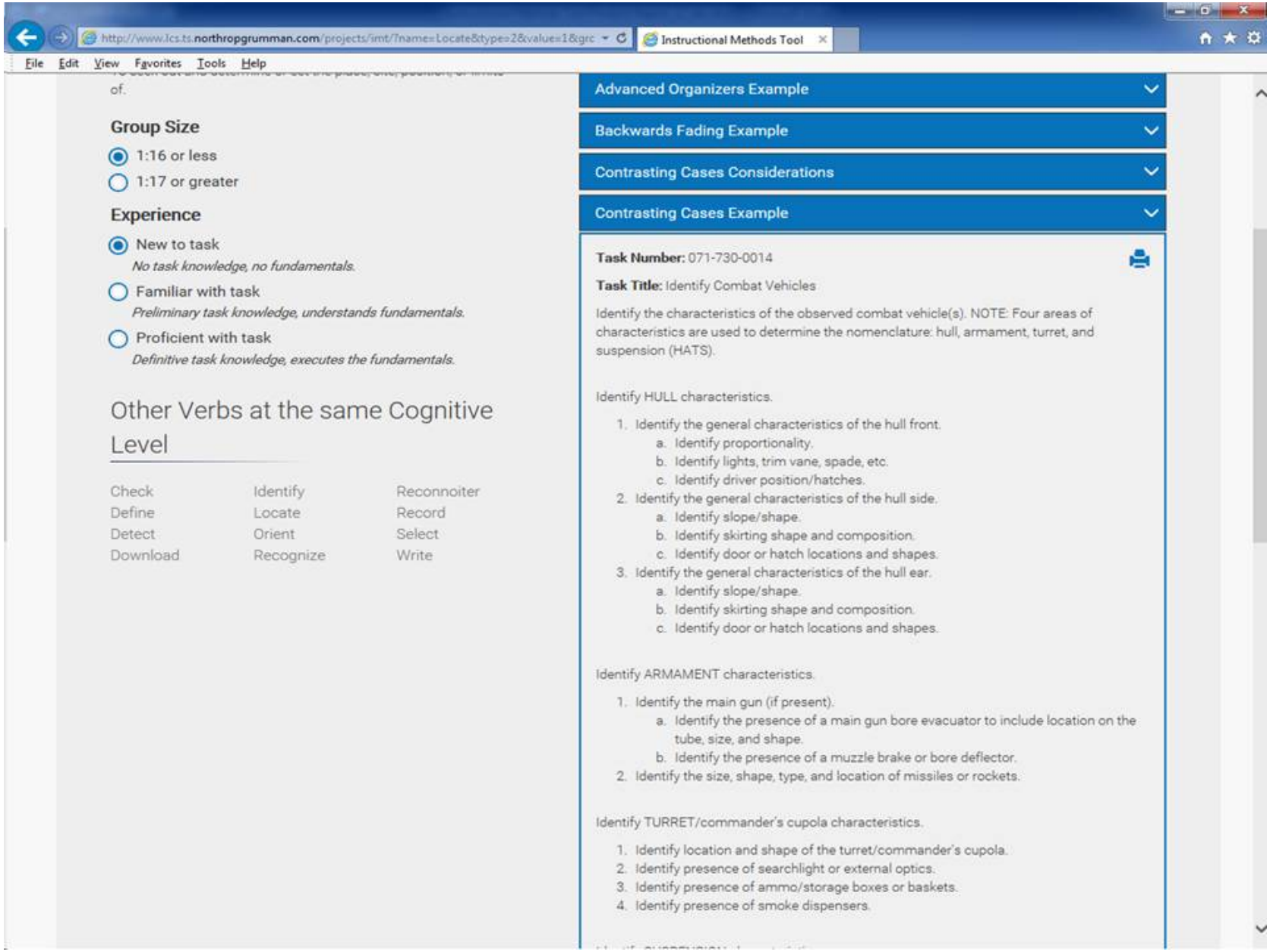
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Guided Notes
Advanced Organizers Example
Backwards Fading Example
Contrasting Cases Considerations
• Comparing two or more things is determining how they are alike; whereas, contrasting two or more things is determining how they are different. It is a process where the act of classification is practiced.
• The process is used to help learners distinguish between types of ideas or to group similar ideas, engage in critical thinking, and go beyond mere description or summary to generate analysis.
• It can be used to help learners identify language/visual/signal cues and gain a deeper comprehension of the items being compared. It can also be used to facilitate indirect instruction through concept formation or concept attainment. It is often presented in either written text paragraphs or a chart. Its most common use is as a graphic organizer of content.
Contrasting Cases Example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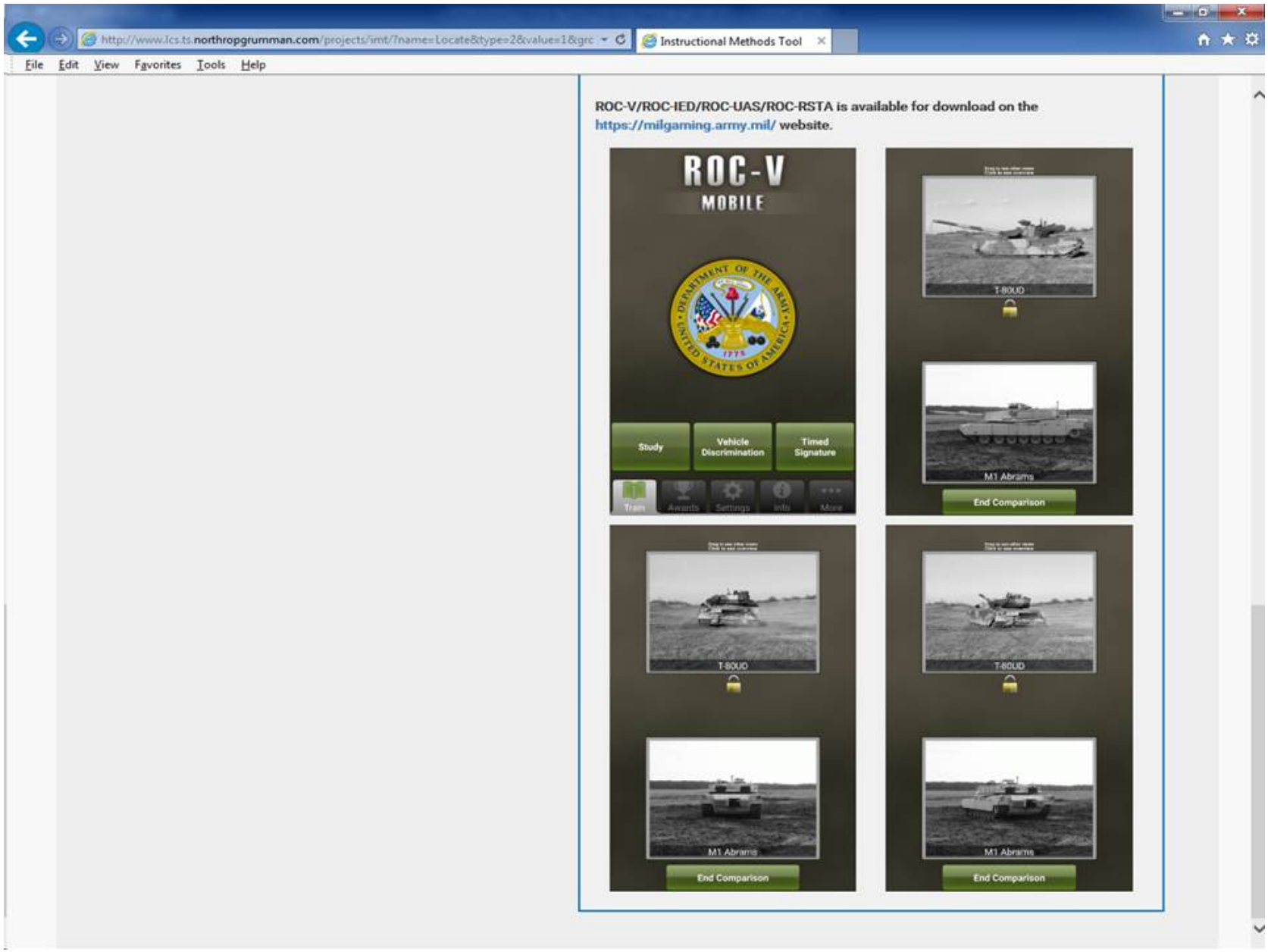
Record
Select
Write
Advanced Organizers Example
Backwards Fading Example
Contrasting Cases Considerations
Contrasting Cases Example
Task Number: 071-730-0014
Task Title: Identify Combat Vehicles
Identify the characteristics of the observed combat vehicle(s). NOTE: Four areas of characteristics are used 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.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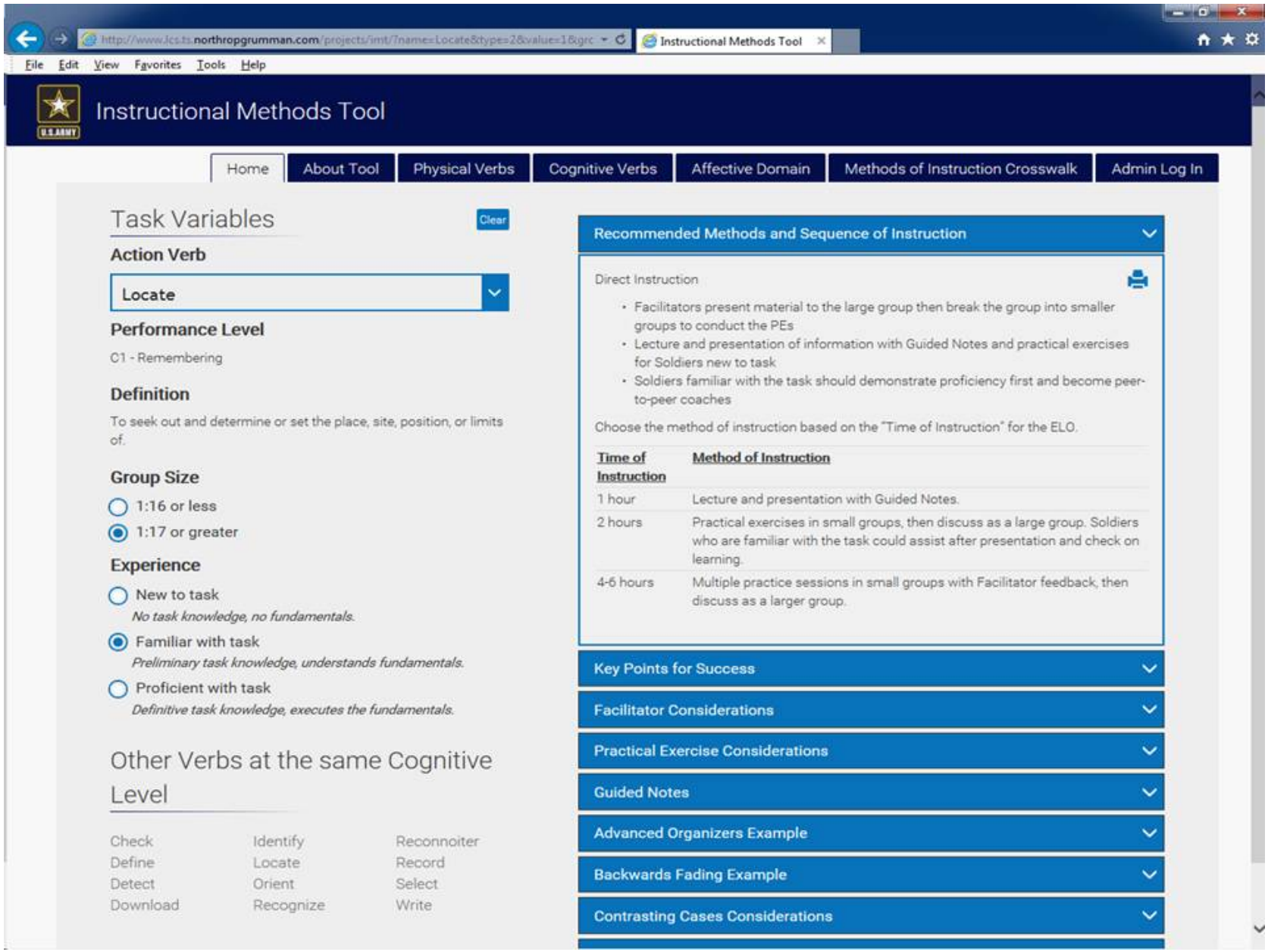
ROC-V/ROC-IED/ROC-UAS/ROC-RSTA is available for download on the
https://milgaming.army.mil/ website.
ROC-V
MOBILE
Study
Vehicle Discrimination
Timed Signature
Train
Awards
Settings
Info
More
T-80UD
M1 Abrams
End Comparison

Appendix P

Military Task Examples
C1-Remembering / Large Group / New to Task and Familiar with Task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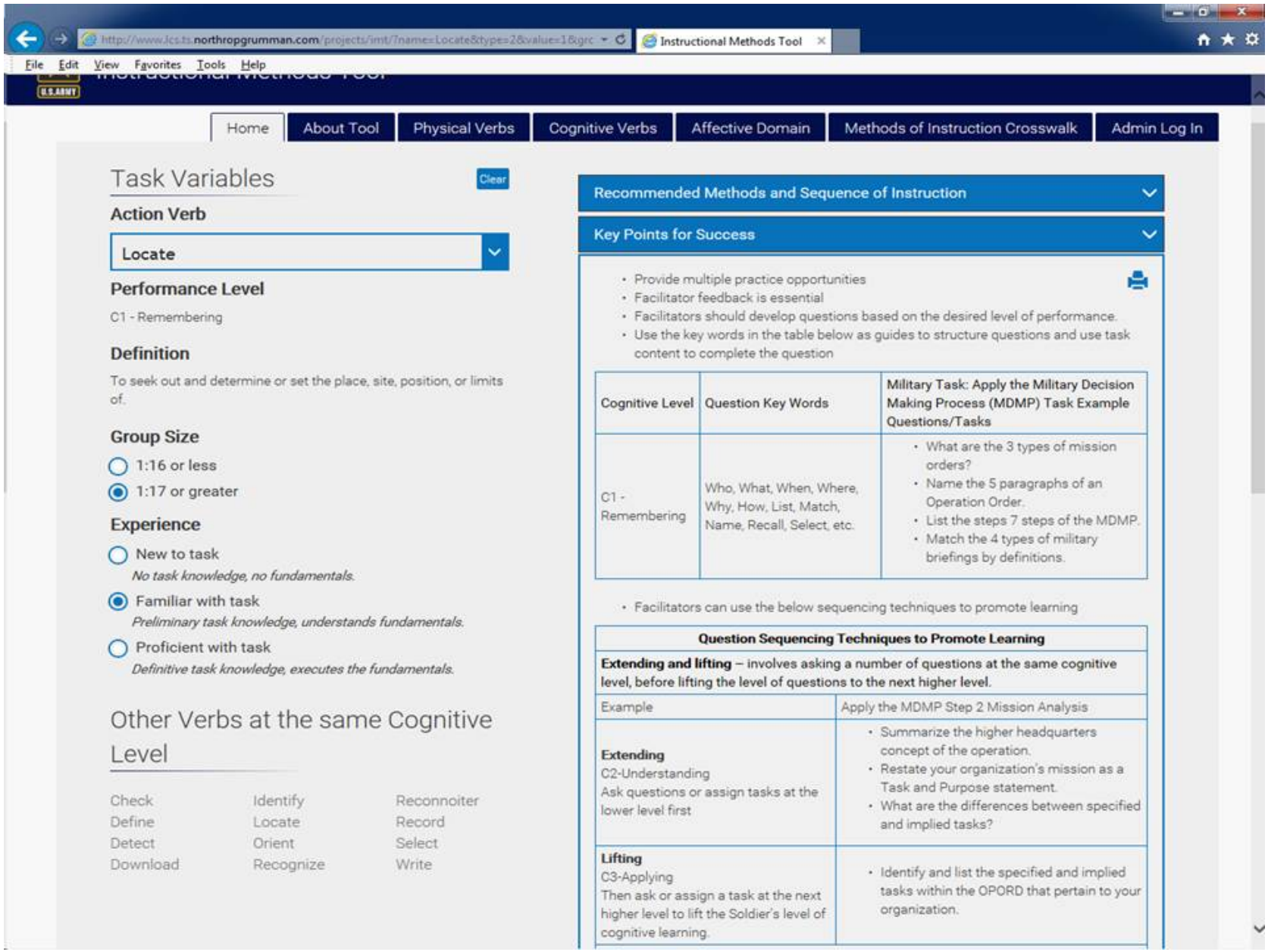
Recommended Methods and Sequence of Instruction
Direct Instruction
Facilitators present material to the large group then break the group into smaller groups to conduct the PEs
Lecture and presentation of information with Guided Notes and practical exercises for Soldiers new to task
Soldiers familiar 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
Method 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 Organizers Example
Backwards Fading Example
Contrasting Cases Considerations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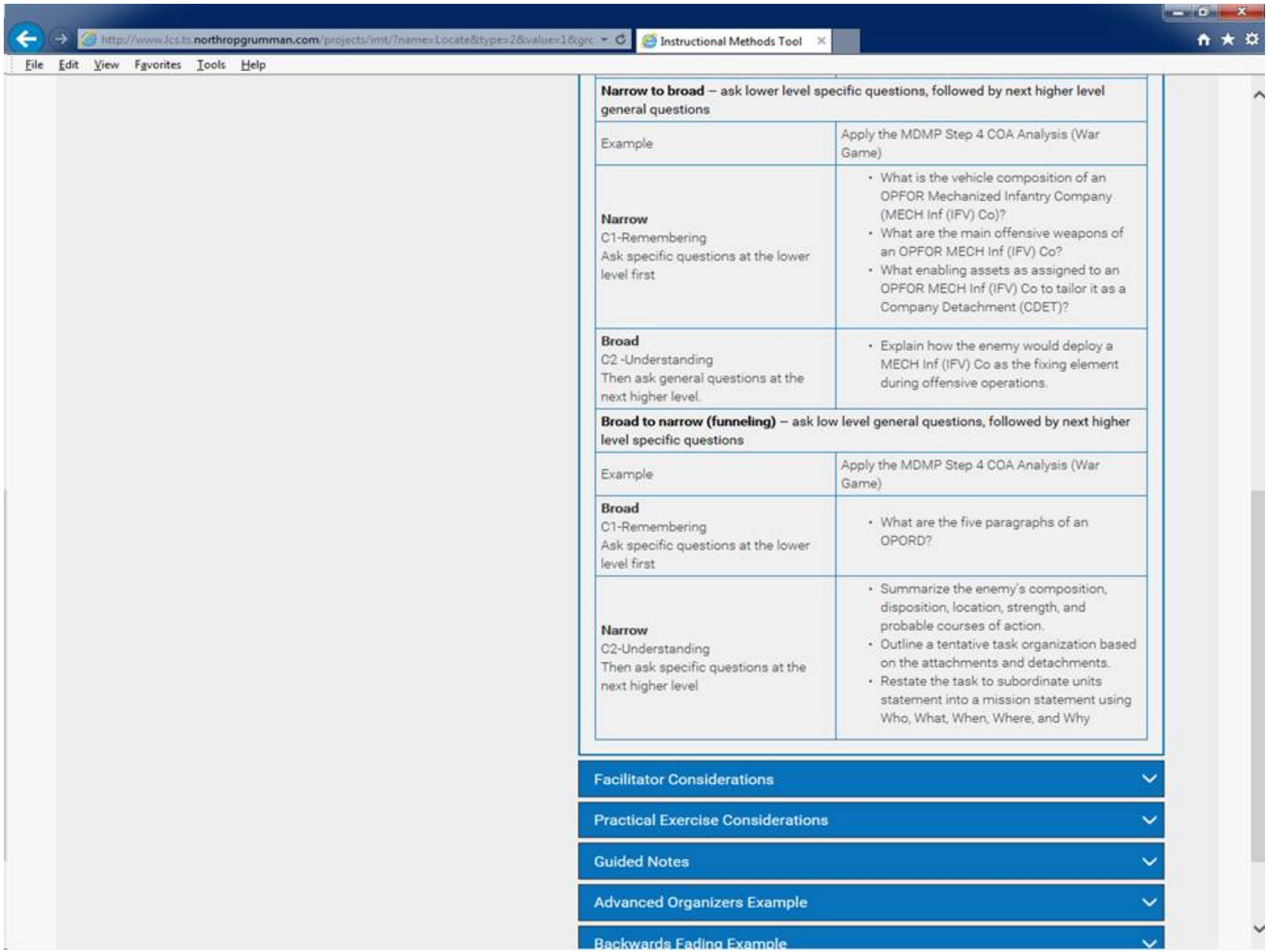
Recommended Methods and Sequence of Instruction
Key Points for Success
Provide multiple practice opportunities
Facilitator feedback is essential
Facilitators should develop questions based on the desired level of performance.
Use the key words in the table below as guides to structure questions and use task content to complete the question
Cognitive Level
Question Key Words
Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks
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.
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.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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.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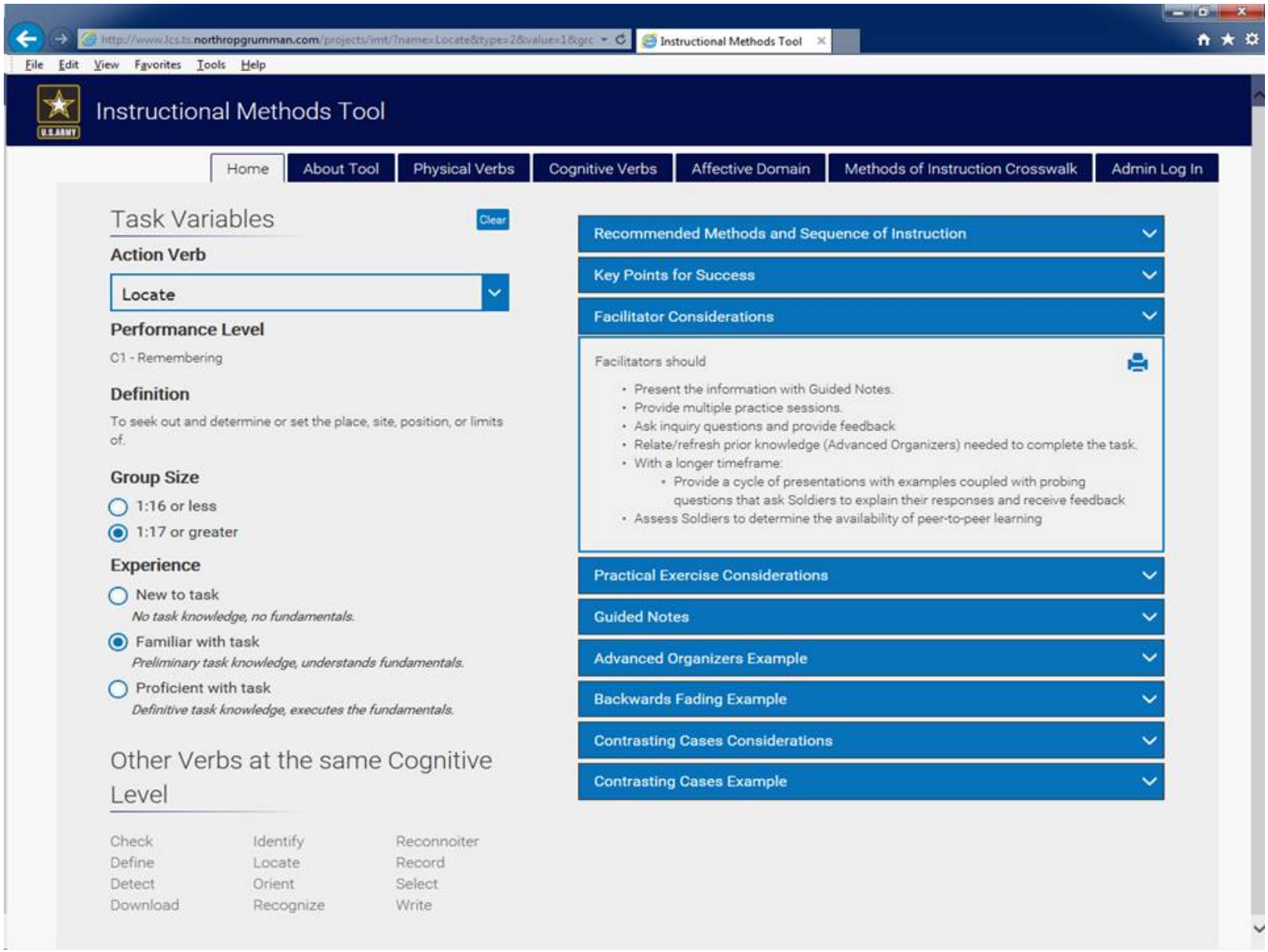
Narrow to broad – ask lower level specific questions, followed by next higher level general questions
Example
Apply the MDMP Step 4 COA Analysis (War Game)
Narrow
C1-Remembering
Ask specific questions at the lower level first
What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?
What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?
What enabling assets 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
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
Guided Notes
Advanced Organizers Example
Backwards Fading Example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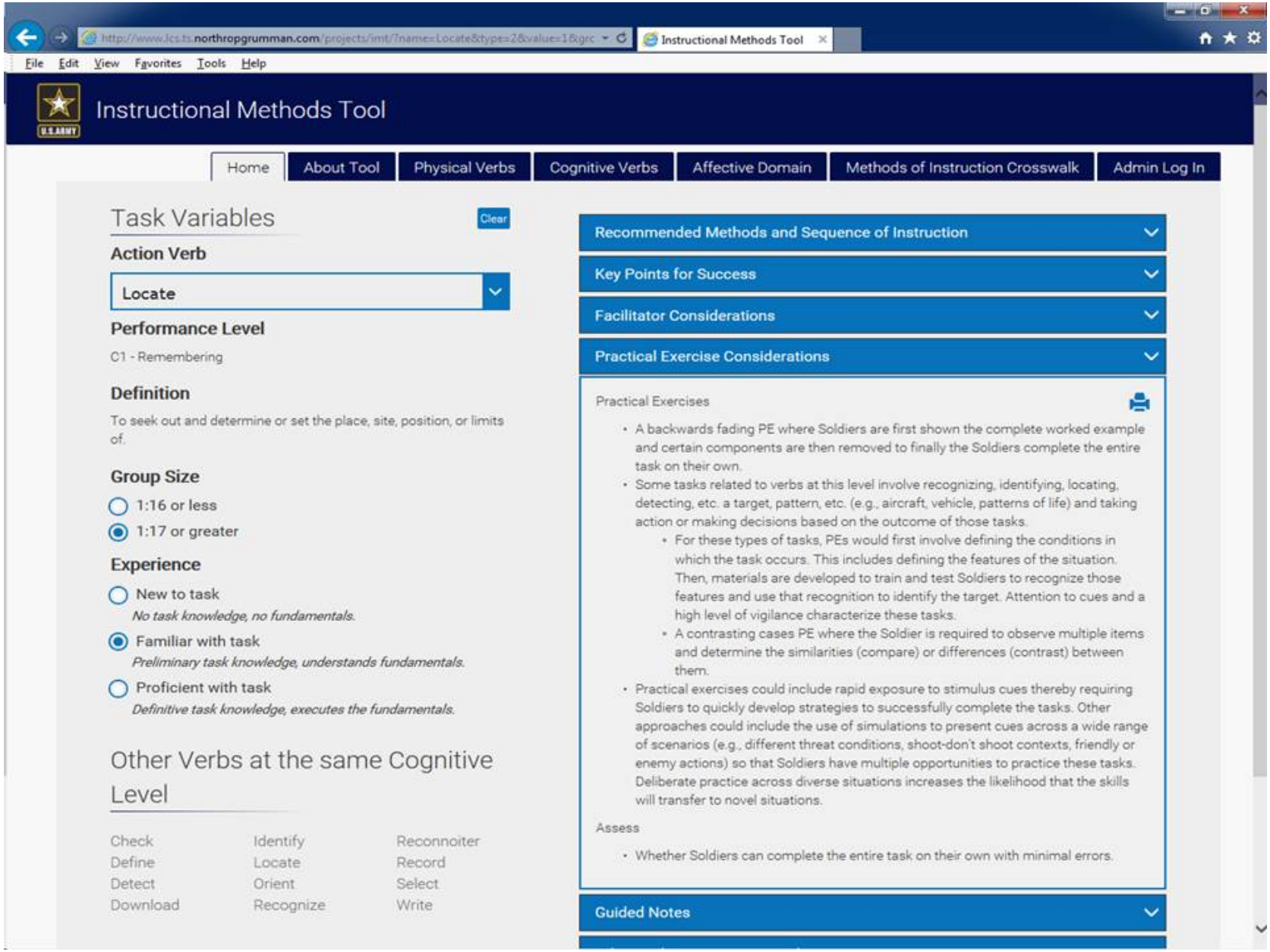
Facilitators should
Present the information with Guided Notes.
Provide multiple practice sessions.
Ask inquiry questions and provide feedback
Relate/refresh prior knowledge (Advanced Organizers) needed to complete the task.
With a longer timeframe:
Provide a cycle of presentations with examples coupled with probing questions that ask Soldiers to explain their responses and receive feedback
Assess Soldiers to determine the availability of peer-to-peer learning
Practical Exercise Considerations
Guided Notes
Advanced Organizers Example
Backwards Fading Example
Contrasting Cases Considerations
Contrasting Cases Example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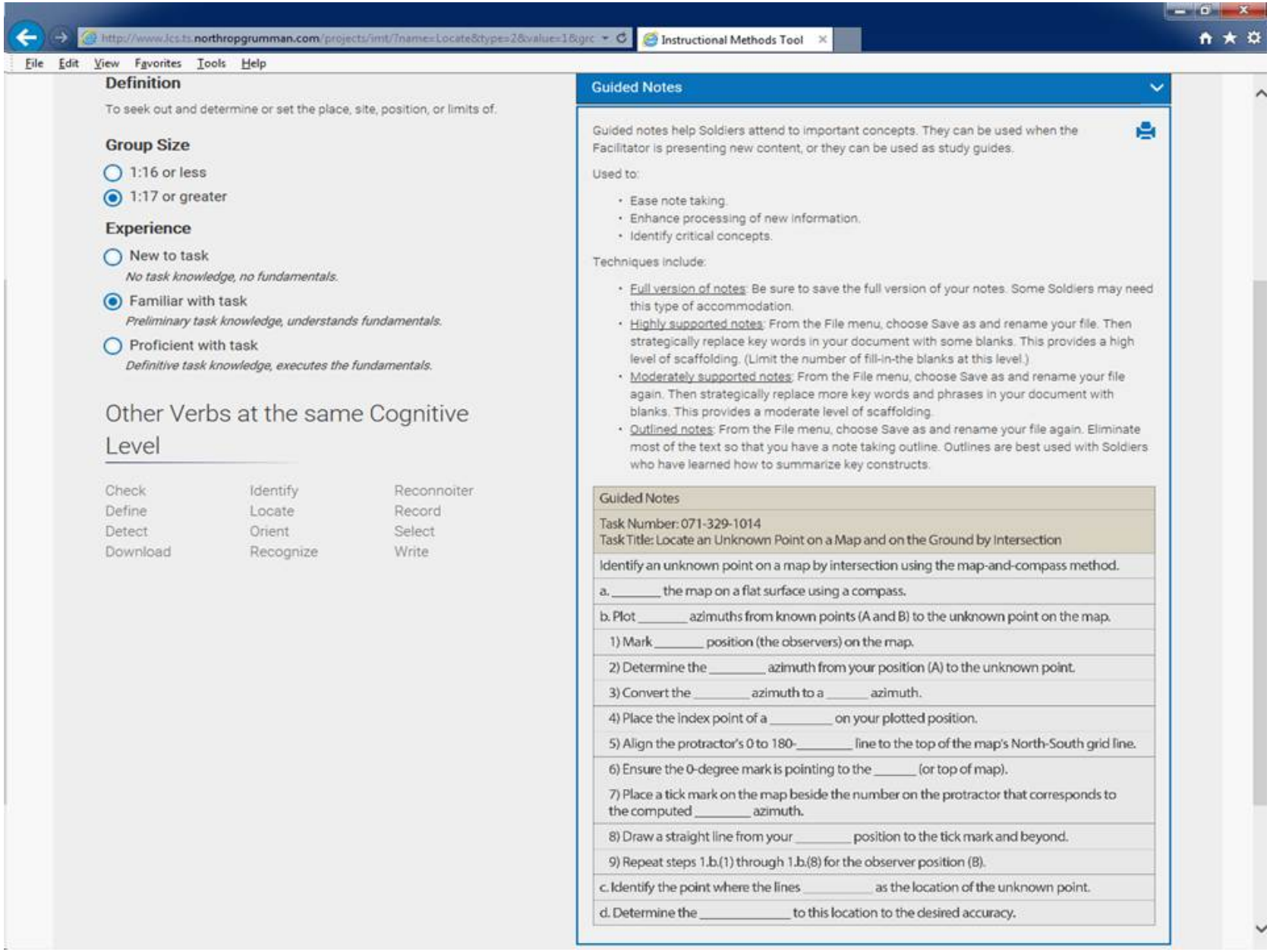
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Locate
Performance Level
C1 - Remembering
Definition
To seek out and determine or set the place, site, position, or limits of.
Group Size
1:16 or less
1:17 or greater
Experience
New to task
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
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 those 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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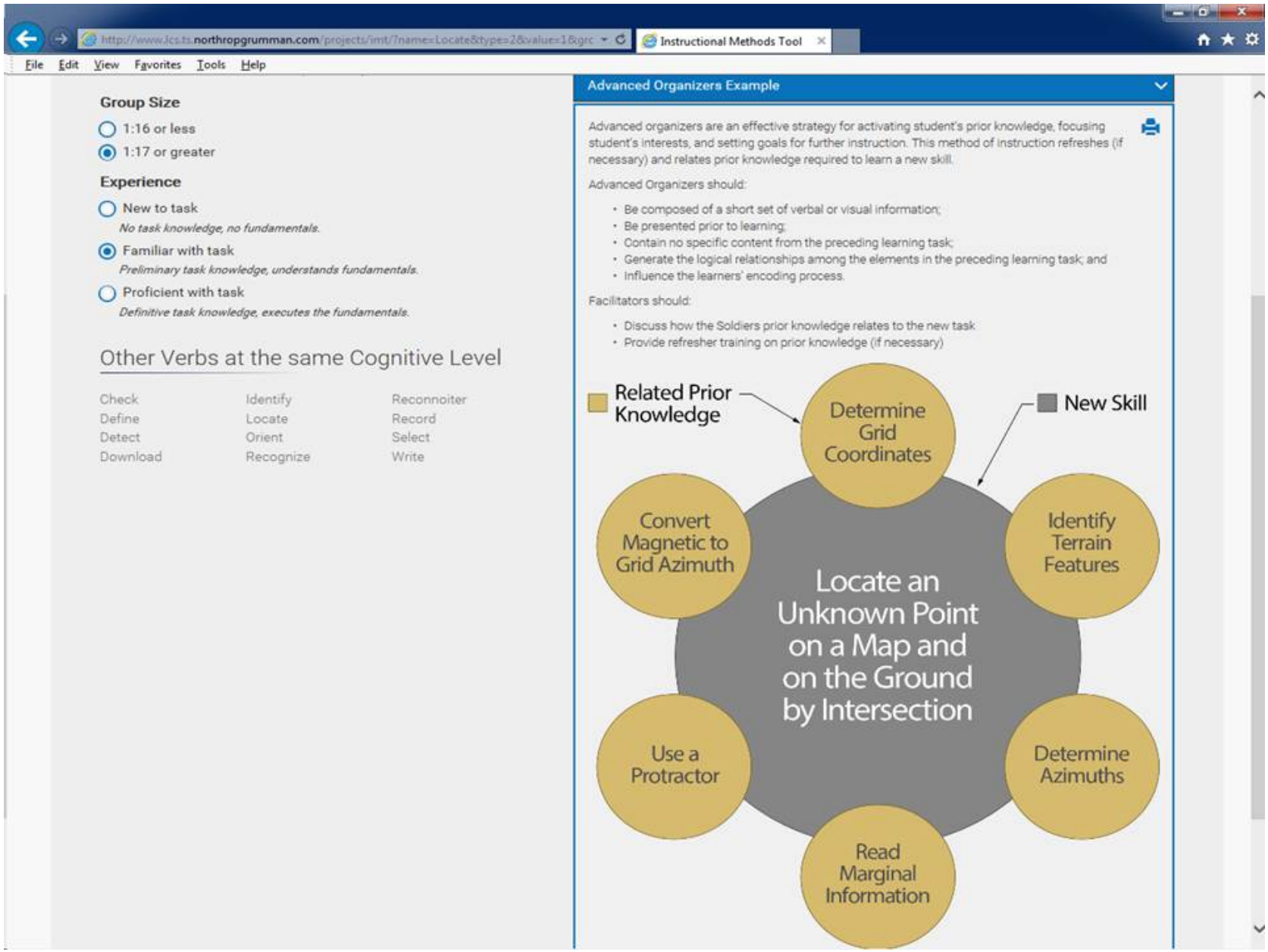
Guided Notes
Guided notes help Soldiers attend to important concepts. They can be used when the Facilitator is presenting new content, or they can be used as study guides.
Used to:
Ease note taking.
Enhance processing of new information.
Identify critical concepts.
Techniques include:
Full version of 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 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 _____ azimuths from known points (A and B) to the unknown point on the map.
1) Mark _____ position (the observers) 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.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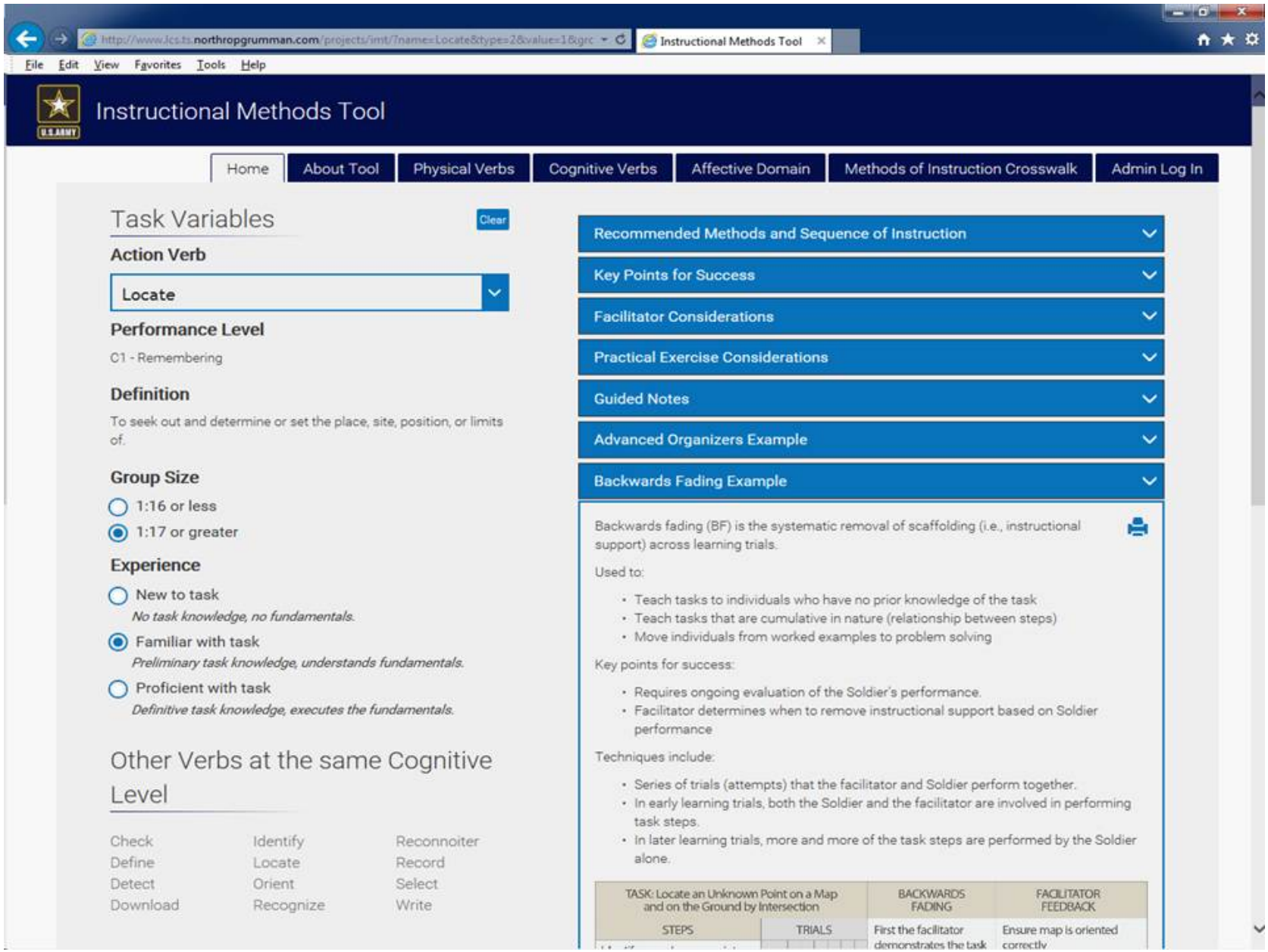
Reconnoiter
Record
Select
Write
Advanced Organizers Example
Advanced organizers are an effective strategy for activating student's prior knowledge, focusing student's interests, and setting goals for further instruction. This method of instruction refreshes (if necessary) and relates prior knowledge 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 Soldiers prior knowledge relates to the new task
Provide refresher training on prior knowledge (if necessary)
Related Prior Knowledge
New Skill
Determine Grid Coordinates
Identify Terrain Features
Determine Azimuths
Read Marginal Information
Use a Protractor
Convert Magnetic to Grid Azimuth
Locate an Unknown Point on a Map and on the Ground by Intersection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Record
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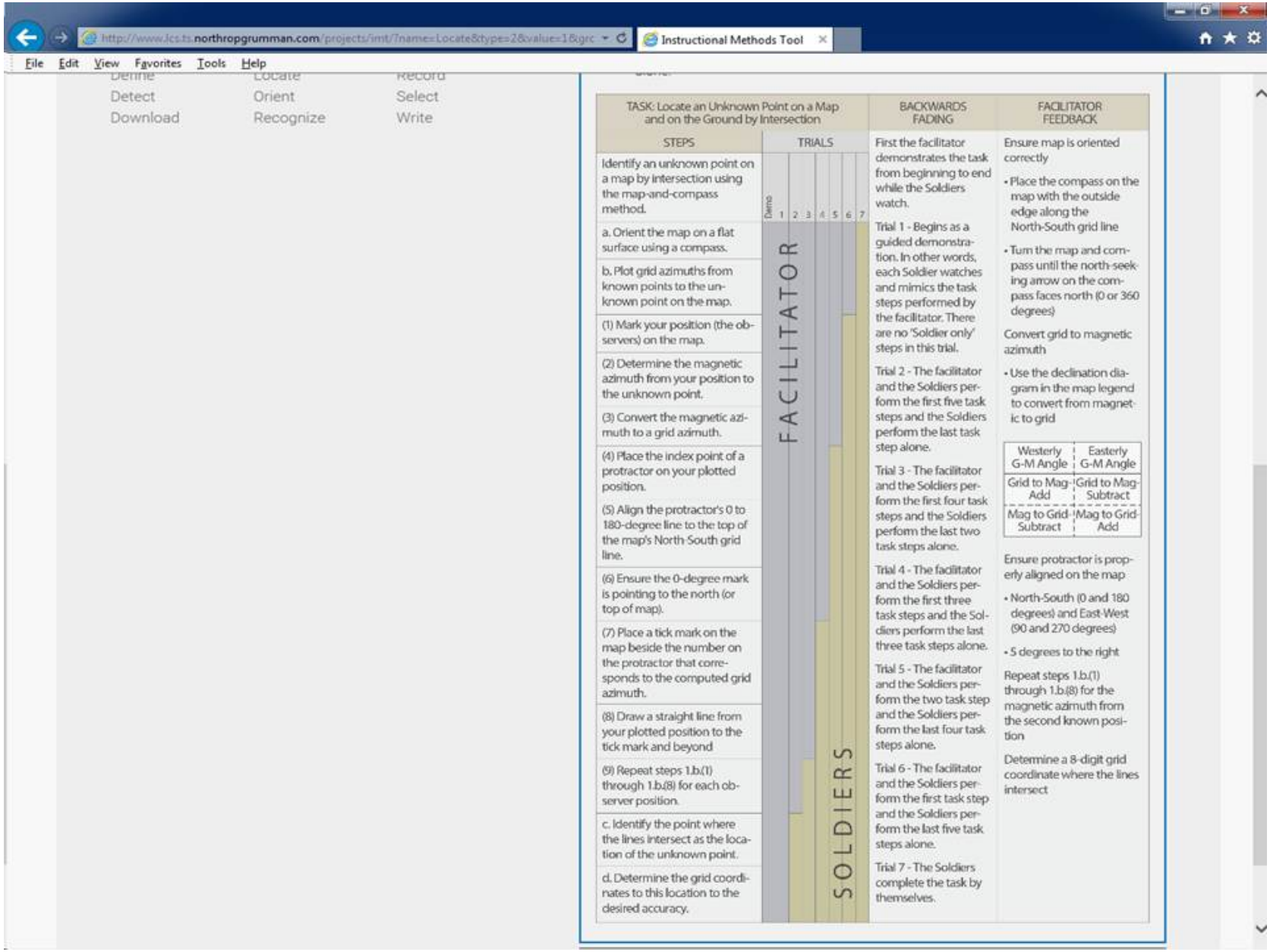
Write
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Guided Notes
Advanced Organizers Example
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across 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 Intersection
BACKWARDS FADING
FACILITATOR FEEDBACK
STEPS
TRIALS
First the facilitator demonstrates the task
Ensure map is oriented correctly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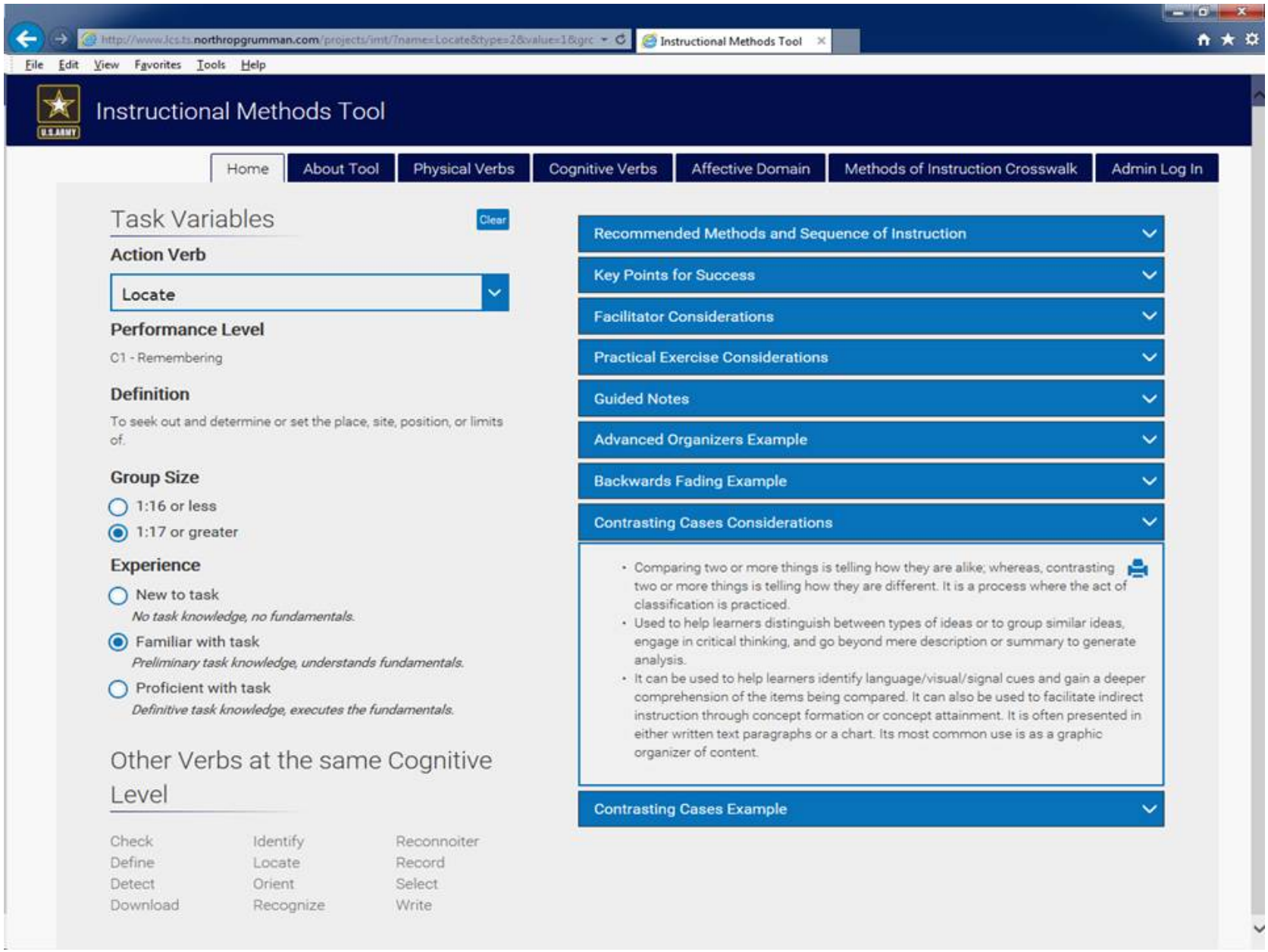
Instructional Methods Tool
File Edit View Favorites Tools Help
Define Locate Record
Detect Orient Select
Download Recognize Write
TASK: Locate an Unknown Point on a Map and on the Ground by Intersection
STEPS
TRIALS
Demo 1 2 3 4 5 6 7
FACILITATOR
SOLDIERS
Identify an unknown point on a map by intersection 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 observers) 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 0-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.b.(1) through 1.b.(8) for each observer position.
c. Identify the point where the lines intersect as the location of the unknown point.
d. Determine the grid coordinates to this location to the desired accuracy.
BACKWARDS FADING
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 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 two task step 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
• Place 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
Westerly G-M Angle
Easterly G-M Angle
Grid to Mag-Add
Grid to Mag-Subtract
Mag to Grid-Subtract
Mag to Grid-Add
Ensure protractor is properly aligned on the map
• North-South (0 and 180 degrees) and East-West (90 and 270 degrees)
• 5 degrees to the right
Repeat steps 1.b.(1) through 1.b.(8) for the magnetic azimuth from the second known position
Determine a 8-digit grid coordinate where the lines intersect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Reconnoiter
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Write
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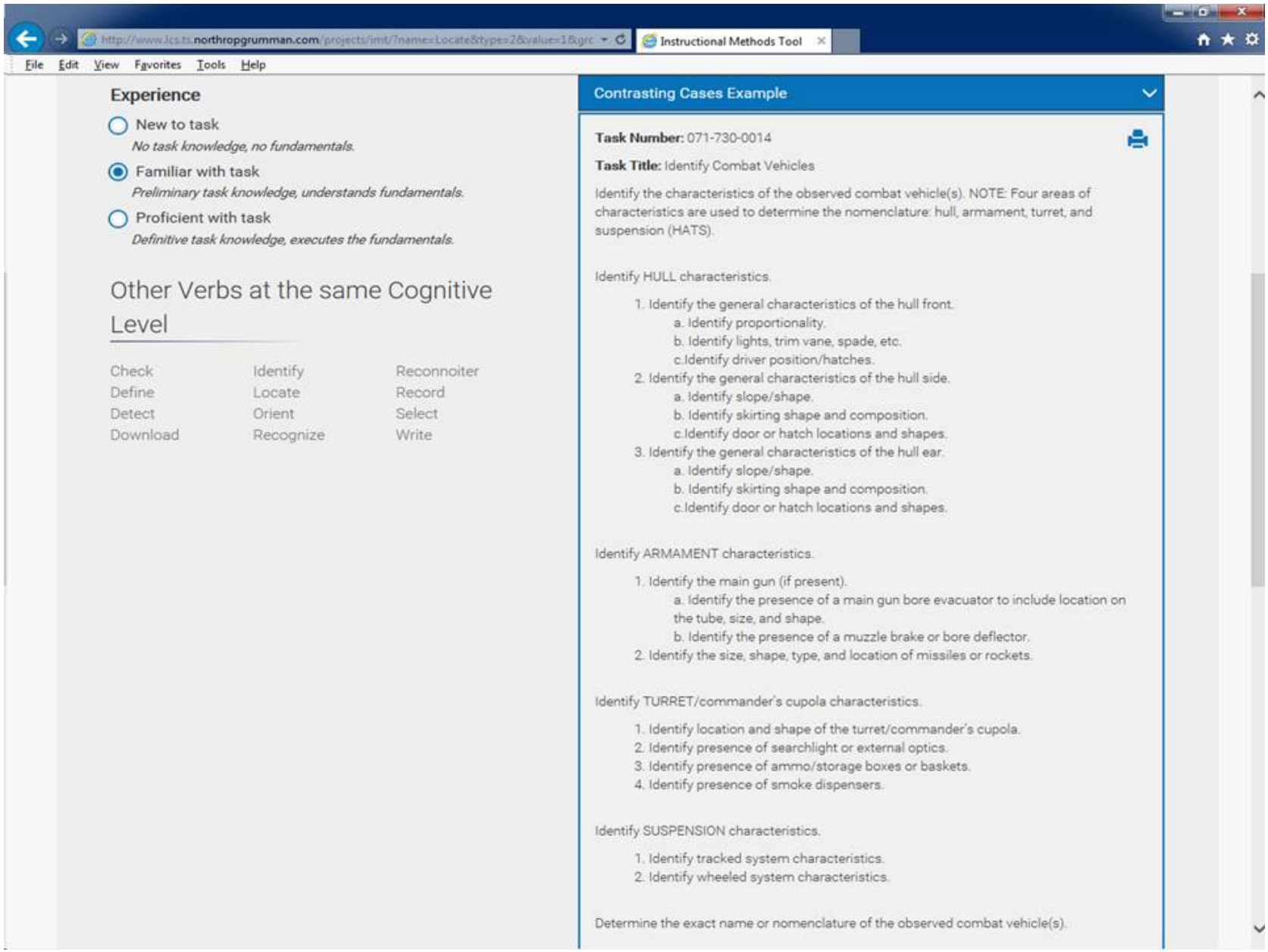
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Guided Notes
Advanced Organizers Example
Backwards Fading Example
Contrasting Cases Considerations
• Comparing two or more things is telling how they are alike; whereas, contrasting two or more things is telling how they are different. It is a process where the act of classification is practiced.
• Used to help learners distinguish between types of ideas or to group similar ideas, engage in critical thinking, and go beyond mere description or summary to generate analysis.
• It can be used to help learners identify language/visual/signal cues and gain a deeper comprehension of the items being compared. It can also be used to facilitate indirect instruction through concept formation or concept attainment. It is often presented in either written text paragraphs or a chart. Its most common use is as a graphic organizer of content.
Contrasting Cases Example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Other Verbs at the same Cognitive Level
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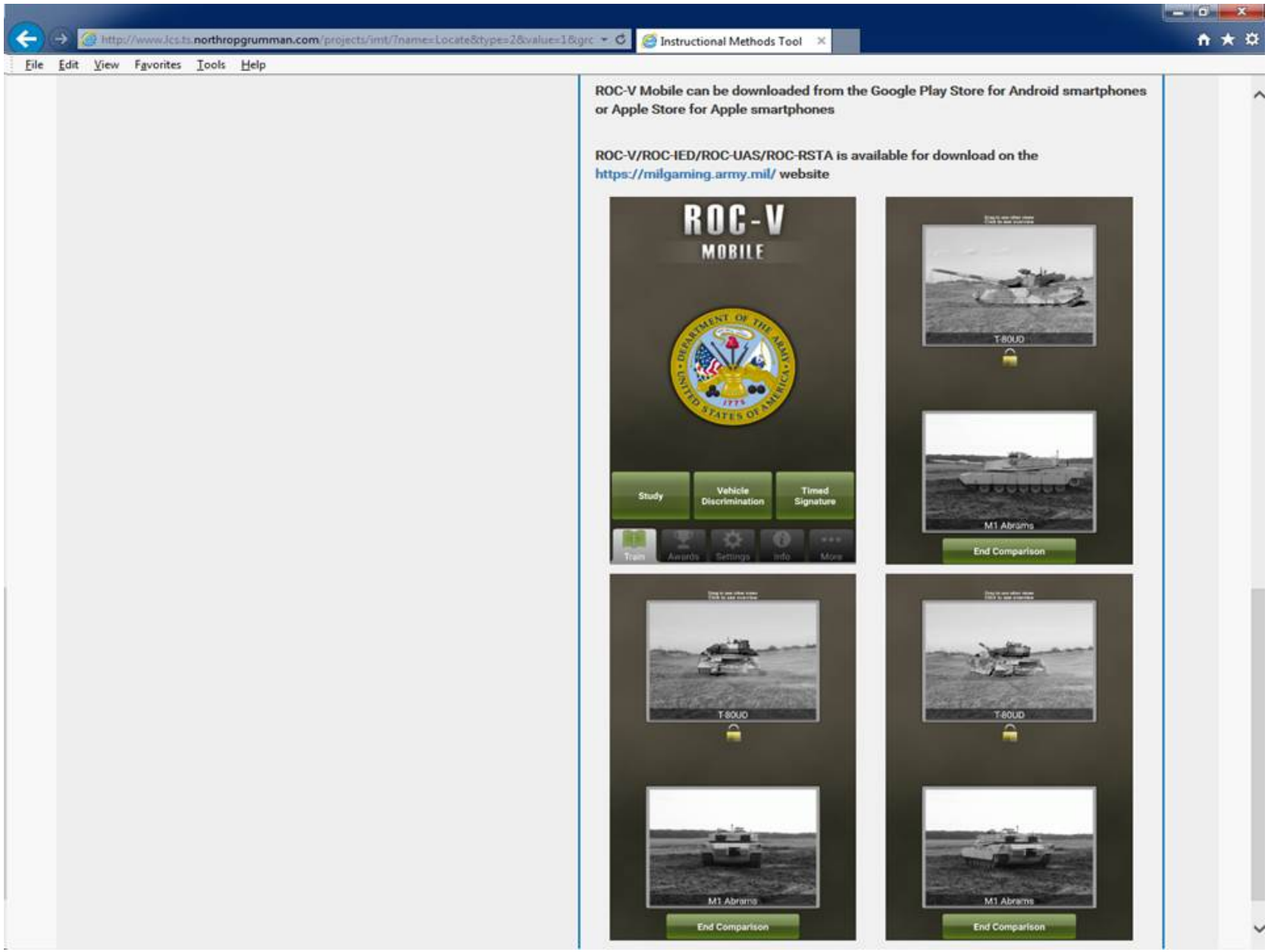
Orient
Recognize
Reconnoiter
Record
Select
Write
Contrasting Cases Example
Task Number: 071-730-0014
Task Title: Identify Combat Vehicles
Identify the characteristics of the observed combat vehicle(s). NOTE: Four areas of characteristics are used to determine the nomenclature: hull, armament, turret, 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).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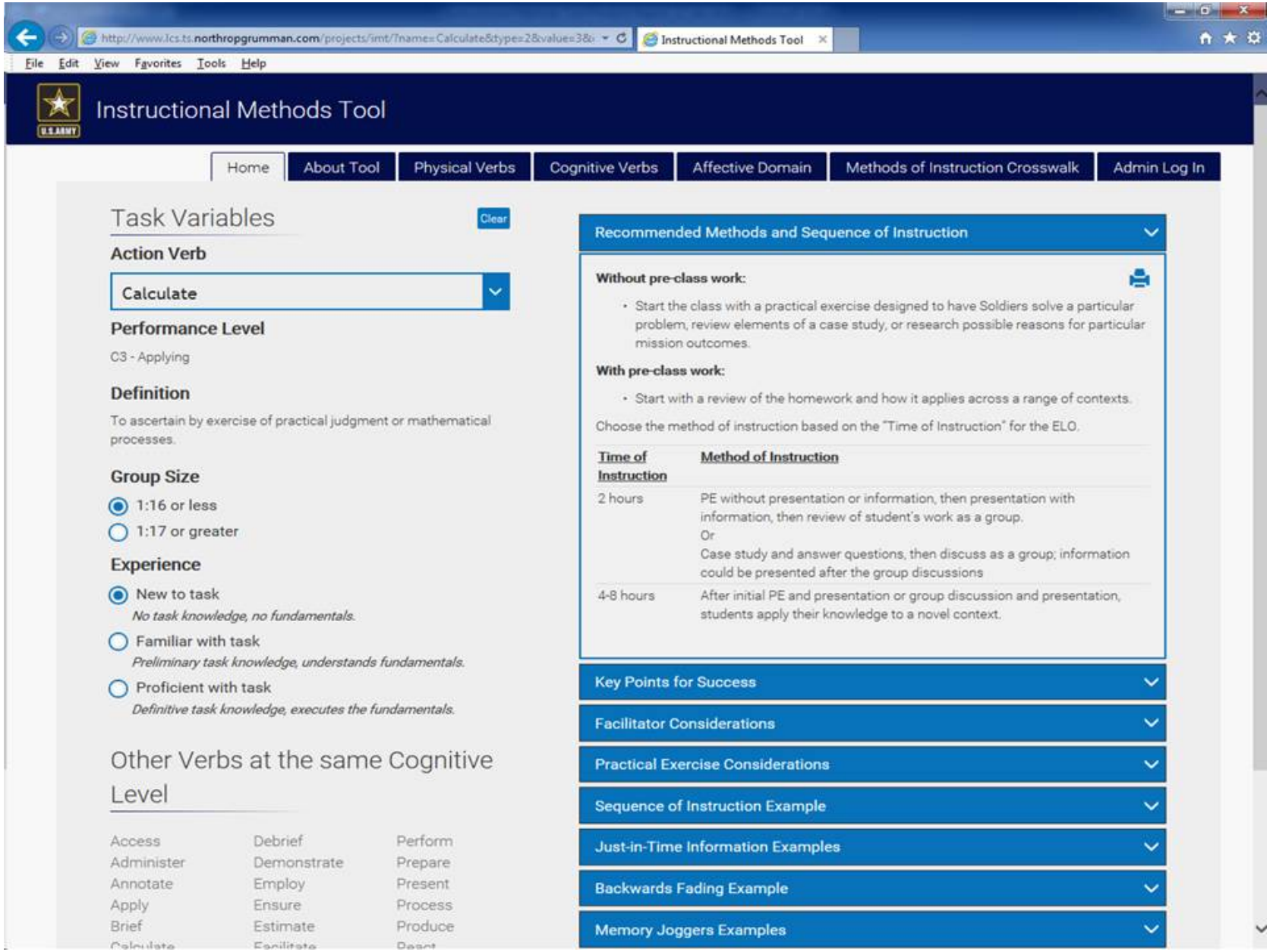
ROC-V Mobile can be downloaded from the Google Play Store for Android smartphones or Apple Store for Apple smartphones
ROC-V/ROC-IED/ROC-UAS/ROC-RSTA is available for download on the https://milgaming.army.mil/ website
ROC-V
MOBILE
Study
Vehicle Discrimination
Timed Signature
Train
Awards
Settings
Info
More
T-80UD
M1 Abrams
End Comparison

Appendix Q

Military Task Examples
C2+C3 – Understanding and Applying / Small Group / New with Task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C3 - Applying
Definition
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1:17 or greater
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Proficient with task
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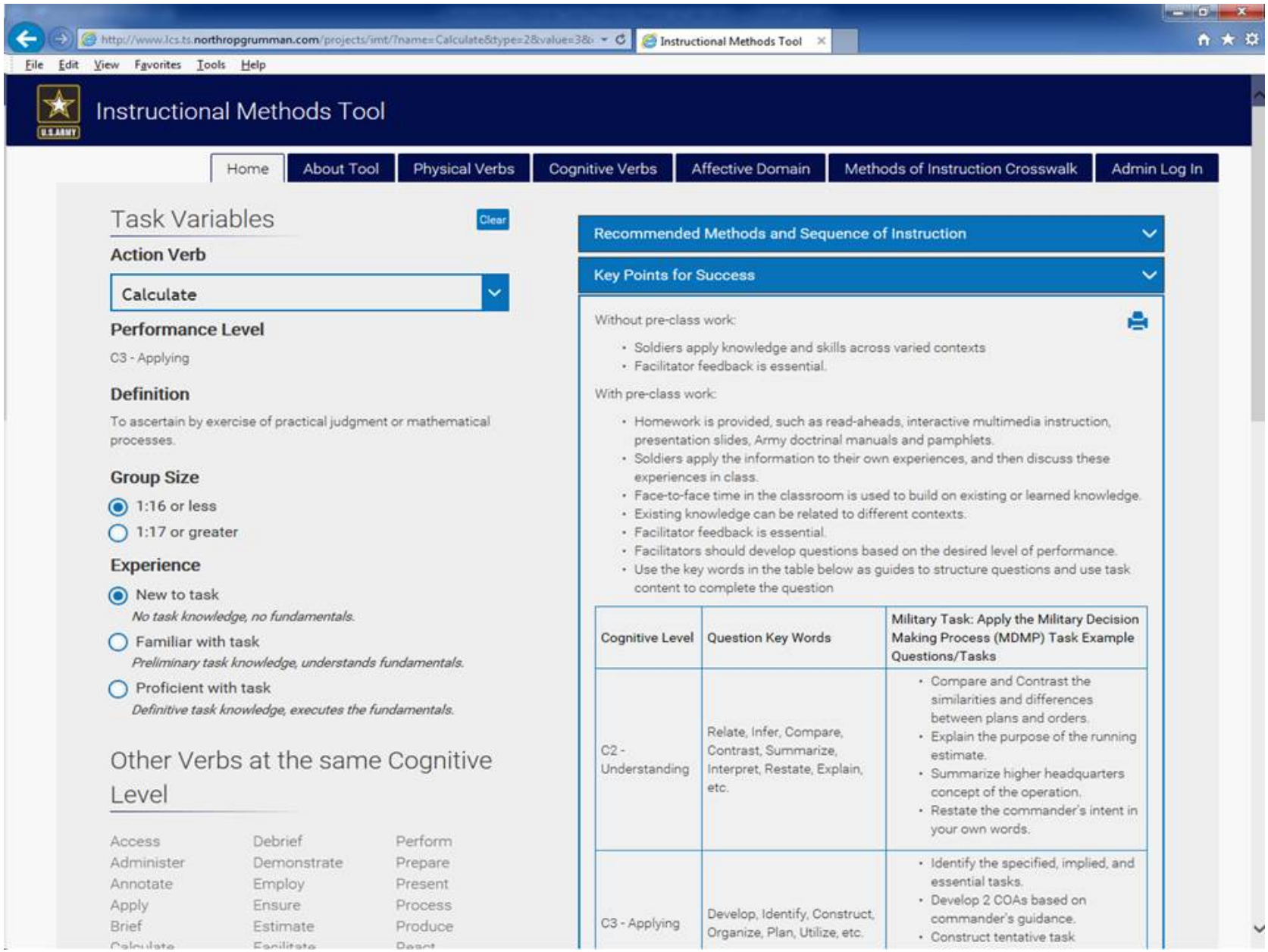
Other Verbs at the same Cognitive Level
Access
Administer
Annotate
Apply
Brief
Debrief
Demonstrate
Employ
Ensure
Estimate
Perform
Prepare
Present
Process
Produce
Recommended Methods and Sequence of Instruction
Without pre-class work:
Start the class with a practical exercise designed to have Soldiers 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
Method 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
4-8 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
Backwards Fading Example
Memory Joggers Examples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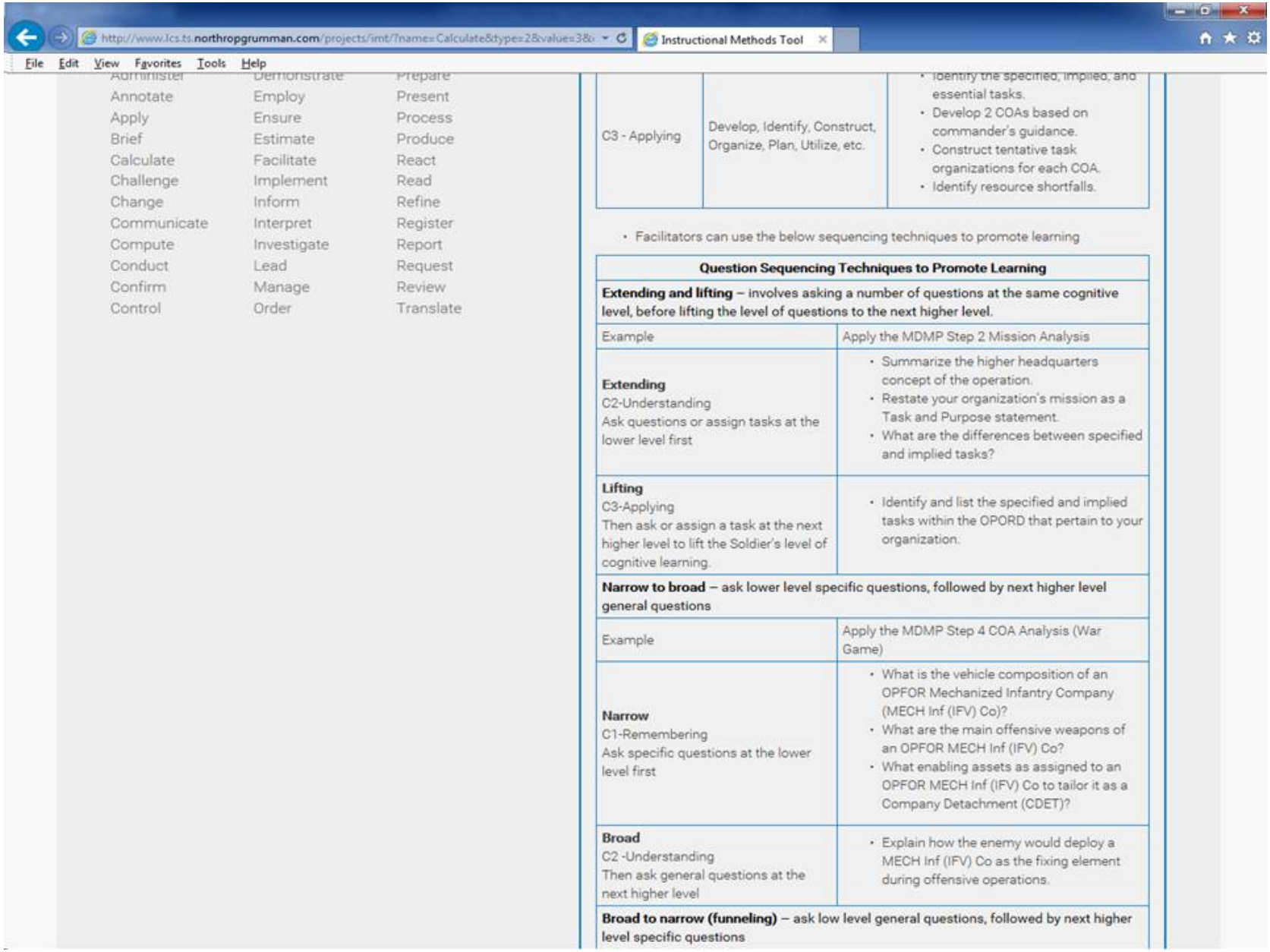
Recommended Methods and Sequence of Instruction
Key Points for Success
Without pre-class work:
Soldiers apply knowledge and skills across varied contexts
Facilitator feedback is essential.
With pre-class work:
Homework is provided, such as read-aheads, interactive multimedia instruction, presentation slides, Army doctrinal 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 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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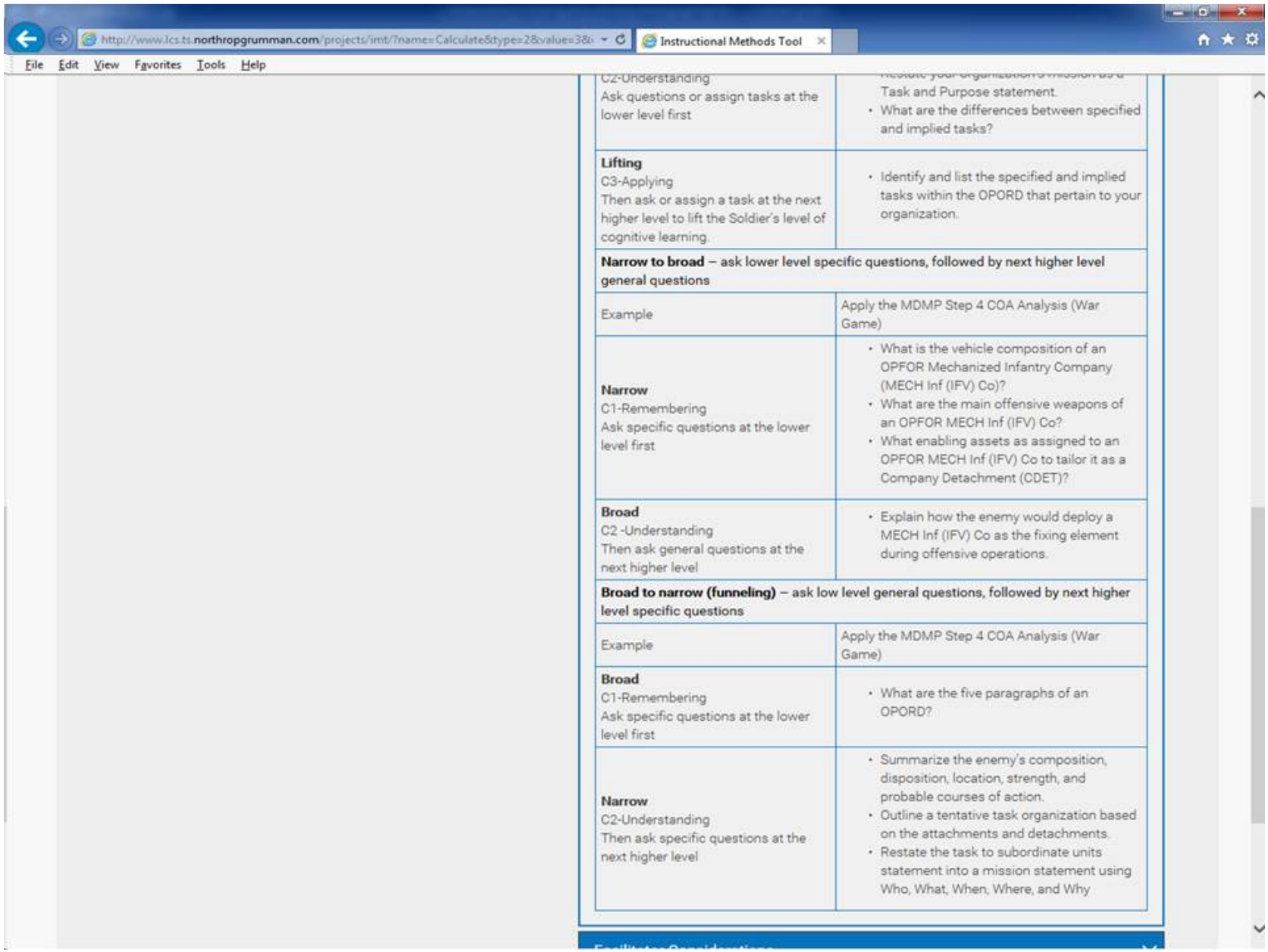
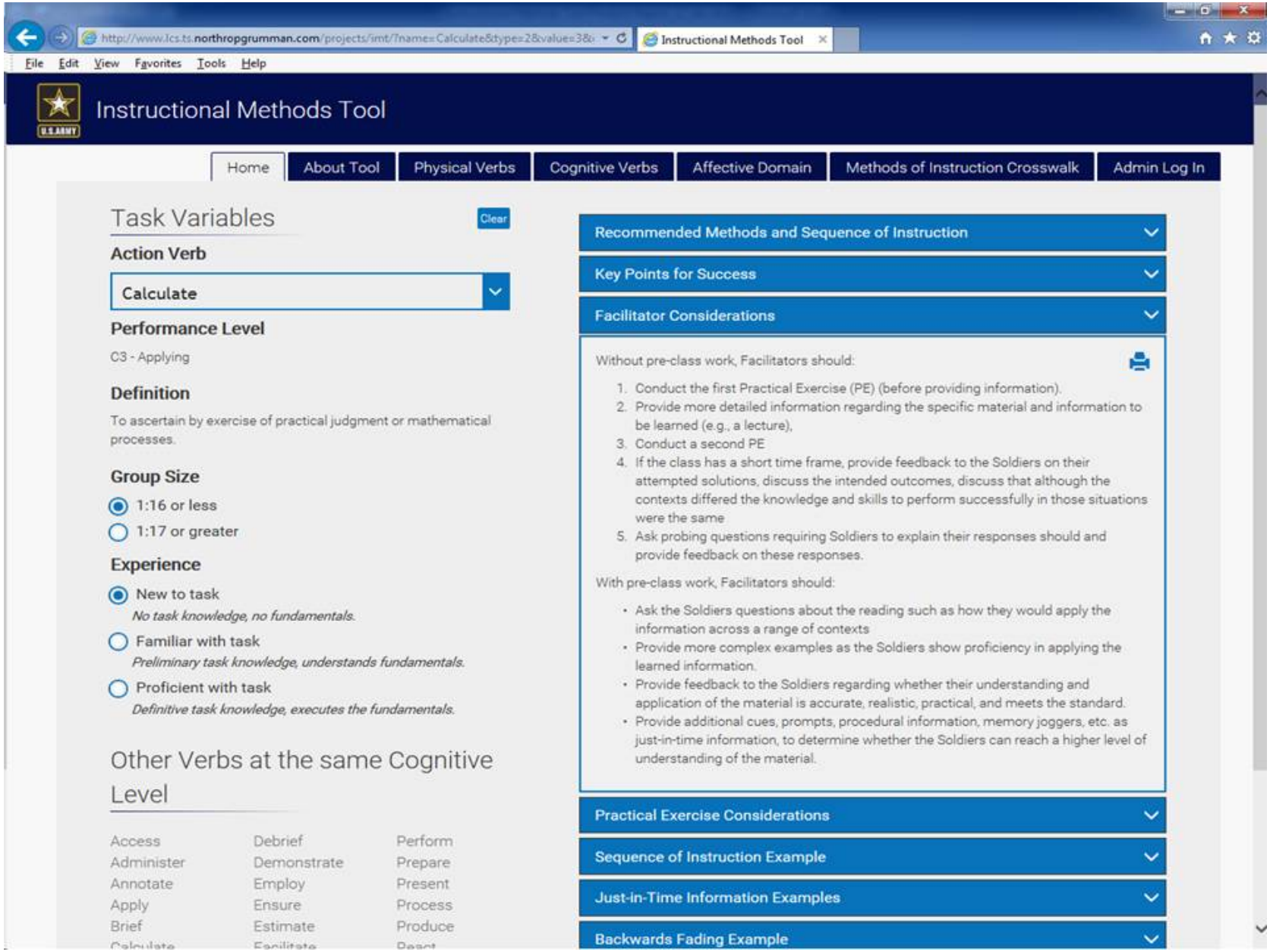
Interpret
Investigate
Lead
Manage
Order
Prepare
Present
Process
Produce
React
Read
Refine
Register
Report
Request
Review
Translate
C3 - Applying
Develop, Identify, Construct, Organize, Plan, Utilize, etc.
• Identify the specified, implied, and essential tasks.
• Develop 2 COAs based on commander's guidance.
• Construct tentative task organizations for each COA.
• Identify resource shortfalls.
• 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.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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
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 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



C2-Understanding Ask questions or assign tasks at the lower level first	Task and Purpose statement. • What are the differences between specified and implied tasks?
Lifting C3-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	
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 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	
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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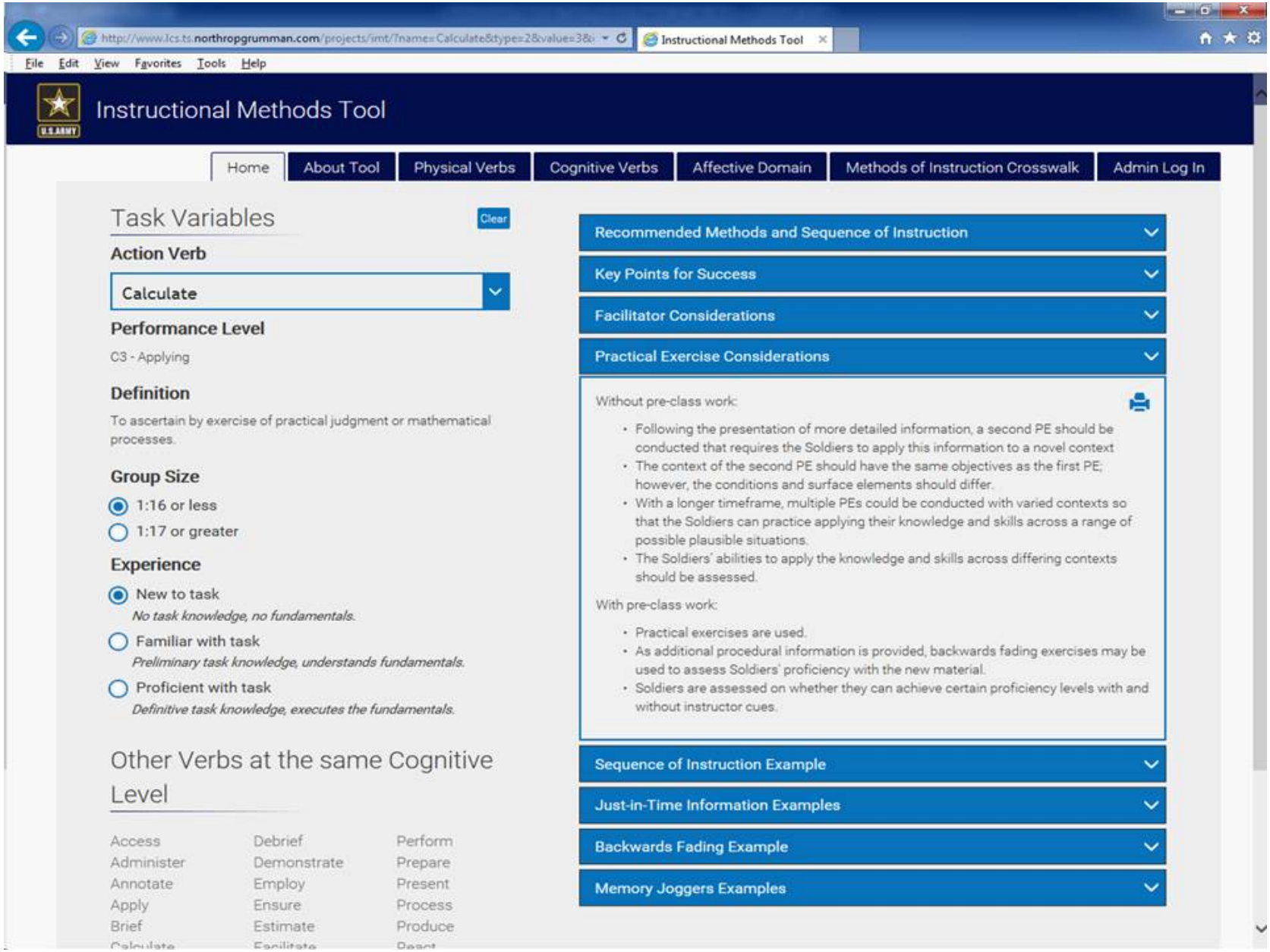
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Calculate
Performance Level
C3 - Applying
Definition
To ascertain by exercise of practical judgment or mathematical processes.
Group Size
1:16 or less
1:17 or greater
Experience
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
Debrief
Demonstrate
Employ
Ensure
Estimate
Perform
Prepare
Present
Process
Produce
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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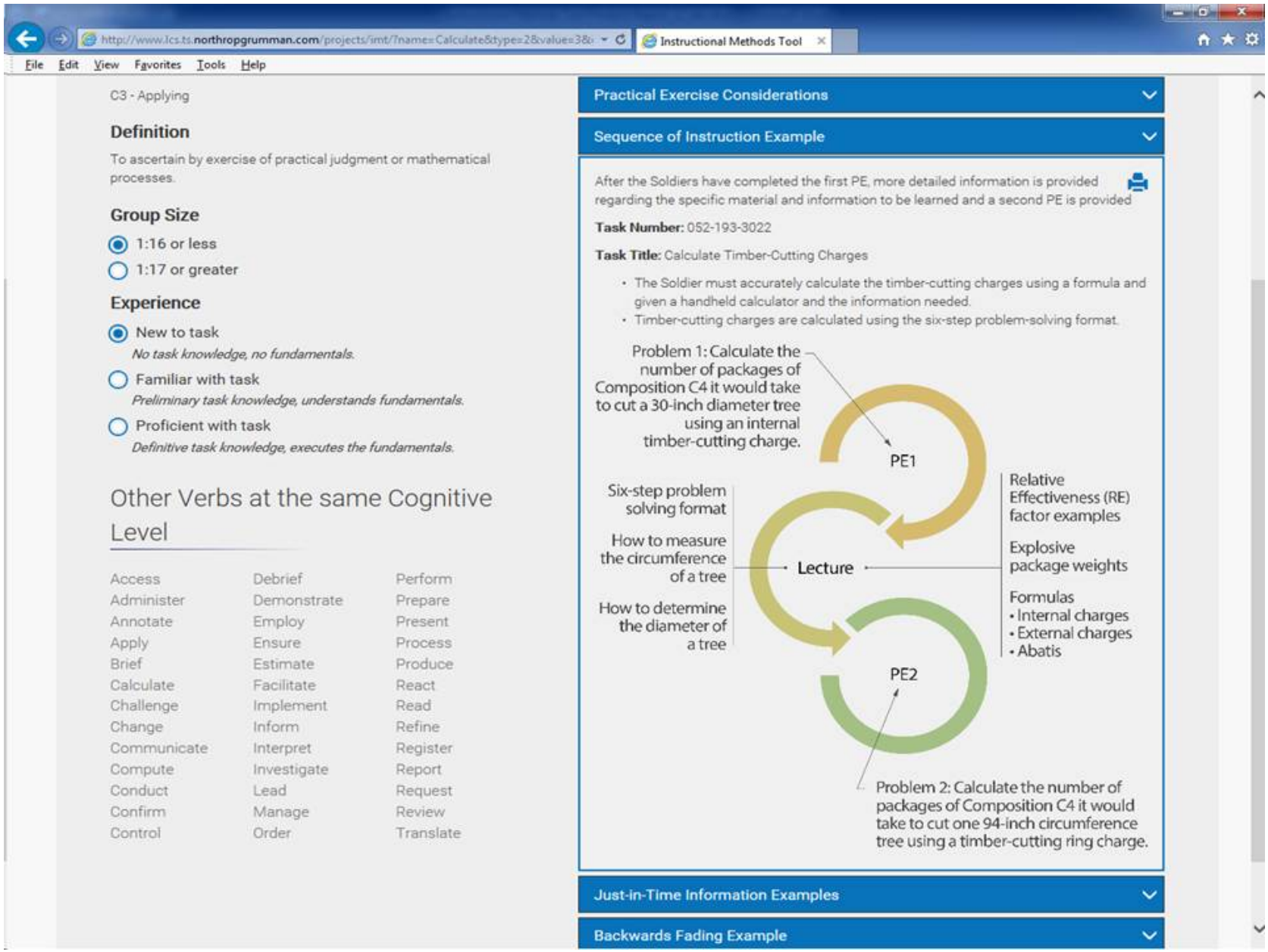
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Without pre-class work:
Following the presentation of more detailed information, a second PE should be conducted that requires the Soldiers to apply this information to 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.
With a longer timeframe, multiple PEs could be conducted with varied contexts so that the Soldiers can practice applying their knowledge and skills across a range of possible plausible situations.
The Soldiers' abilities to apply the knowledge and skills across differing contexts should be assessed.
With pre-class work:
Practical exercises are used.
As additional procedural information is provided, backwards fading exercises may be used to assess Soldiers' proficiency with the new material.
Soldiers are assessed on whether they can achieve certain proficiency levels with and without instructor cues.
Sequence of Instruction Example
Just-in-Time Information Examples
Backwards Fading Example
Memory Joggers Examples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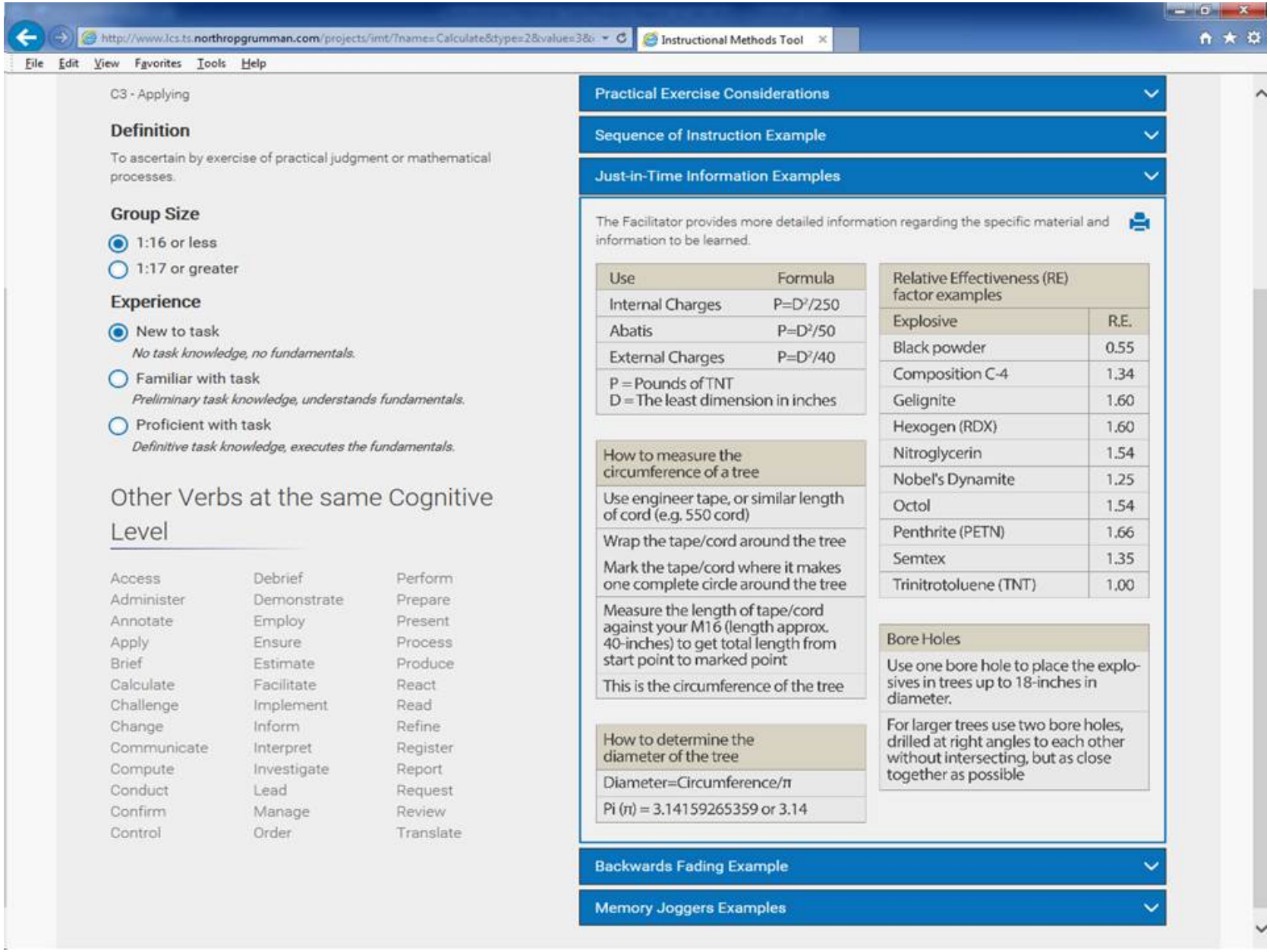
Access Administer Annotate Apply Brief Calculate Challenge Change Communicate Compute Conduct Confirm Control
Debrief Demonstrate Employ Ensure Estimate Facilitate Implement Inform Interpret Investigate Lead Manage Order
Perform Prepare Present Process Produce React Read Refine Register Report Request Review Translate
Practical Exercise Considerations
Sequence of Instruction Example
After the Soldiers have completed the first PE, more detailed information is provided regarding the specific material and information to be learned and a second PE is provided
Task Number: 052-193-3022
Task Title: Calculate Timber-Cutting Charges
The Soldier must accurately calculate the timber-cutting charges using a formula and given a handheld calculator and the information needed.
Timber-cutting charges are calculated using the six-step problem-solving format.
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
Six-step problem solving format
How to measure the circumference of a tree
How to determine the diameter of a tree
Lecture
Relative Effectiveness (RE) factor examples
Explosive package weights
Formulas
• Internal charges
• External charges
• Abatis
PE2
Problem 2: Calculate the number of packages of Composition C4 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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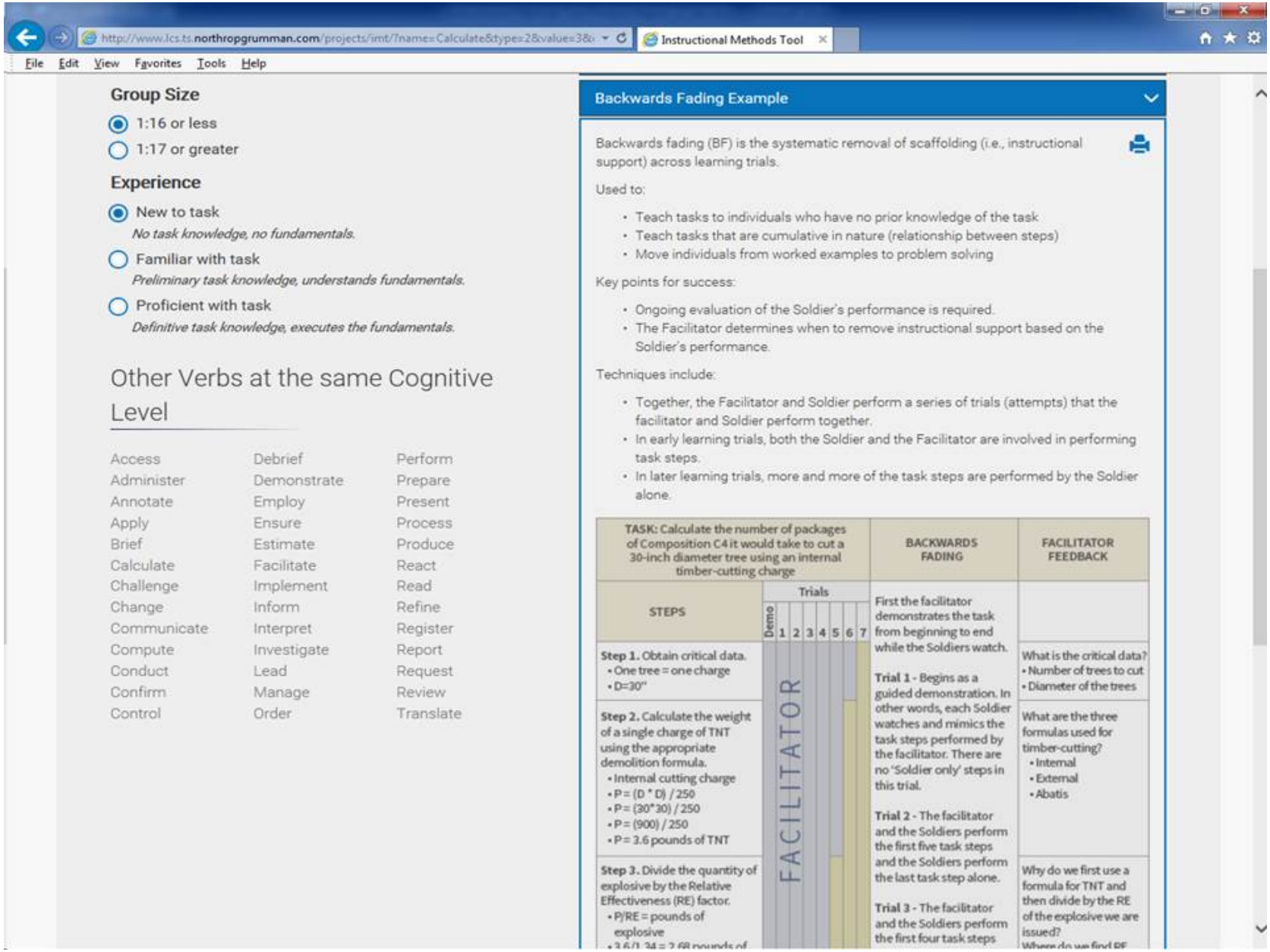
Practical Exercise Considerations
Sequence of Instruction Example
Just-in-Time Information Examples
The Facilitator provides more detailed information regarding the specific material and information to be learned.
Use | Formula
Internal Charges | P=D²/250
Abatis | P=D²/50
External Charges | P=D²/40
P = Pounds of TNT
D = The least dimension in inches
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 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
Diameter=Circumference/π
Pi (π) = 3.14159265359 or 3.14
Relative Effectiveness (RE) factor examples
Explosive | R.E.
Black powder | 0.55
Composition C-4 | 1.34
Gelignite | 1.60
Hexogen (RDX) | 1.60
Nitroglycerin | 1.54
Nobel's Dynamite | 1.25
Octol | 1.54
Penthrite (PETN) | 1.66
Semtex | 1.35
Trinitrotoluene (TNT) | 1.00
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
Backwards Fading Example
Memory Joggers Examples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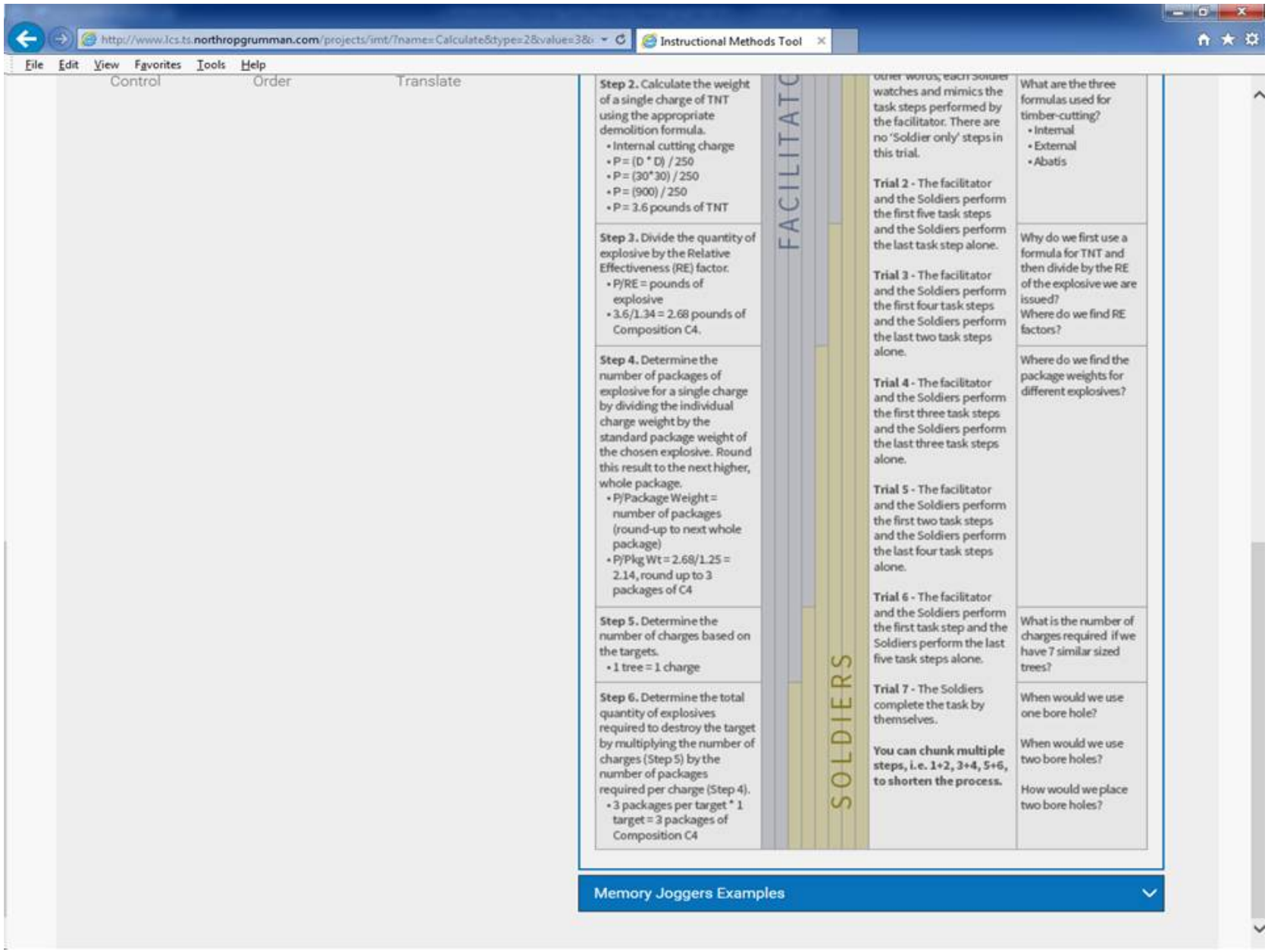
Translate
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.
Used to:
• Teach tasks to individuals who have no prior knowledge of the task
• Teach tasks that are cumulative in nature (relationship between steps)
• 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.
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
BACKWARDS FADING
FACILITATOR FEEDBACK
STEPS
Trials
Demo 1 2 3 4 5 6 7
FACILITATOR
Step 1. Obtain critical data.
• One tree = one charge
• D=30"
Step 2. Calculate the weight of a single charge of TNT using the appropriate demolition formula.
• Internal cutting charge
• P = (D * D) / 250
• P = (30*30) / 250
• P = (900) / 250
• P = 3.6 pounds of TNT
Step 3. Divide the quantity of explosive by the Relative Effectiveness (RE) factor.
• P/RE = pounds of explosive
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 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
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
• Abatis
Why do we first use a formula for TNT and then divide by the RE of the explosive we are issued?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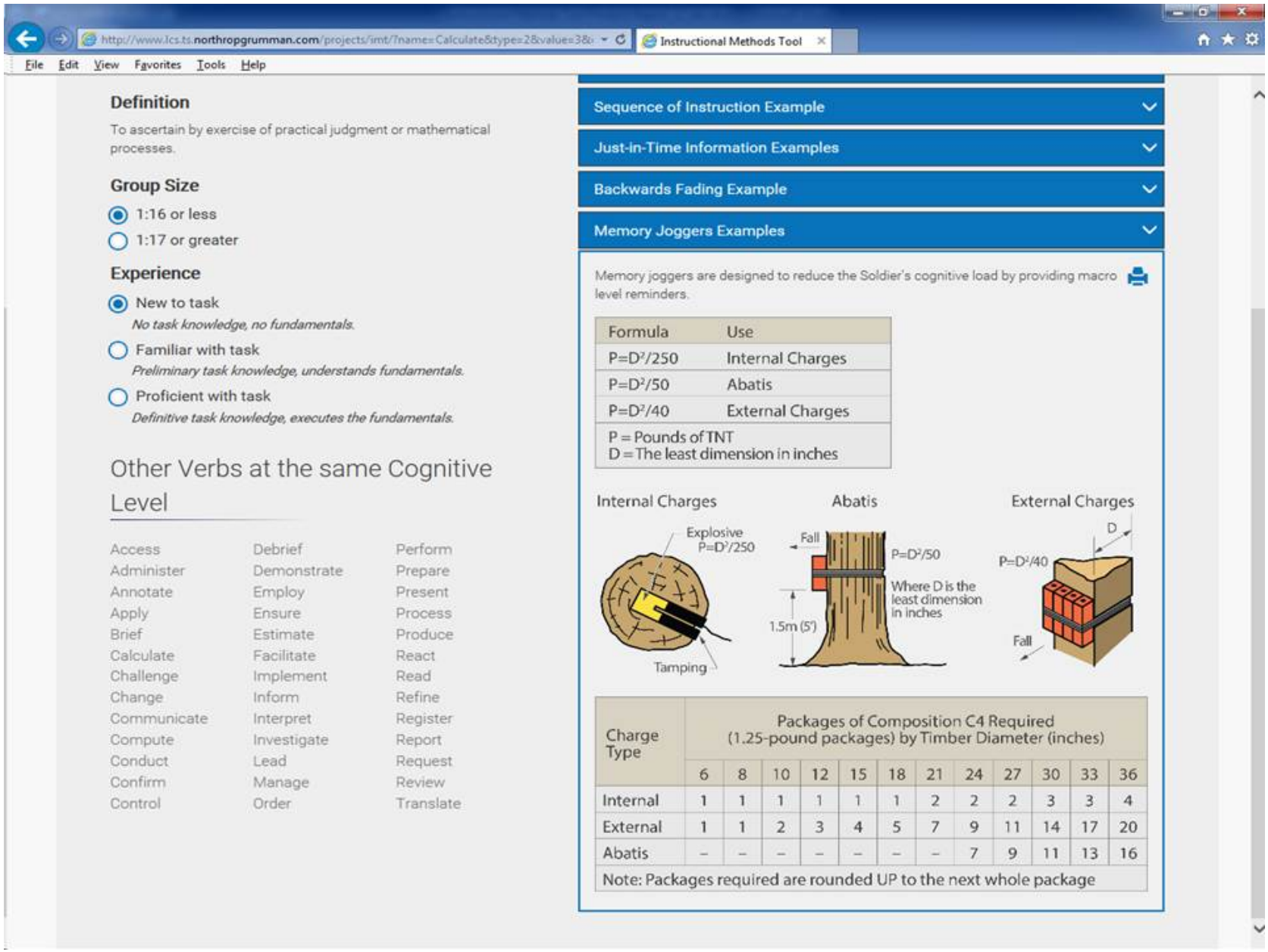
• Internal cutting charge
• P = (D * D) / 250
• P = (30*30) / 250
• P = (900) / 250
• P = 3.6 pounds of TNT
Step 3. Divide the quantity of explosive by the Relative Effectiveness (RE) factor.
• P/RE = pounds of explosive
• 3.6/1.34 = 2.68 pounds of Composition C4.
Step 4. Determine the number of packages 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.
• P/Package Weight = number of packages (round-up to next whole package)
• P/Pkg Wt = 2.68/1.25 = 2.14, round up to 3 packages of C4
Step 5. Determine the number of charges based on the targets.
• 1 tree = 1 charge
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).
• 3 packages per target * 1 target = 3 packages of Composition C4
FACILITATO
SOLDIERS
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.
You can chunk multiple steps, i.e. 1+2, 3+4, 5+6, to shorten the process.
What are the three formulas used for timber-cutting?
• Internal
• External
• Abatis
Why do we first use a formula for TNT and then divide by the RE of the explosive we are issued?
Where do we find RE factors?
Where do we find the package weights for different explosives?
What is the number of charges required if we have 7 similar sized trees?
When would we use one bore hole?
When would we use two bore holes?
How would we place two bore holes?
Memory Joggers Examples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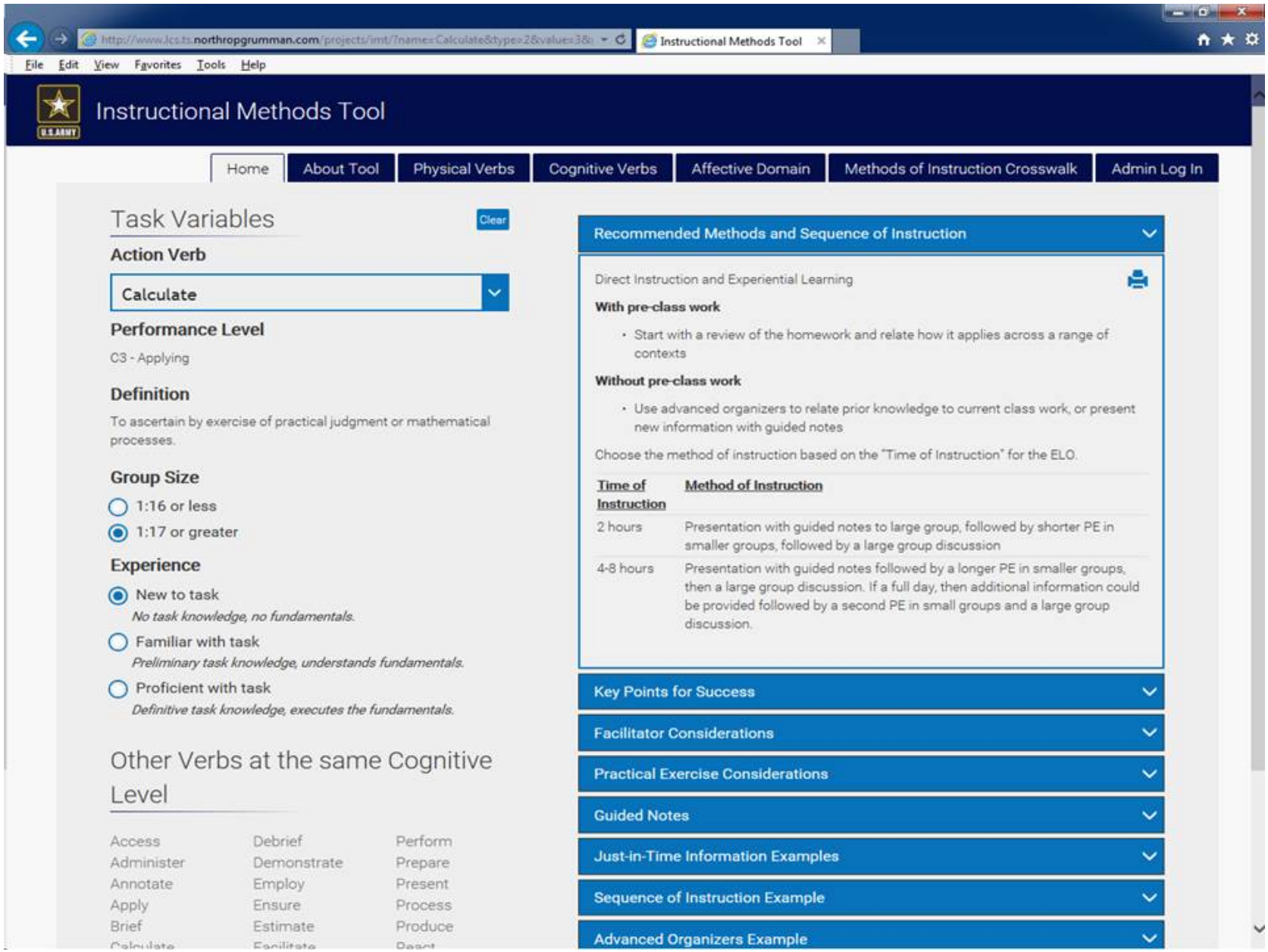
Sequence of Instruction Example
Just-in-Time Information Examples
Backwards Fading Example
Memory Joggers Examples
Memory joggers are designed to reduce the Soldier's cognitive load by providing macro level reminders.
Formula
Use
P=D²/250
Internal Charges
P=D²/50
Abatis
P=D²/40
External Charges
P = Pounds of TNT
D = The least dimension in inches
Internal Charges
Explosive
P=D²/250
Tamping
Abatis
Fall
P=D²/50
Where D is the least dimension in inches
1.5m (5')
External Charges
D
P=D²/40
Fall
Charge Type
Packages of Composition C4 Required (1.25-pound packages) by Timber Diameter (inches)
6 8 10 12 15 18 21 24 27 30 33 36
Internal 1 1 1 1 1 1 2 2 2 3 3 4
External 1 1 2 3 4 5 7 9 11 14 17 20
Abatis – – – – – – – 7 9 11 13 16
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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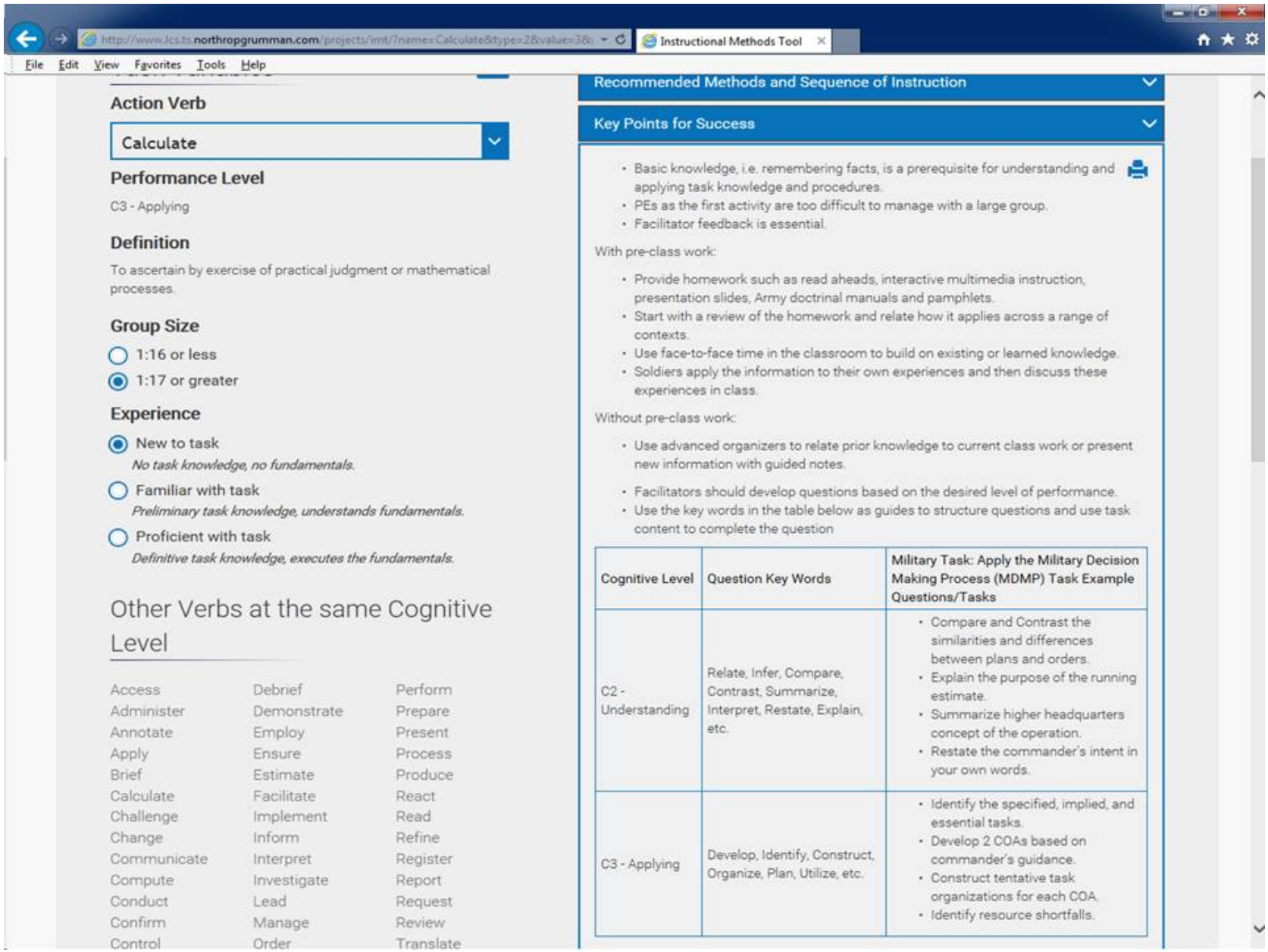
Recommended Methods and Sequence of Instruction
Direct Instruction and Experiential Learning
With pre-class work
Start with a review of the homework and relate how it applies across a range of contexts
Without pre-class work
Use advanced organizers to relate prior knowledge to current class work, or present new information with guided notes
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
2 hours
Presentation with guided notes to large group, followed by shorter PE in smaller groups, followed by a large group discussion
4-8 hours
Presentation with guided notes followed by a longer PE in smaller groups, then a large group discussion. If a full day, then additional information could be provided followed by a second PE in small groups and a large group discussion.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Guided Notes
Just-in-Time Information Examples
Sequence of Instruction Example
Advanced Organizers Example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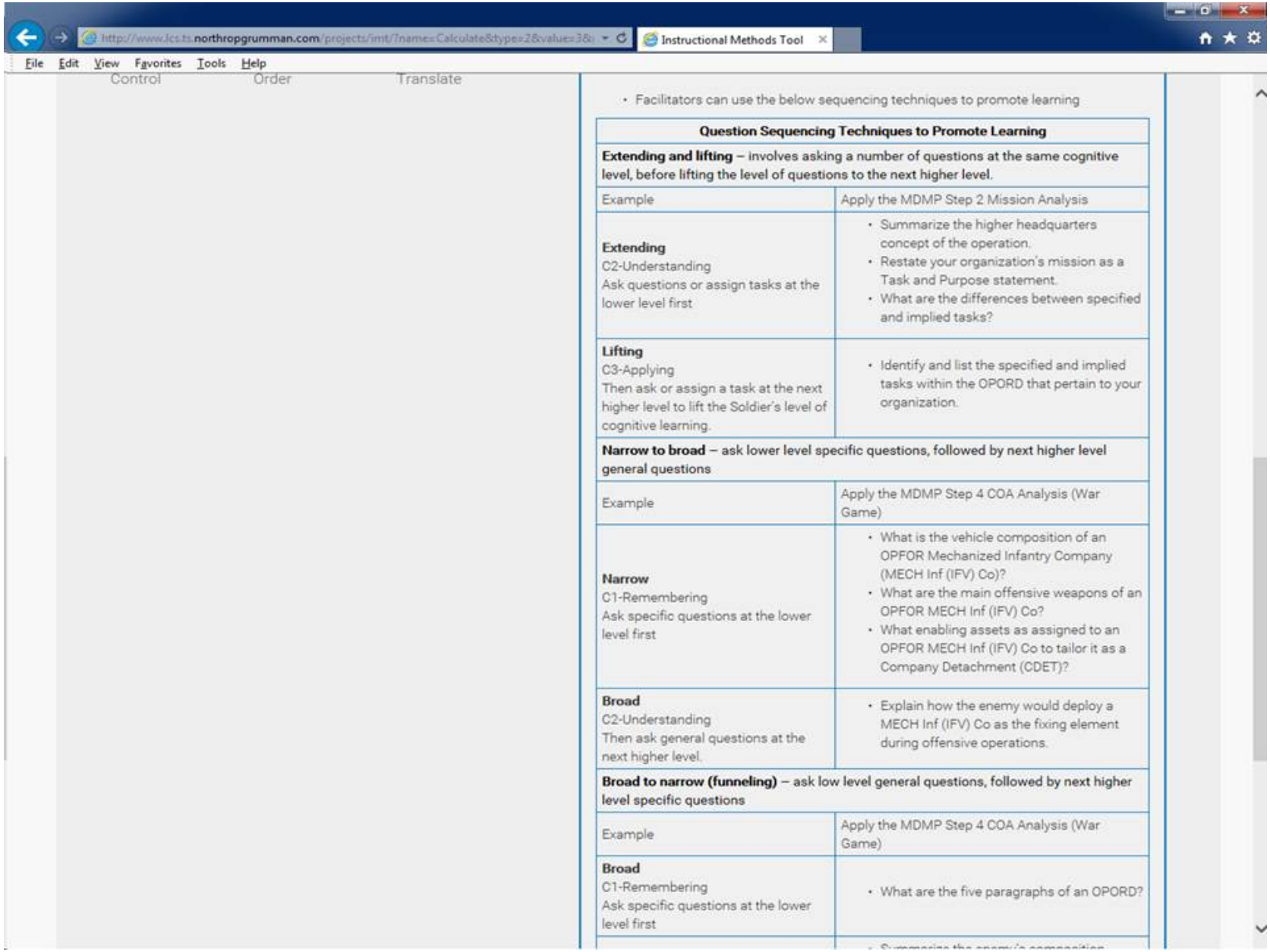
Recommended Methods and Sequence of Instruction
Key Points for Success
• Basic knowledge, i.e. remembering facts, is a prerequisite for understanding and applying task knowledge and procedures.
• PEs as the first activity are too difficult to manage with a large group.
• Facilitator feedback is essential.
With pre-class work:
• Provide homework such as read aheads, interactive multimedia instruction, 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
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.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• 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.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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
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 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
Example
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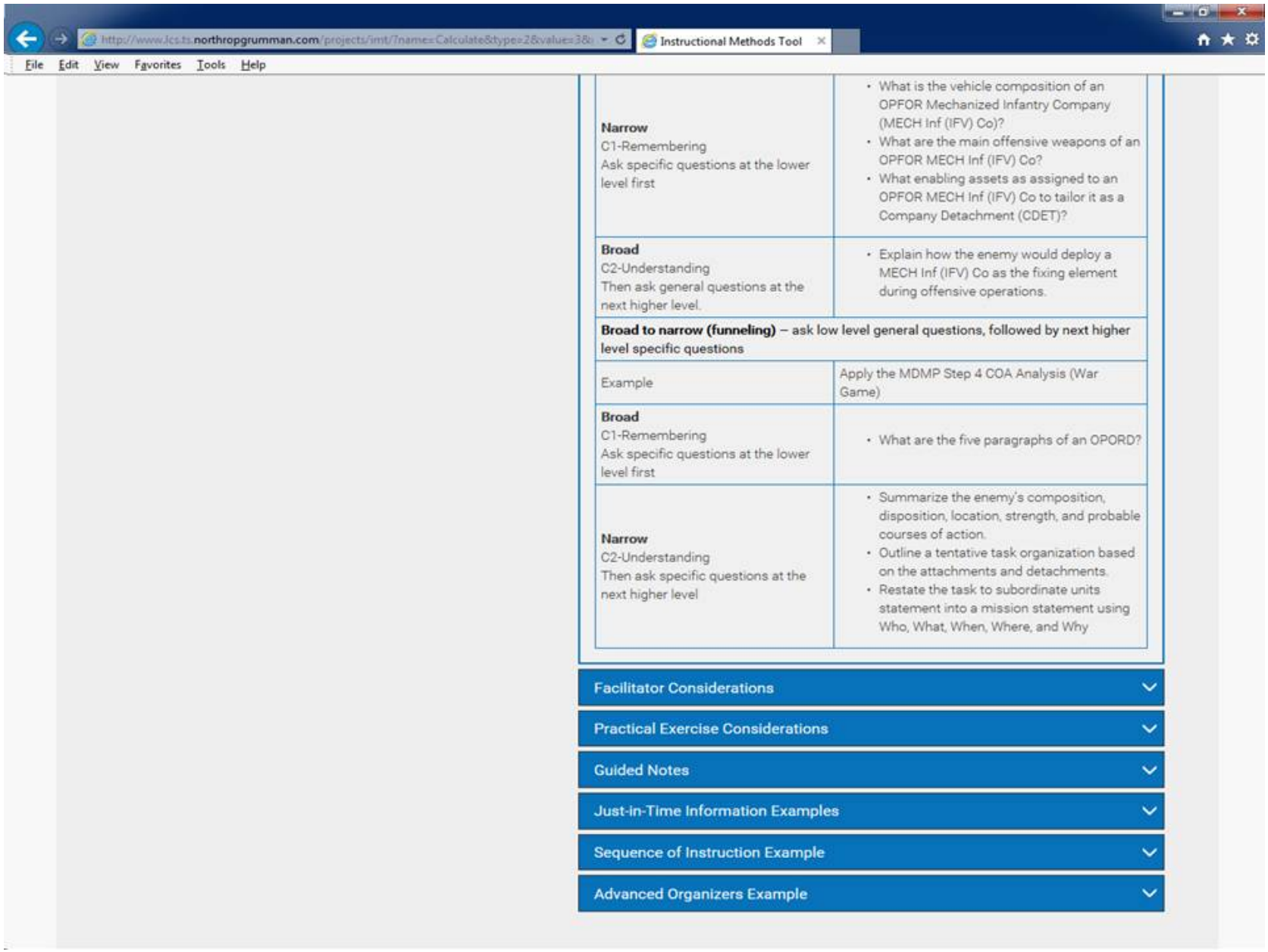
C1-Remembering
Ask specific questions at the lower level first
• What are the five paragraphs of an OPORD?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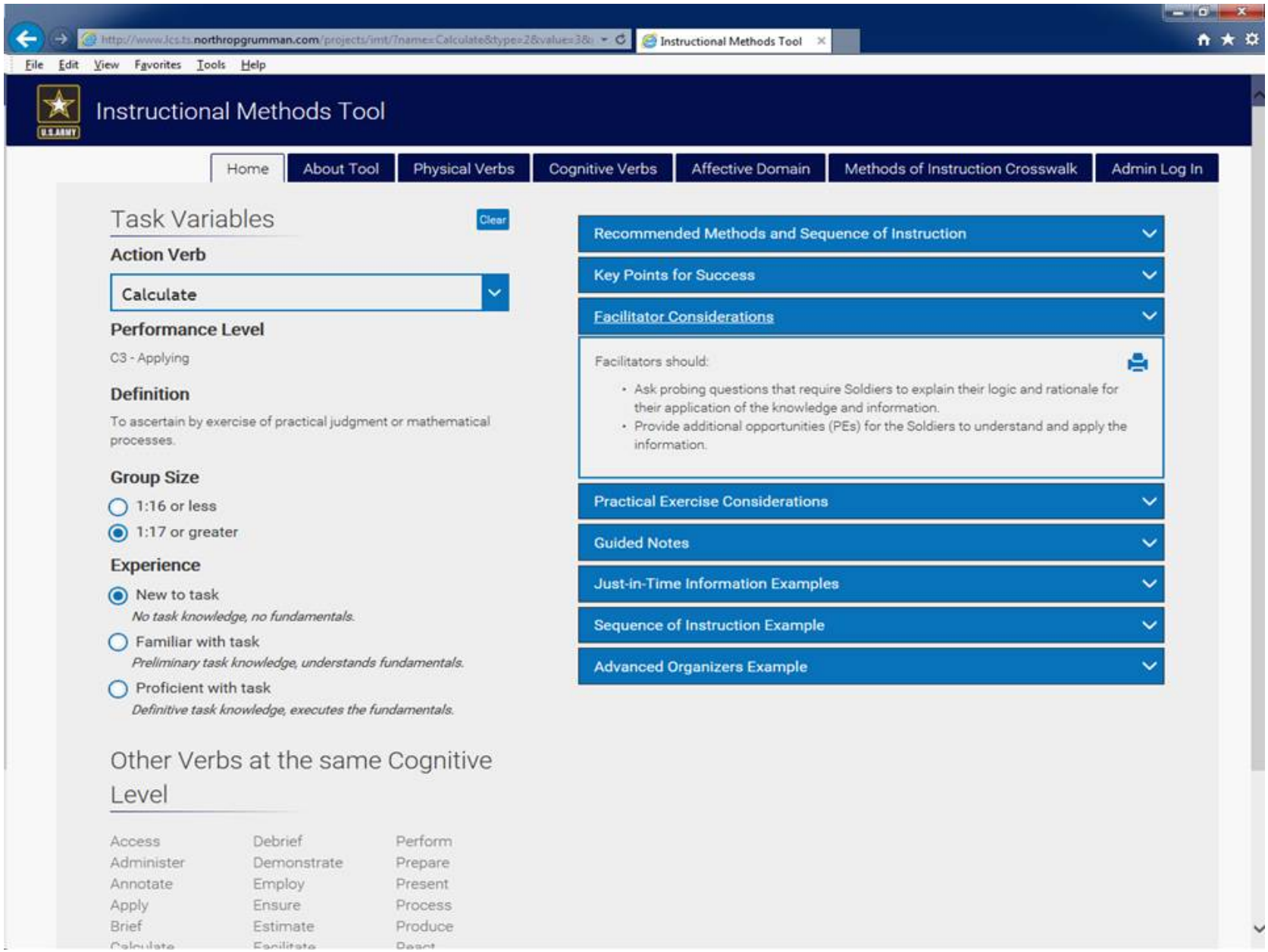
C1-Remembering
Ask specific questions at the lower level first
What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?
What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?
What enabling assets as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as 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
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
Guided Notes
Just-in-Time Information Examples
Sequence of Instruction Example
Advanced Organizers Example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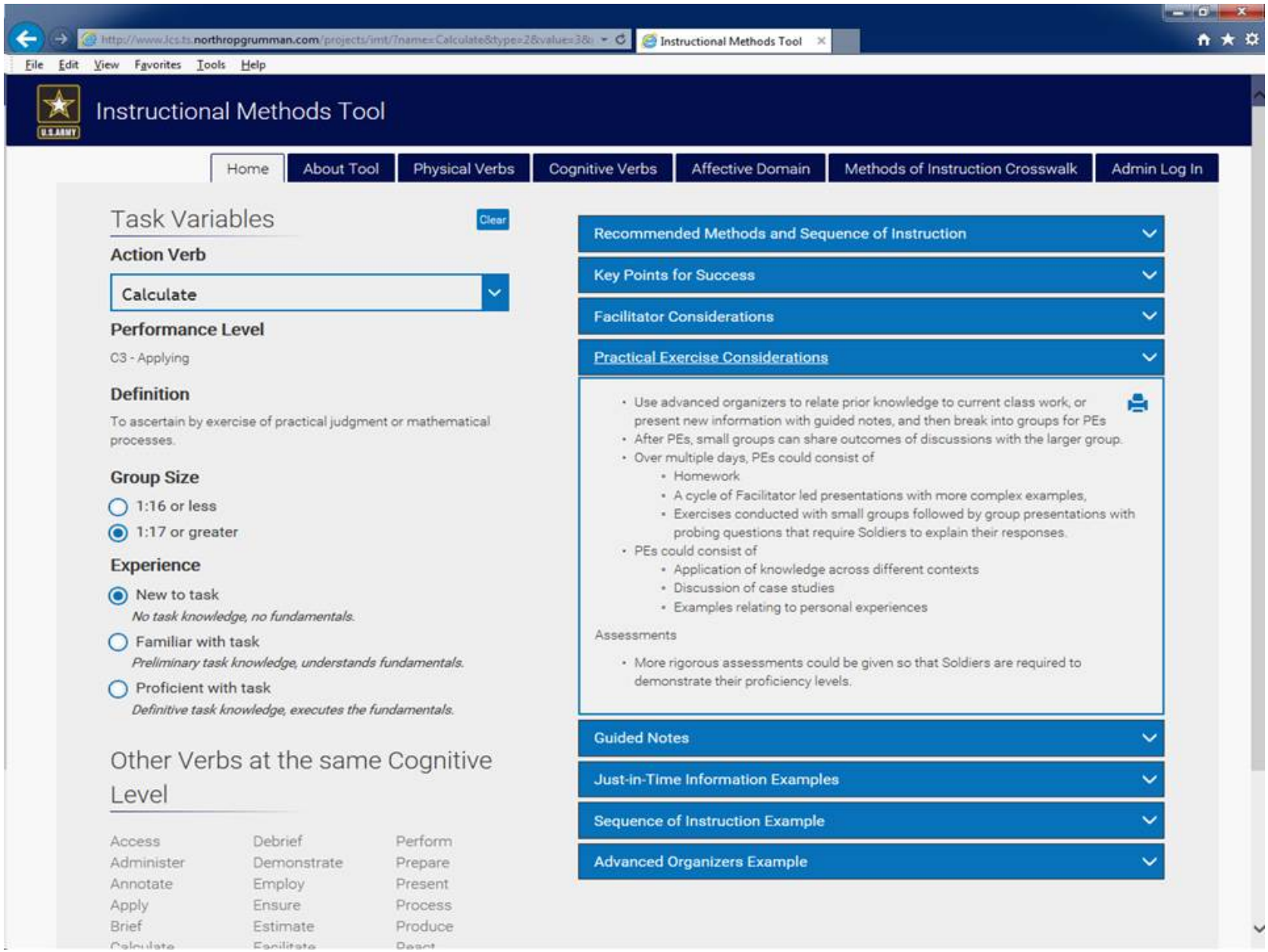
Home
About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Calculate
Performance Level
C3 - Applying
Definition
To ascertain by exercise of practical judgment or mathematical processes.
Group Size
1:16 or less
1:17 or 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
Debrief
Demonstrate
Employ
Ensure
Estimate
Perform
Prepare
Present
Process
Produce
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Ask probing questions that require Soldiers to explain their logic and rationale for their application of the knowledge and information.
Provide additional opportunities (PEs) for the Soldiers to understand and apply the information.
Practical Exercise Considerations
Guided Notes
Just-in-Time Information Examples
Sequence of Instruction Example
Advanced Organizers Example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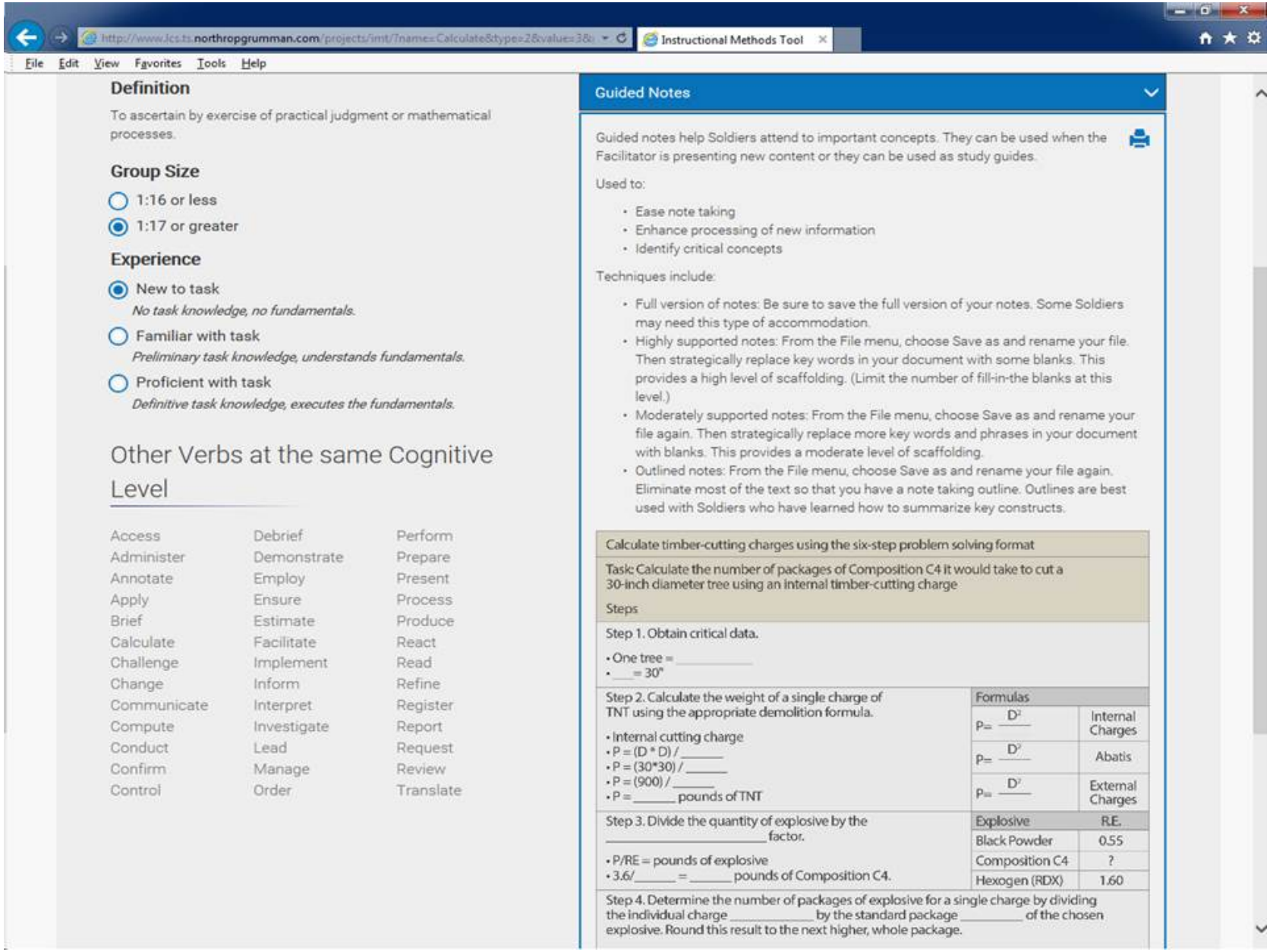
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Use advanced organizers to relate prior knowledge to current class work, or present new information with guided notes, and then break into groups for PEs
After PEs, small groups can share outcomes of discussions with the larger group.
Over multiple days, PEs could consist of
Homework
A cycle of Facilitator led 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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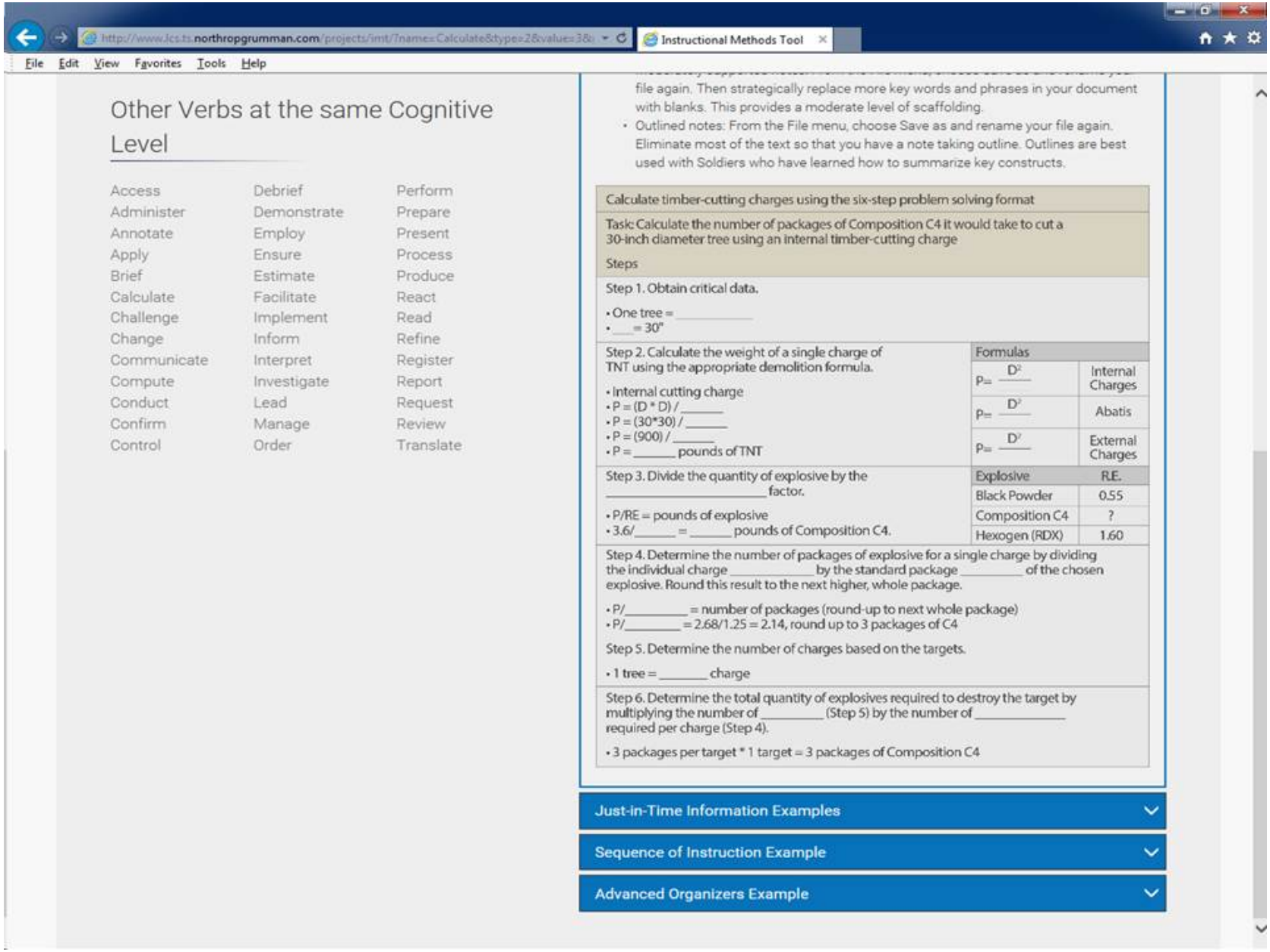
Perform Prepare Present Process Produce React Read Refine Register Report Request Review Translate
Guided Notes
Guided notes help Soldiers attend to important concepts. They can be used when the Facilitator is presenting new content or they can be used as study guides.
Used to:
Ease note taking
Enhance 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 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.
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 = (D * D) / _____
• P = (30*30) / _____
• P = (900) / _____
• P = _____ pounds of TNT
Formulas
P= D²/_____ Internal Charges
P= D²/_____ Abatis
P= D²/_____ External Charges
Step 3. Divide the quantity of explosive by the _____ factor.
• P/RE = pounds of explosive
• 3.6/_____ = _____ pounds of Composition C4.
Explosive R.E.
Black Powder 0.55
Composition C4 ?
Hexogen (RDX) 1.60
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.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P= D²/ Abatis
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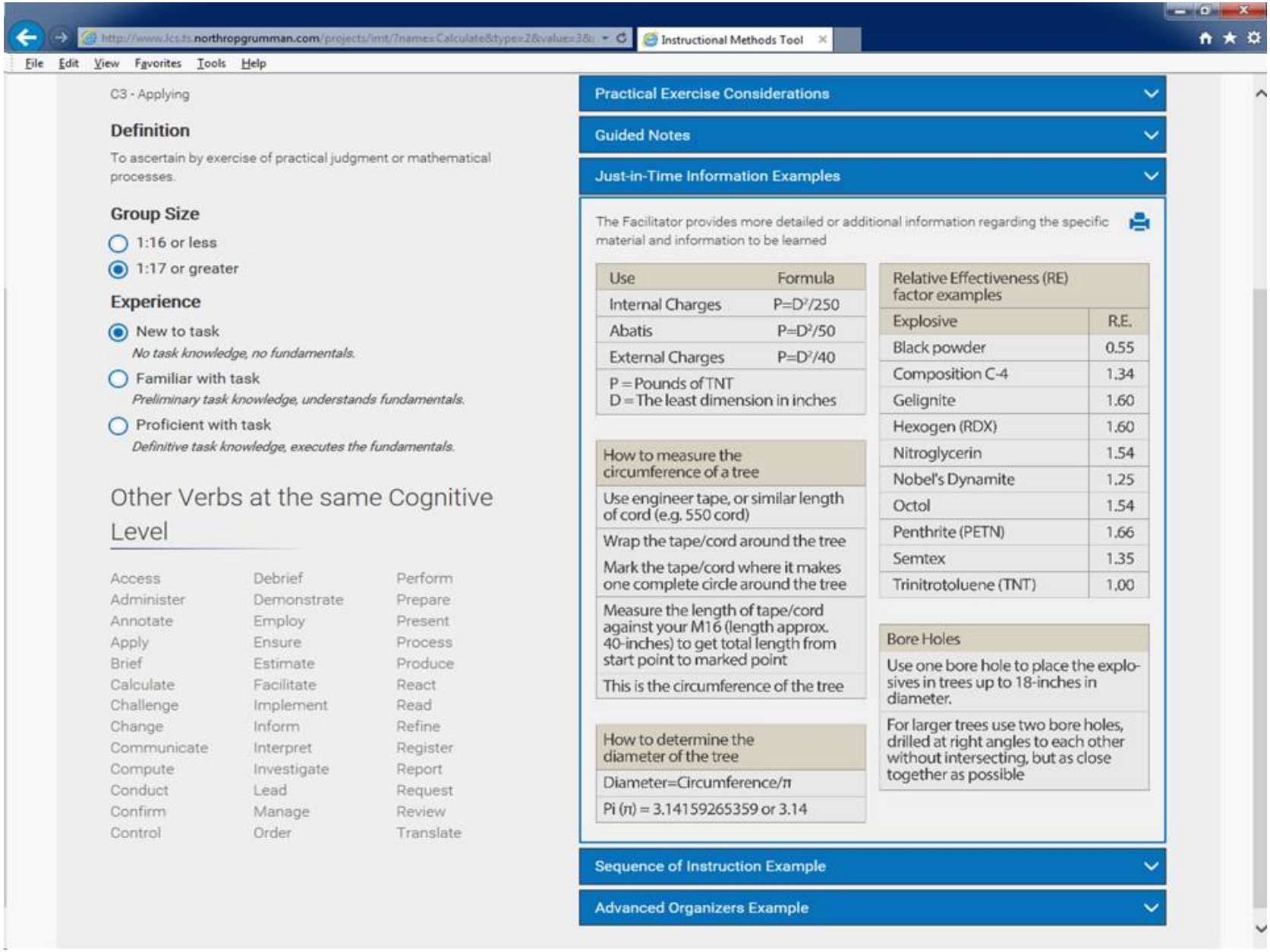
Black Powder | 0.55
Composition C4 | ?
Hexogen (RDX) | 1.60
Step 4. Determine the number of packages of explosive for a single charge by dividing the individual charge _____ by the standard package _____ of the chosen explosive. Round this result to the next higher, whole package.
• P/_____ = number of packages (round-up to next whole package)
• P/_____ = 2.68/1.25 = 2.14, round up to 3 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 _____ 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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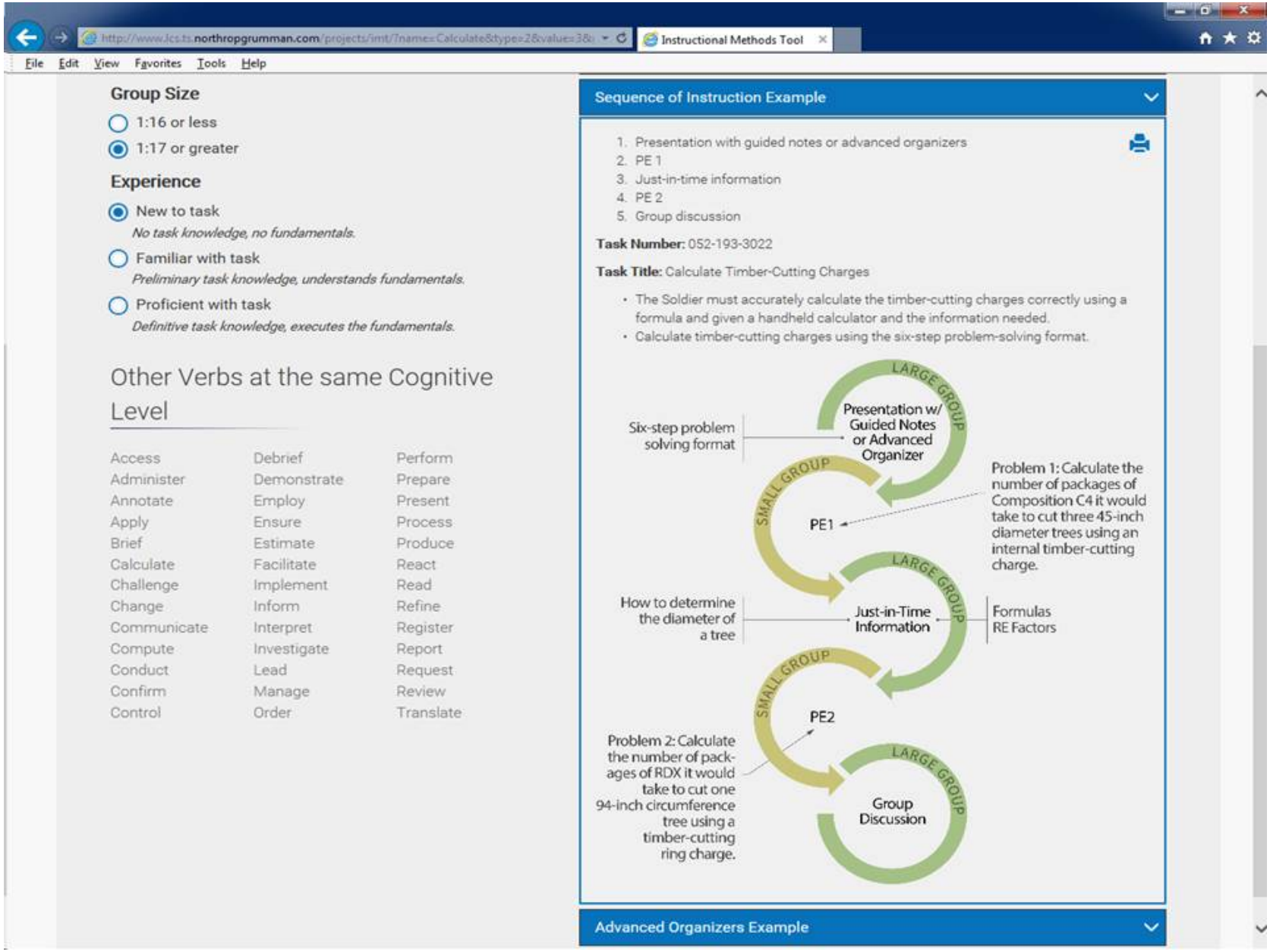
Practical Exercise Considerations
Guided Notes
Just-in-Time Information Examples
The Facilitator provides more detailed or additional information regarding the specific material and information to be learned
Use | Formula
Internal Charges | P=D²/250
Abatis | P=D²/50
External Charges | P=D²/40
P = Pounds of TNT
D = The least dimension in inches
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 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
Diameter=Circumference/π
Pi (π) = 3.14159265359 or 3.14
Relative Effectiveness (RE) factor examples
Explosive | R.E.
Black powder | 0.55
Composition C-4 | 1.34
Gelignite | 1.60
Hexogen (RDX) | 1.60
Nitroglycerin | 1.54
Nobel's Dynamite | 1.25
Octol | 1.54
Penthrite (PETN) | 1.66
Semtex | 1.35
Trinitrotoluene (TNT) | 1.00
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
Sequence of Instruction Example
Advanced Organizers Example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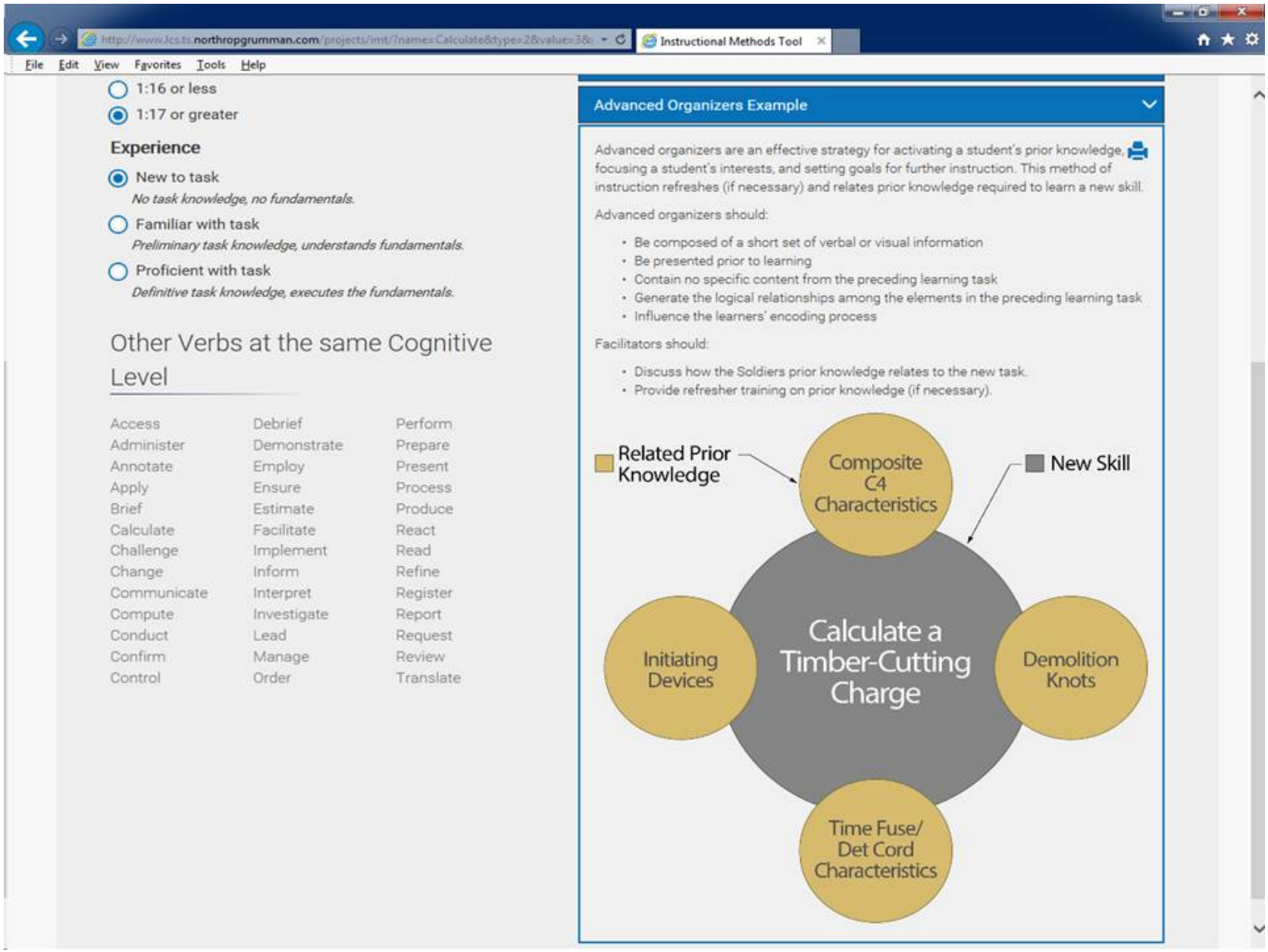
Sequence of Instruction Example
1. Presentation with guided notes or advanced organizers
2. PE 1
3. Just-in-time information
4. PE 2
5. Group discussion
Task Number: 052-193-3022
Task Title: Calculate Timber-Cutting Charges
• The Soldier must accurately calculate the timber-cutting charges correctly using a formula and given a handheld calculator and the information needed.
• Calculate timber-cutting charges using the six-step problem-solving format.
LARGE GROUP
Presentation w/ Guided Notes or Advanced Organizer
Six-step problem solving format
SMALL GROUP
PE1
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.
LARGE GROUP
Just-in-Time Information
How to determine the diameter of a tree
Formulas
RE Factors
SMALL GROUP
PE2
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.
LARGE GROUP
Group Discussion
Advanced Organizers Example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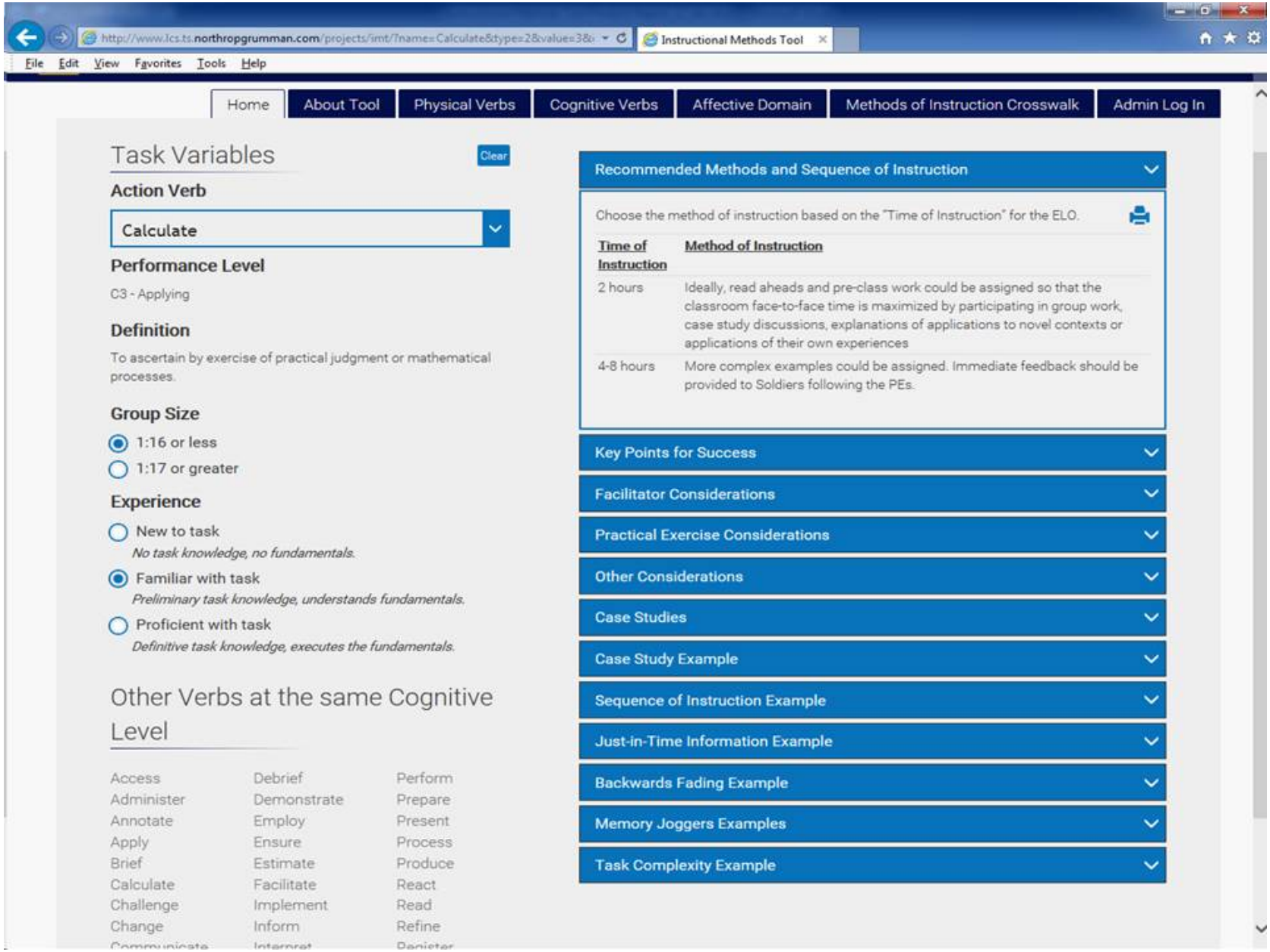
Advanced Organizers Example
Advanced organizers are an effective strategy for activating a student's prior knowledge, focusing a student's interests, and setting goals for further instruction. This method of instruction refreshes (if necessary) and relates prior knowledge required to learn a new skill.
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 Soldiers prior knowledge relates to the new task.
Provide refresher training on prior knowledge (if necessary).
Related Prior Knowledge
Composite C4 Characteristics
New Skill
Initiating Devices
Calculate a Timber-Cutting Charge
Demolition Knots
Time Fuse/ Det Cord Characteristics

Appendix S

Military Task Examples
C2+C3 – Understanding and Applying / Small Group / Familiar with Task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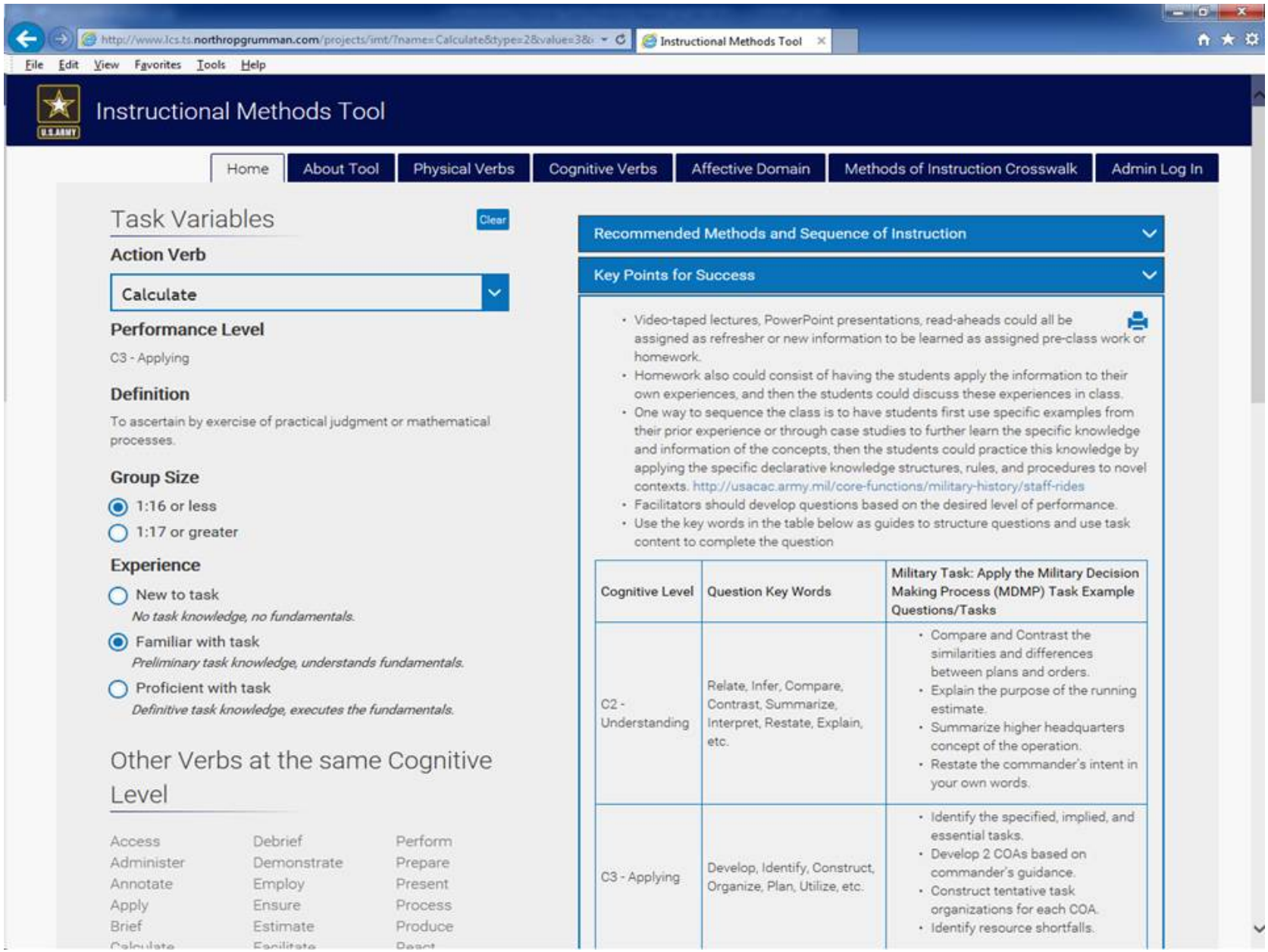
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
2 hours
Ideally, read aheads and pre-class work could be assigned so that the classroom face-to-face time is maximized by participating in group work, case study discussions, explanations of applications to novel contexts or applications of their own experiences
4-8 hours
More complex examples could be assigned. Immediate feedback should be provided to Soldiers following the PEs.
Key Points for Success
Facilitator Considerations
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 Complexity Example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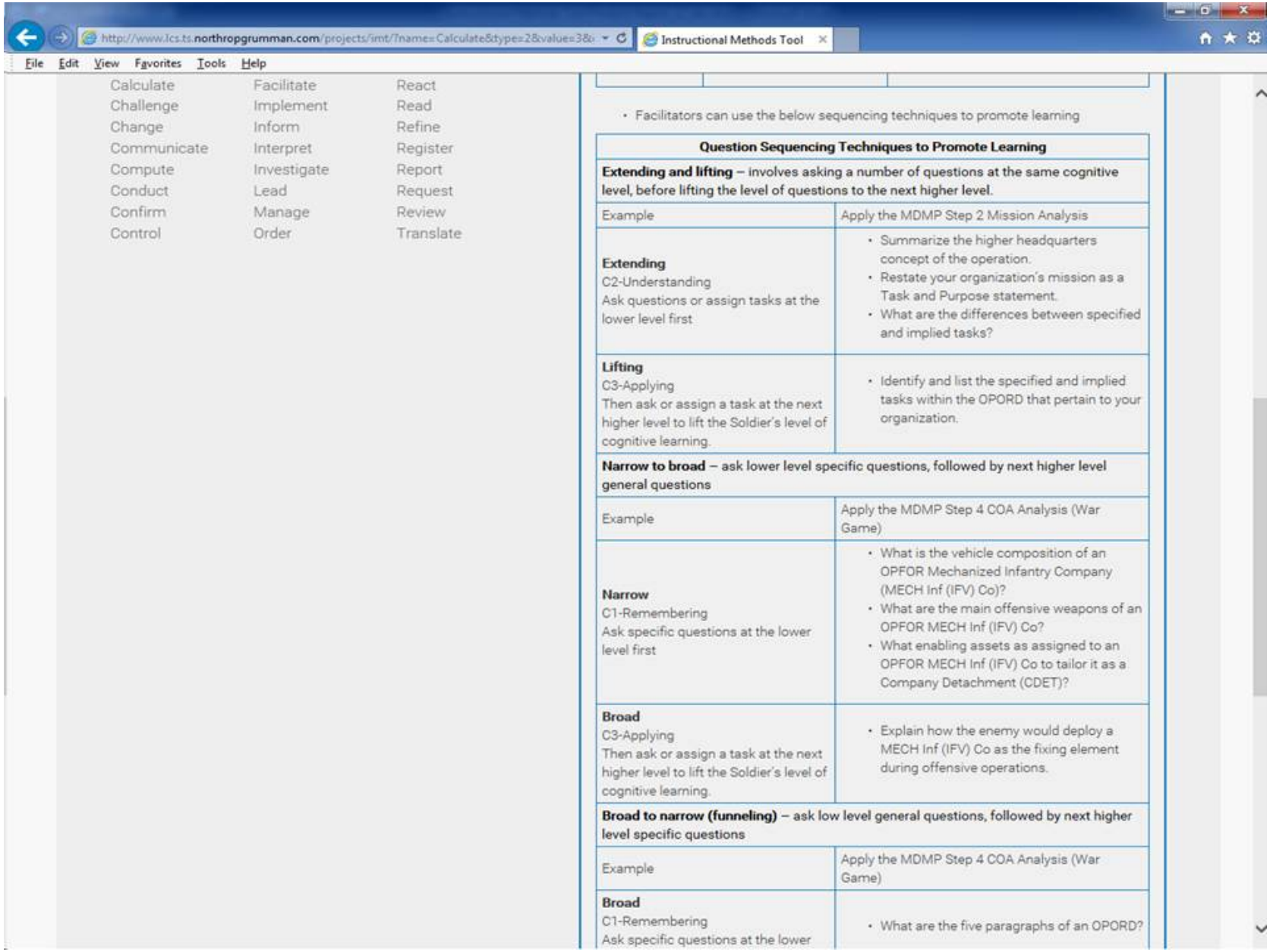
Recommended Methods and Sequence of Instruction
Key Points for Success
• Video-taped lectures, PowerPoint presentations, read-aheads could all be assigned as refresher or new information to be learned as assigned pre-class work or homework.
• Homework also could consist of having the students apply the 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. http://usacac.army.mil/core-functions/military-history/staff-rides
• 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.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• 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.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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
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 as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?
Broad
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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 fixing element during offensive operations.
Broad to narrow (funneling) – ask low level general questions, followed by next higher level specific questions
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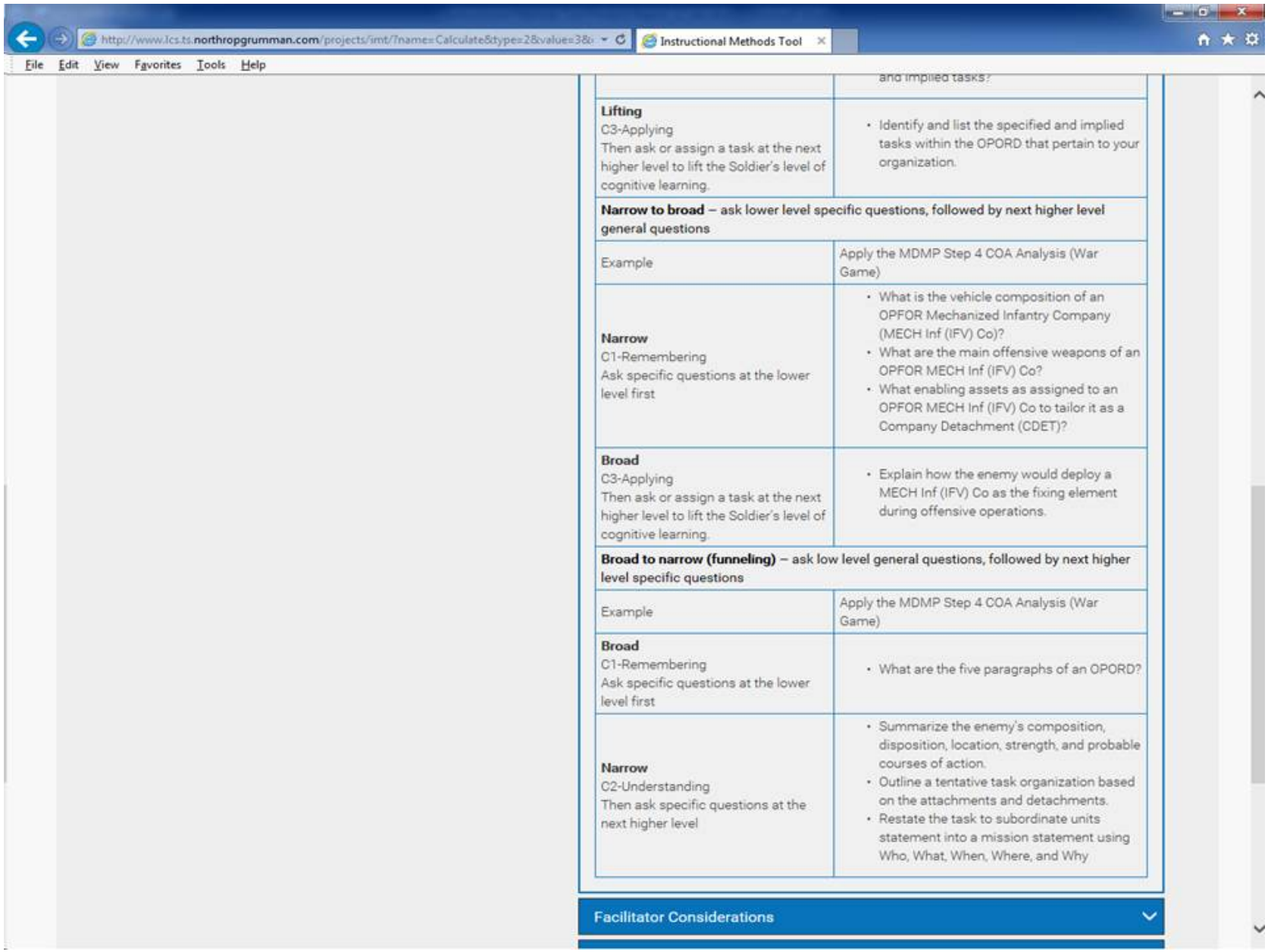
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and implied tasks?
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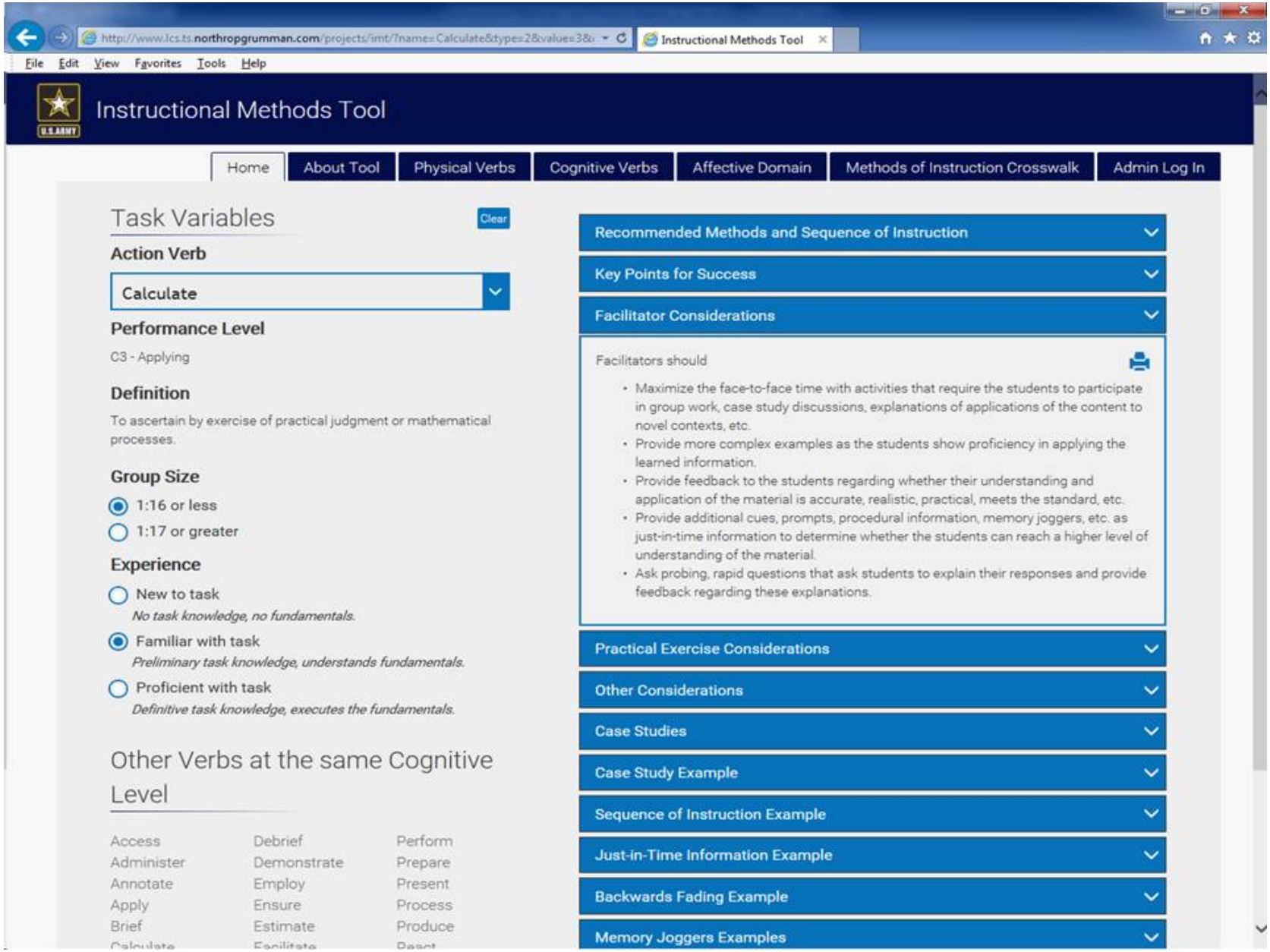
Facilitator Considerations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Instructional Methods Tool
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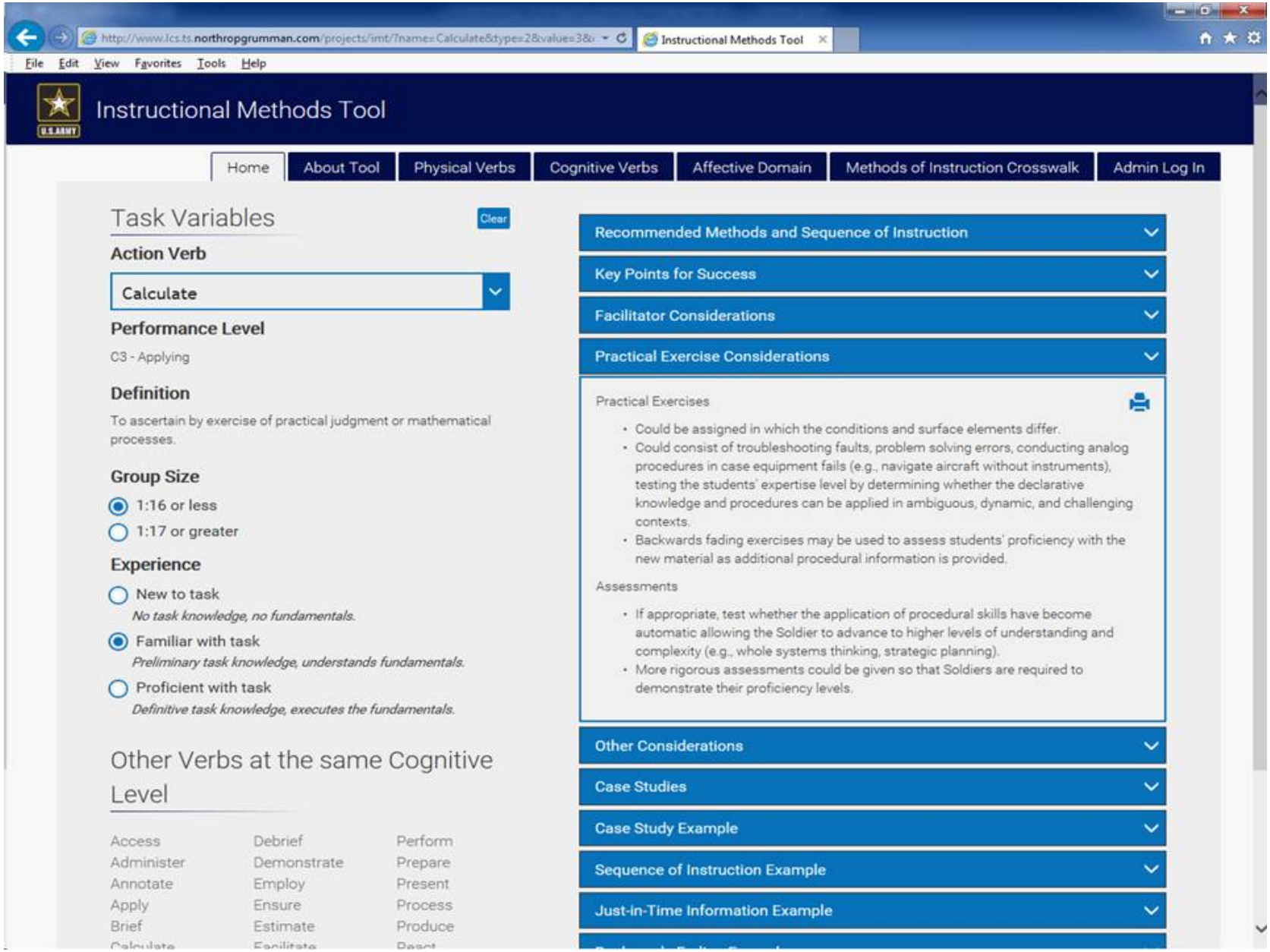
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Calculate
Performance Level
C3 - Applying
Definition
To ascertain by exercise of practical judgment or mathematical processes.
Group Size
1:16 or less
1:17 or greater
Experience
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
Debrief
Demonstrate
Employ
Ensure
Estimate
Perform
Prepare
Present
Process
Produce
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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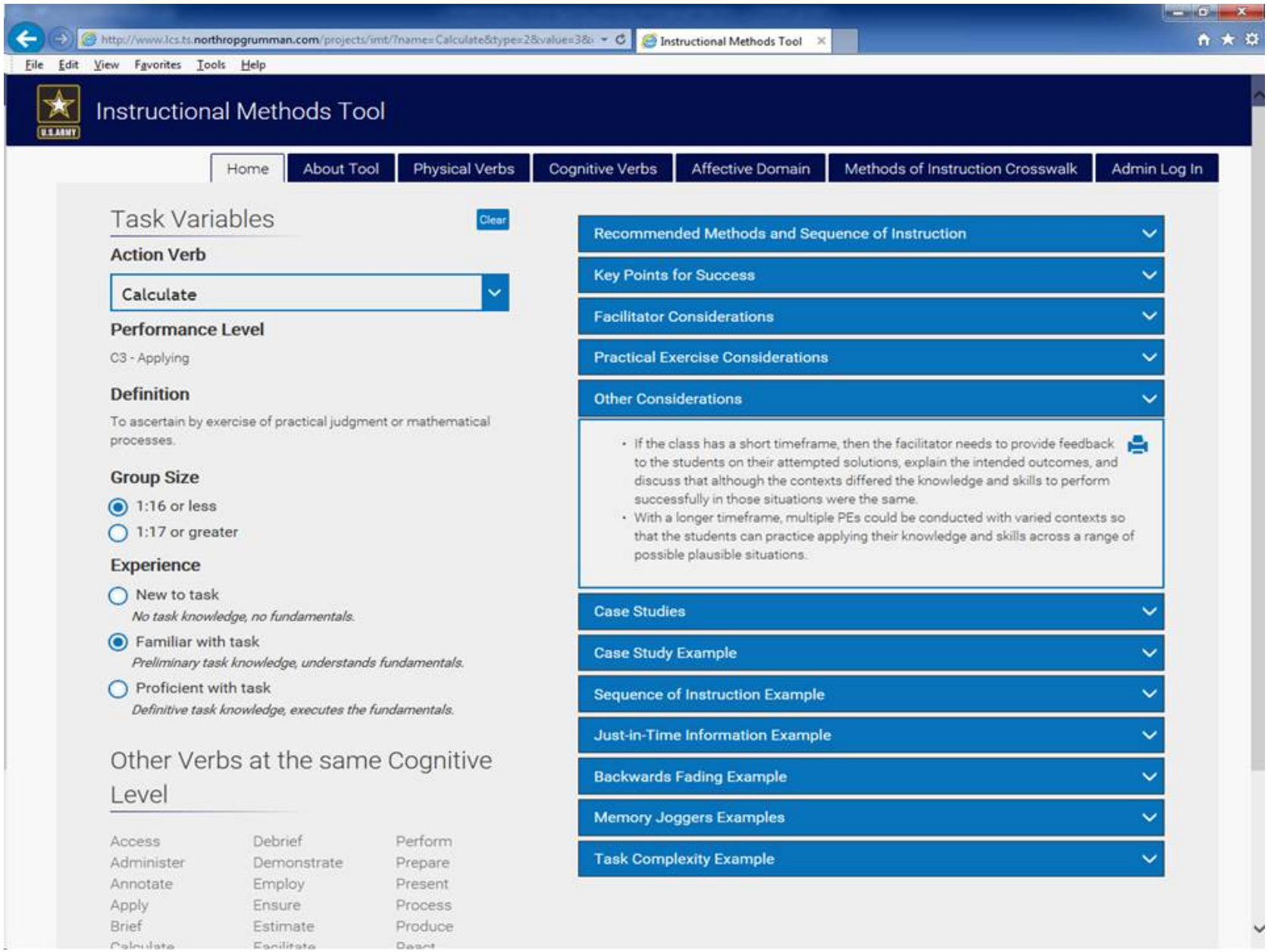
Practical Exercise Considerations
Practical Exercises
Could be assigned in which the conditions and surface elements differ.
Could consist of troubleshooting faults, problem solving errors, conducting analog procedures in case equipment fails (e.g., navigate aircraft without instruments), testing the students' expertise level by determining whether the declarative knowledge and procedures can be applied in ambiguous, dynamic, and challenging contexts.
Backwards fading exercises may be used to assess students' proficiency with the new material as additional procedural information is provided.
Assessments
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).
More rigorous assessments could be given so that Soldiers are required to demonstrate their proficiency levels.
Other Considerations
Case Studies
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Example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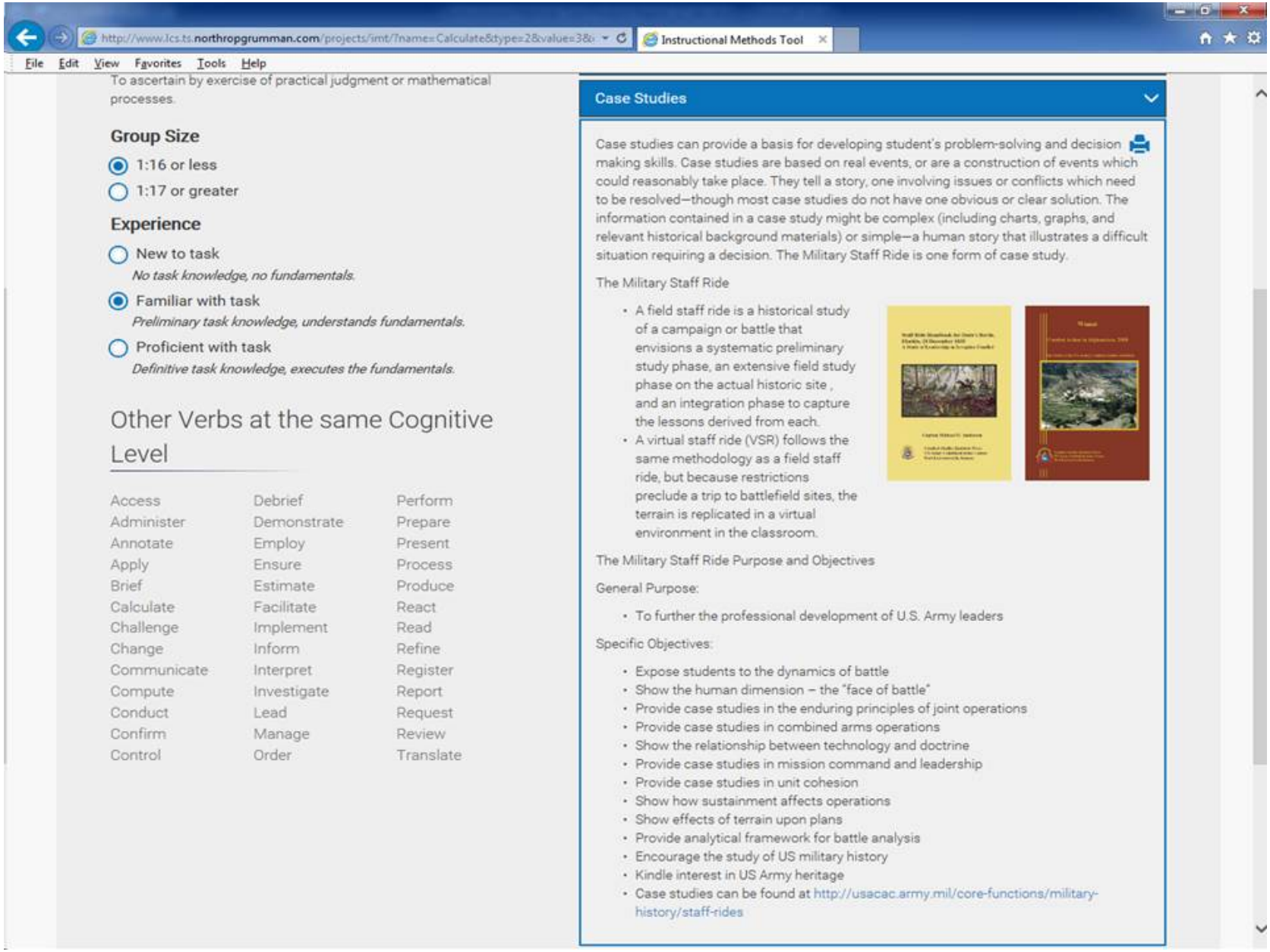
Practical Exercise Considerations
Other Considerations
If the class has a short timeframe, then the facilitator needs to provide feedback to the students on their attempted solutions, explain the intended outcomes, and discuss that although the contexts differed the knowledge and skills to perform successfully 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.
Case Studies
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Example
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example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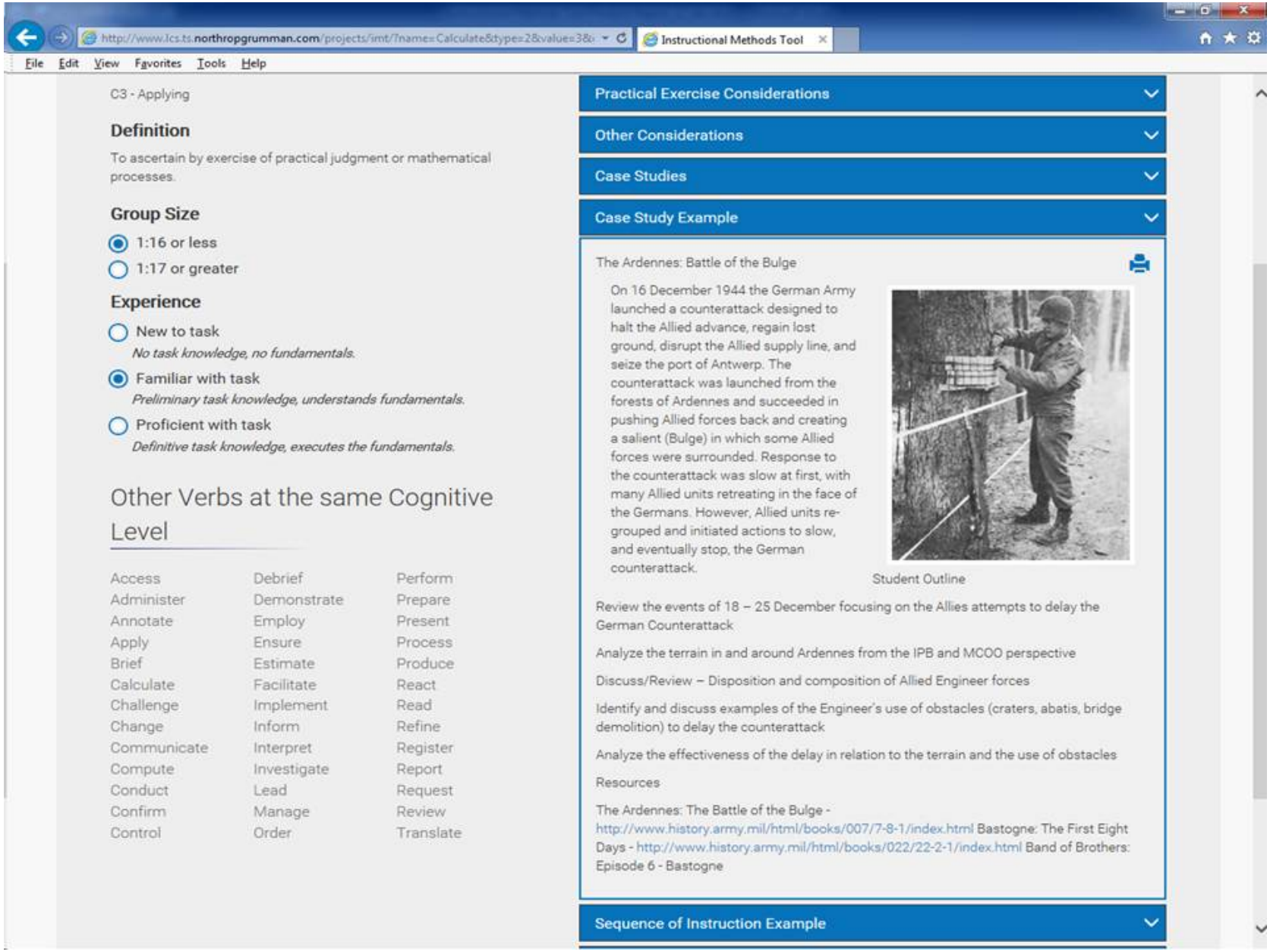
Case Studies
Case studies can provide a basis for developing student's problem-solving and decision making skills. Case studies are based on real events, or are a construction of events which could reasonably take place. They tell a story, one involving issues or conflicts which need to be resolved—though 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
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 US military history
Kindle interest in US Army heritage
Case studies can be found at http://usacac.army.mil/core-functions/military-history/staff-rides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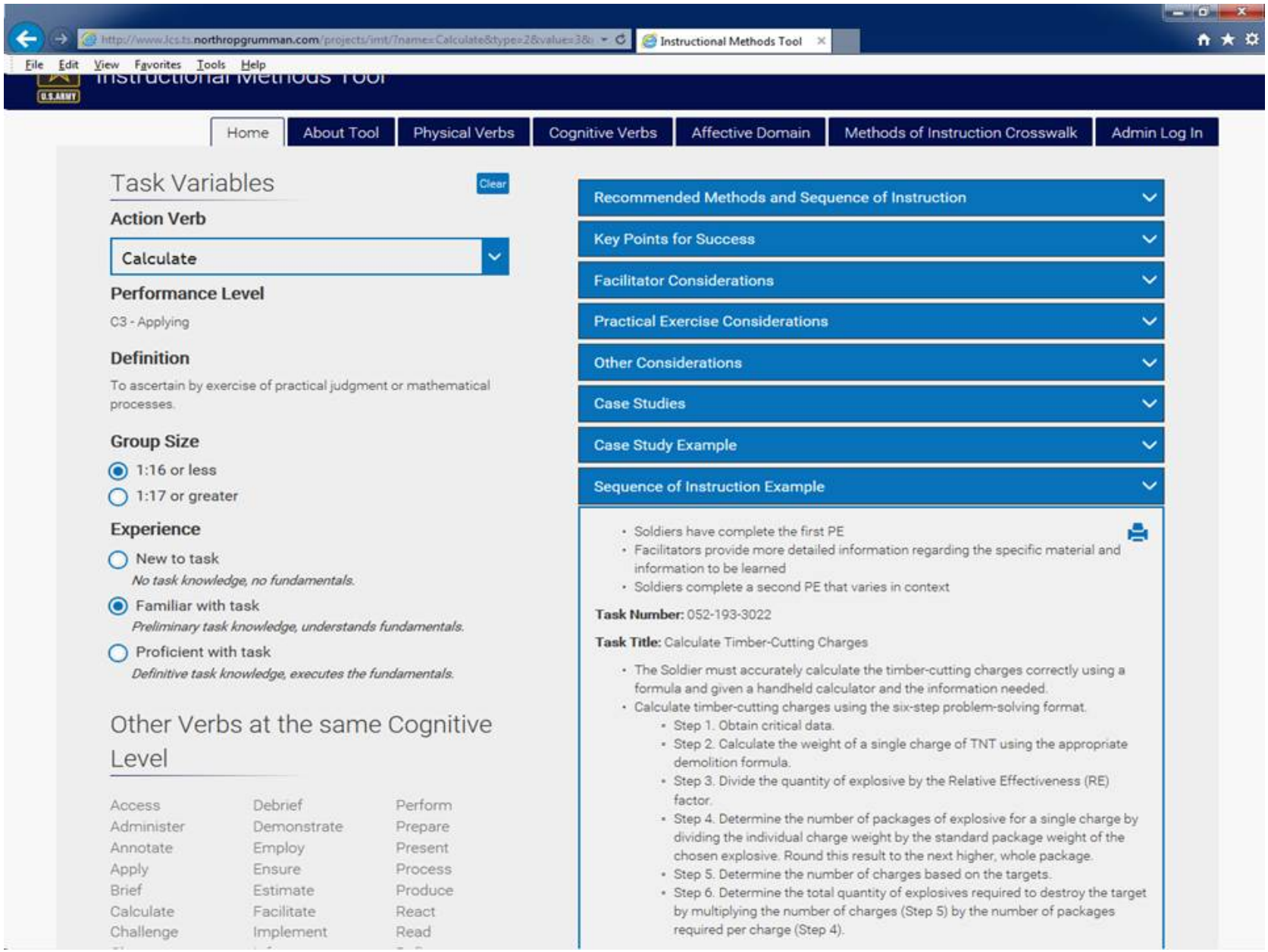
Debrief Demonstrate Employ Ensure Estimate Facilitate Implement Inform Interpret Investigate Lead Manage Order
Perform Prepare Present Process Produce React Read Refine Register Report Request Review Translate
Practical Exercise Considerations
Other Considerations
Case Studies
Case Study Example
The 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 MCOO 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
The Ardennes: The Battle of the Bulge - http://www.history.army.mil/html/books/007/7-8-1/index.html Bastogne: The First Eight Days - http://www.history.army.mil/html/books/022/22-2-1/index.html Band of Brothers: Episode 6 - Bastogne
Sequence of Instruction Example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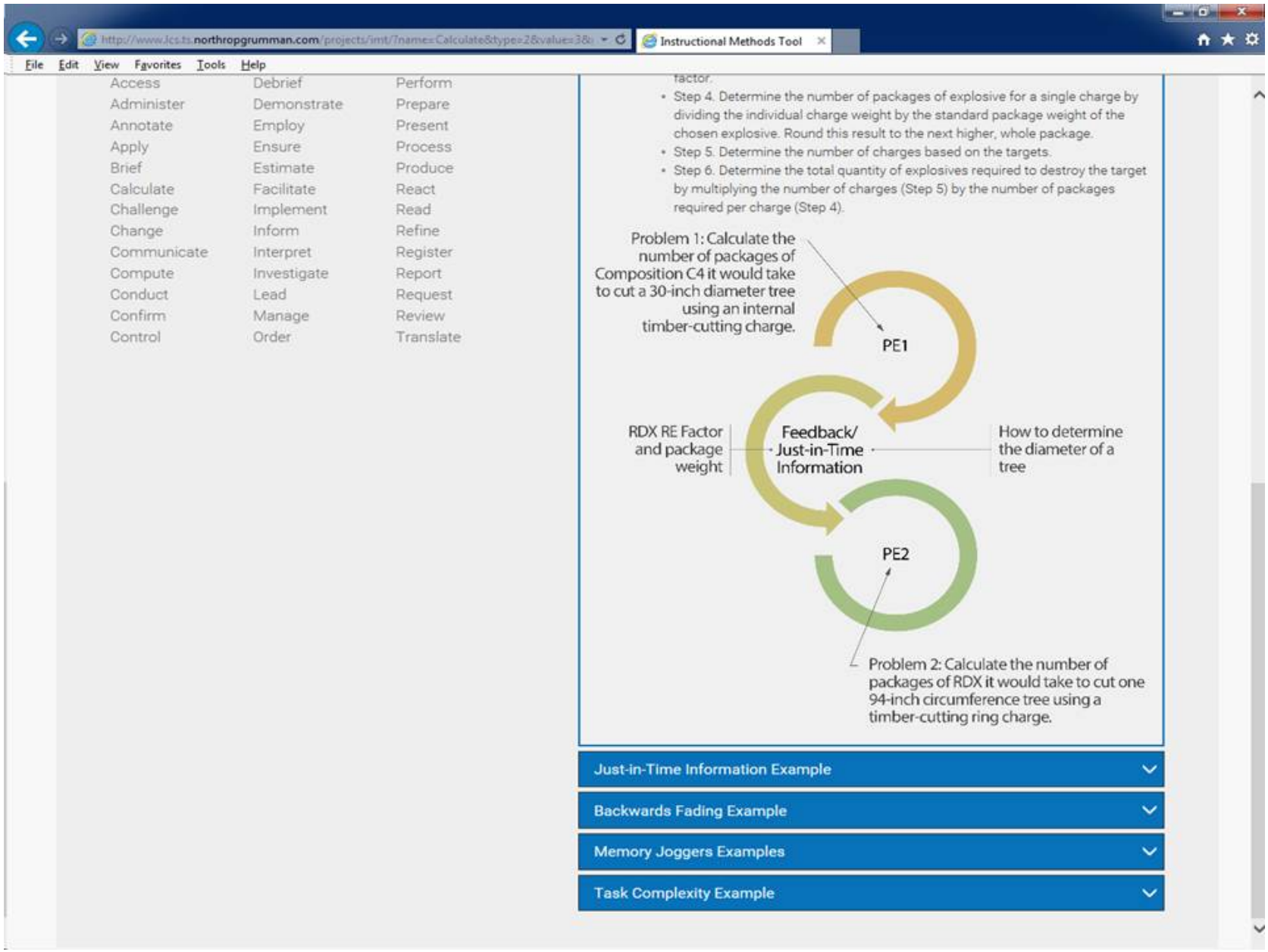
Case Studies
Case Study Example
Sequence of Instruction Example
• Soldiers have complete the first PE
• Facilitators provide more detailed information regarding the specific material and information to be learned
• Soldiers complete a second PE that varies in context
Task Number: 052-193-3022
Task Title: 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).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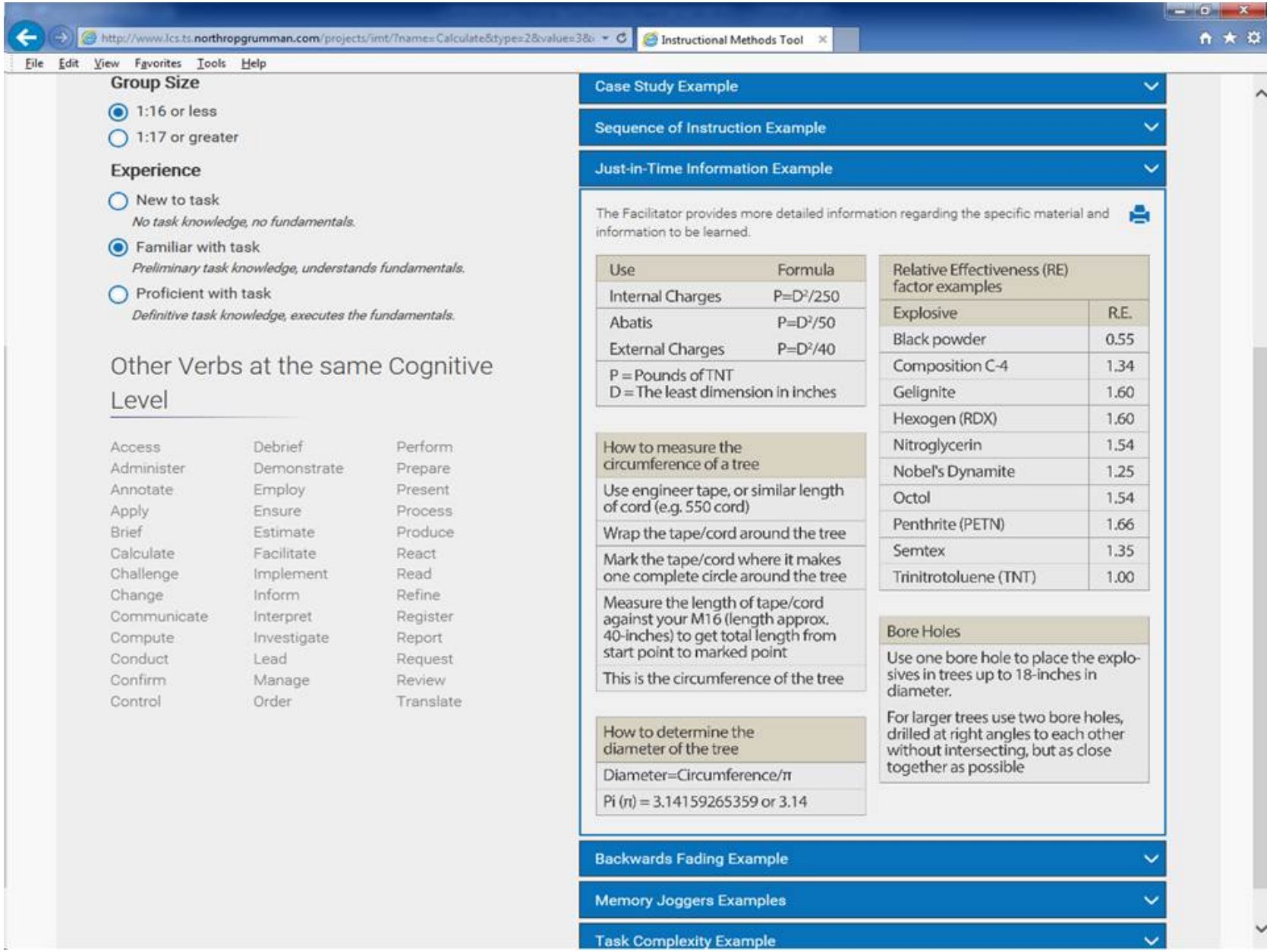
factor.
• Step 4. Determine the number of packages of explosive for a single charge by dividing the individual charge weight by the standard package weight of the chosen explosive. Round this result to the next higher, whole package.
• Step 5. Determine the number of charges based on the targets.
• Step 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
How to determine the diameter of a tree
PE2
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 Example
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example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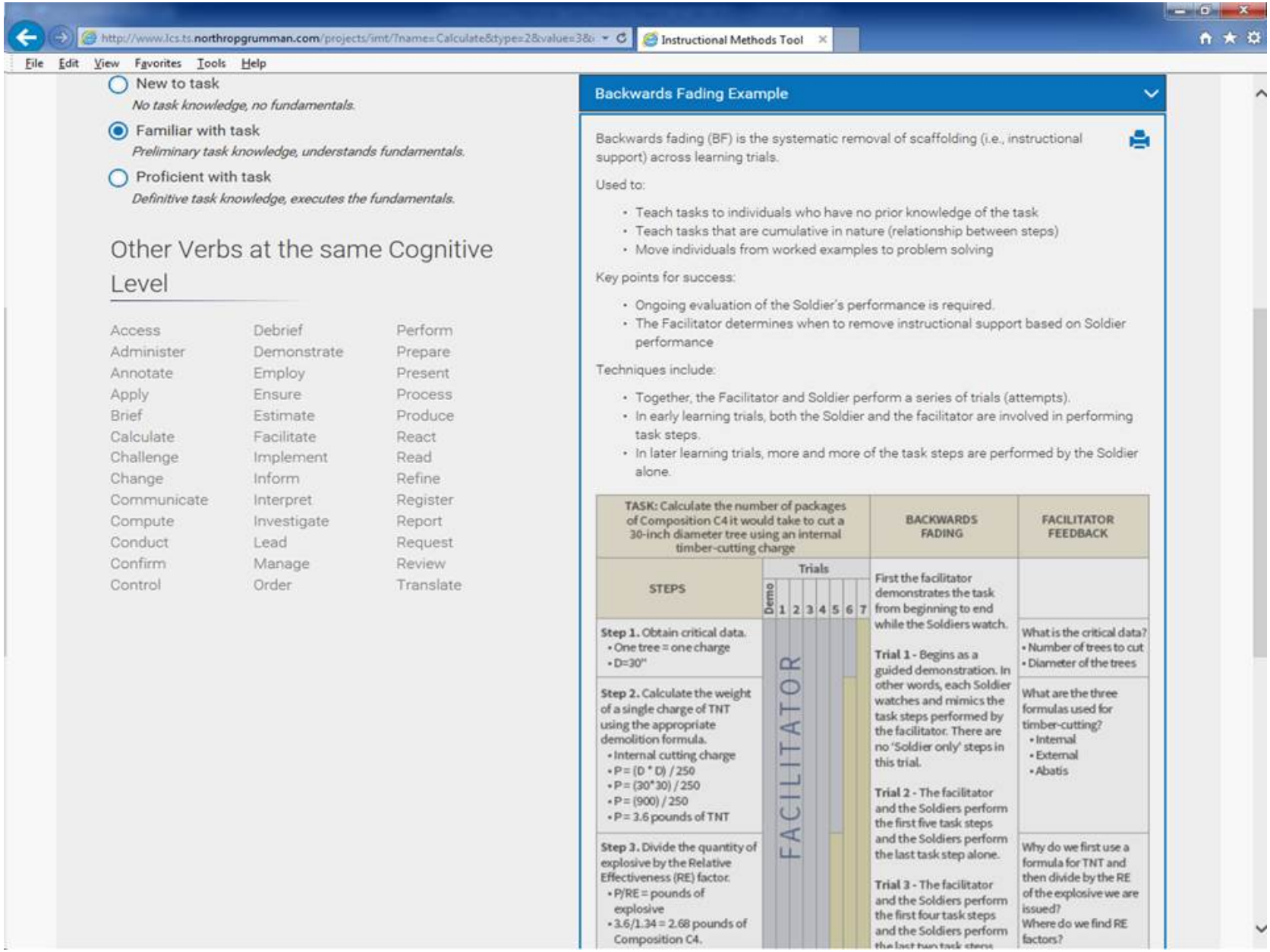
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Example
The Facilitator provides more detailed information regarding the specific material and information to be learned.
Use | Formula
Internal Charges | P=D²/250
Abatis | P=D²/50
External Charges | P=D²/40
P = Pounds of TNT
D = The least dimension in inches
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 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
Diameter=Circumference/π
Pi (π) = 3.14159265359 or 3.14
Relative Effectiveness (RE) factor examples
Explosive | R.E.
Black powder | 0.55
Composition C-4 | 1.34
Gelignite | 1.60
Hexogen (RDX) | 1.60
Nitroglycerin | 1.54
Nobel's Dynamite | 1.25
Octol | 1.54
Penthrite (PETN) | 1.66
Semtex | 1.35
Trinitrotoluene (TNT) | 1.00
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
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example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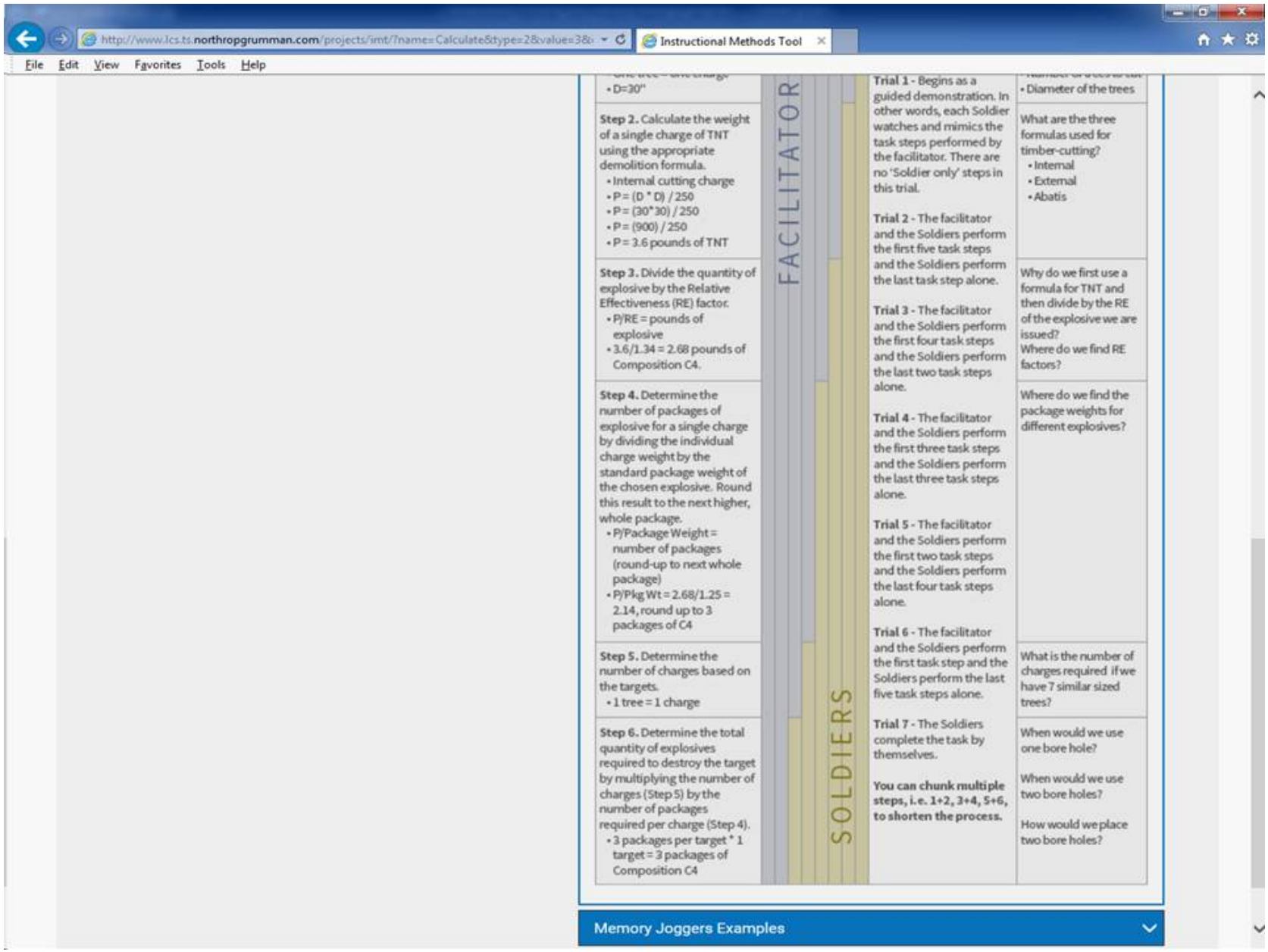
Backwards Fading Example
Backwards fading (BF) is the systematic removal of scaffolding (i.e., instructional support) across learning trials.
Used to:
• Teach tasks to individuals who have no prior knowledge of the task
• Teach tasks that are cumulative in nature (relationship between steps)
• Move individuals 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
BACKWARDS FADING
FACILITATOR FEEDBACK
STEPS
Trials
Demo 1 2 3 4 5 6 7
FACILITATOR
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 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
Step 1. Obtain critical data.
• One tree = one charge
• D=30"
What is the critical data?
• Number of trees to cut
• Diameter of the trees
Step 2. Calculate the weight of a single charge of TNT using the appropriate demolition formula.
• Internal cutting charge
• P= (D * D) / 250
• P= (30*30) / 250
• P= (900) / 250
• P= 3.6 pounds of TNT
What are the three formulas used for timber-cutting?
• Internal
• External
• Abatis
Step 3. Divide the quantity of explosive by the Relative Effectiveness (RE) factor.
• P/RE = pounds of explosive
• 3.6/1.34 = 2.68 pounds of Composition C4.
Why do we first use a formula for TNT and then divide by the RE of the explosive we are issued?
Where do we find RE factors?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• Internal cutting charge
• P = (D * D) / 250
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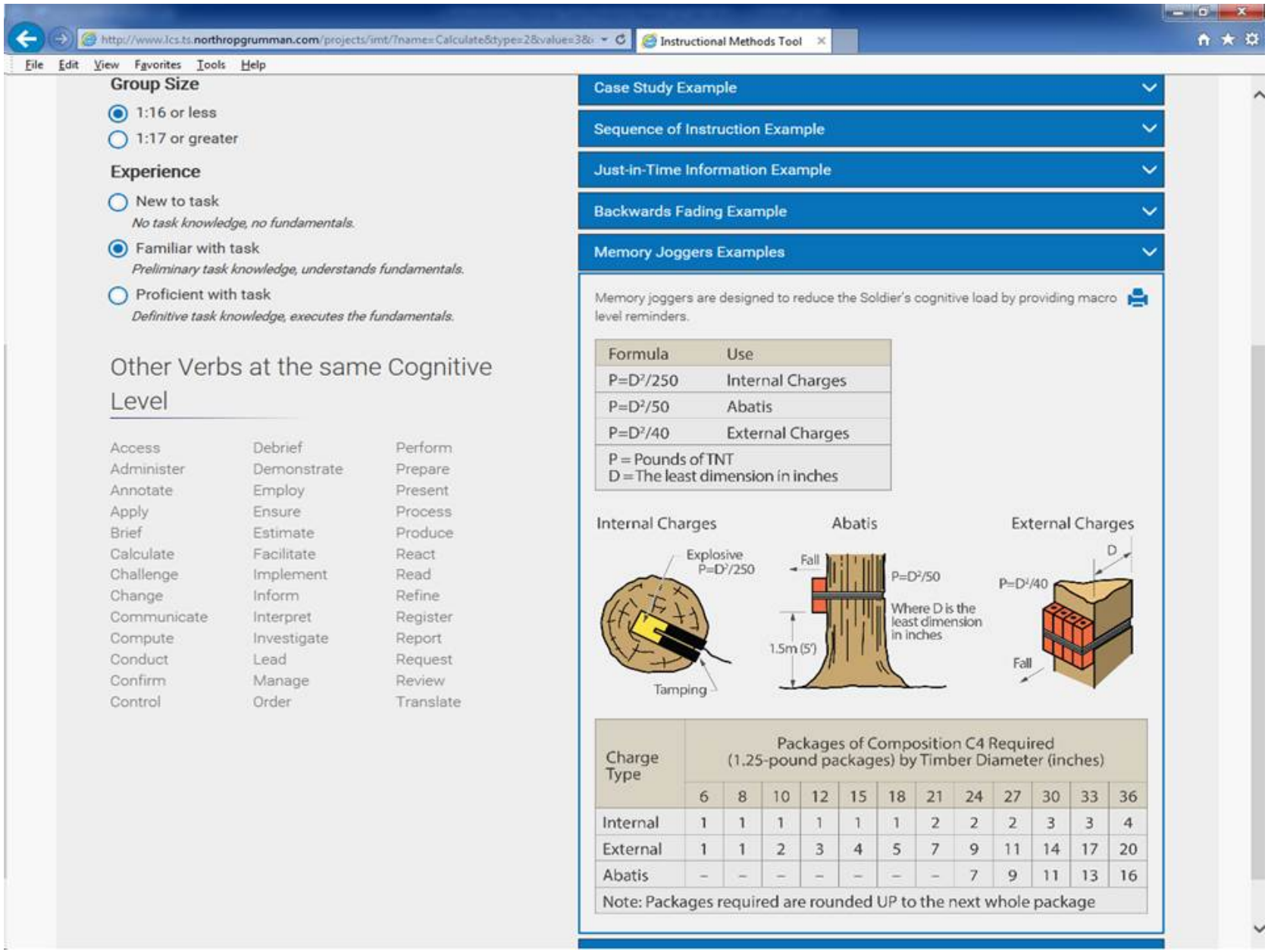
• P = 3.6 pounds of TNT
Step 3. Divide the quantity of explosive by the Relative Effectiveness (RE) factor.
• P/RE = pounds of explosive
• 3.6/1.34 = 2.68 pounds of Composition C4.
Step 4. Determine the number of packages of explosive for a single charge by dividing the individual charge weight by the standard package weight of the chosen explosive. Round this result to the next higher, whole package.
• P/Package Weight = number of packages (round-up to next whole package)
• P/Pkg Wt = 2.68/1.25 = 2.14, round up to 3 packages of C4
Step 5. Determine the number of charges based on the targets.
• 1 tree = 1 charge
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).
• 3 packages per target * 1 target = 3 packages of Composition C4
FACILITATOR
SOLDIERS
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 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.
You can chunk multiple steps, i.e. 1+2, 3+4, 5+6, to shorten the process.
• Diameter of the trees
What are the three formulas used for timber-cutting?
• Internal
• External
• Abatis
Why do we first use a formula for TNT and then divide by the RE of the explosive we are issued?
Where do we find RE factors?
Where do we find the package weights for different explosives?
What is the number of charges required if we have 7 similar sized trees?
When would we use one bore hole?
When would we use two bore holes?
How would we place two bore holes?
Memory Joggers Examples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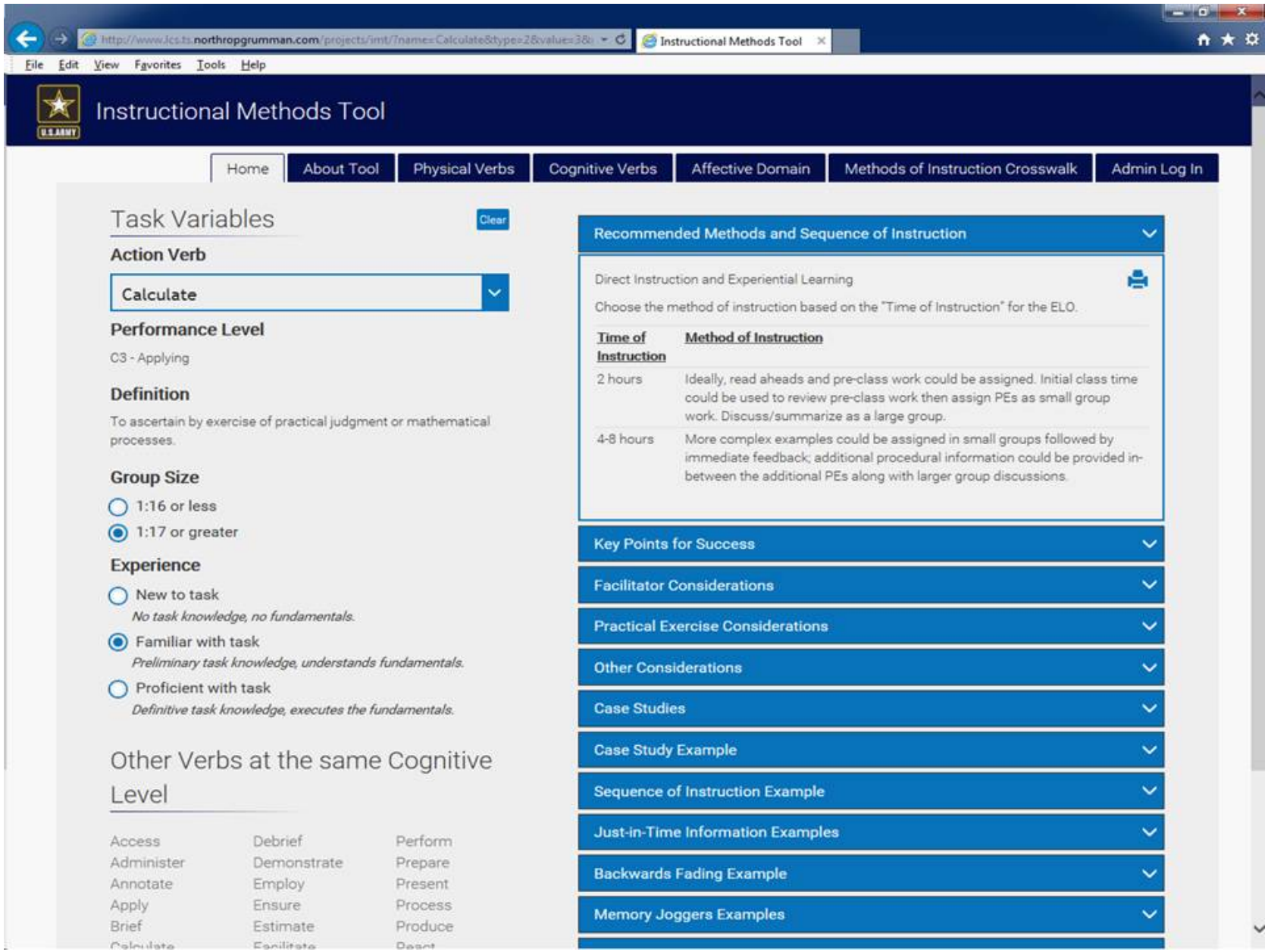
Memory Joggers Examples
Memory joggers are designed to reduce the Soldier's cognitive load by providing macro level reminders.
Formula
Use
P=D²/250
Internal Charges
P=D²/50
Abatis
P=D²/40
External Charges
P = Pounds of TNT
D = The least dimension in inches
Internal Charges
Explosive
P=D²/250
Tamping
Abatis
Fall
P=D²/50
Where D is the least dimension in inches
1.5m (5')
External Charges
D
P=D²/40
Fall
Charge Type
Packages of Composition C4 Required (1.25-pound packages) by Timber Diameter (inches)
6 8 10 12 15 18 21 24 27 30 33 36
Internal 1 1 1 1 1 1 2 2 2 3 3 4
External 1 1 2 3 4 5 7 9 11 14 17 20
Abatis – – – – – – – 7 9 11 13 16
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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Physical Verbs
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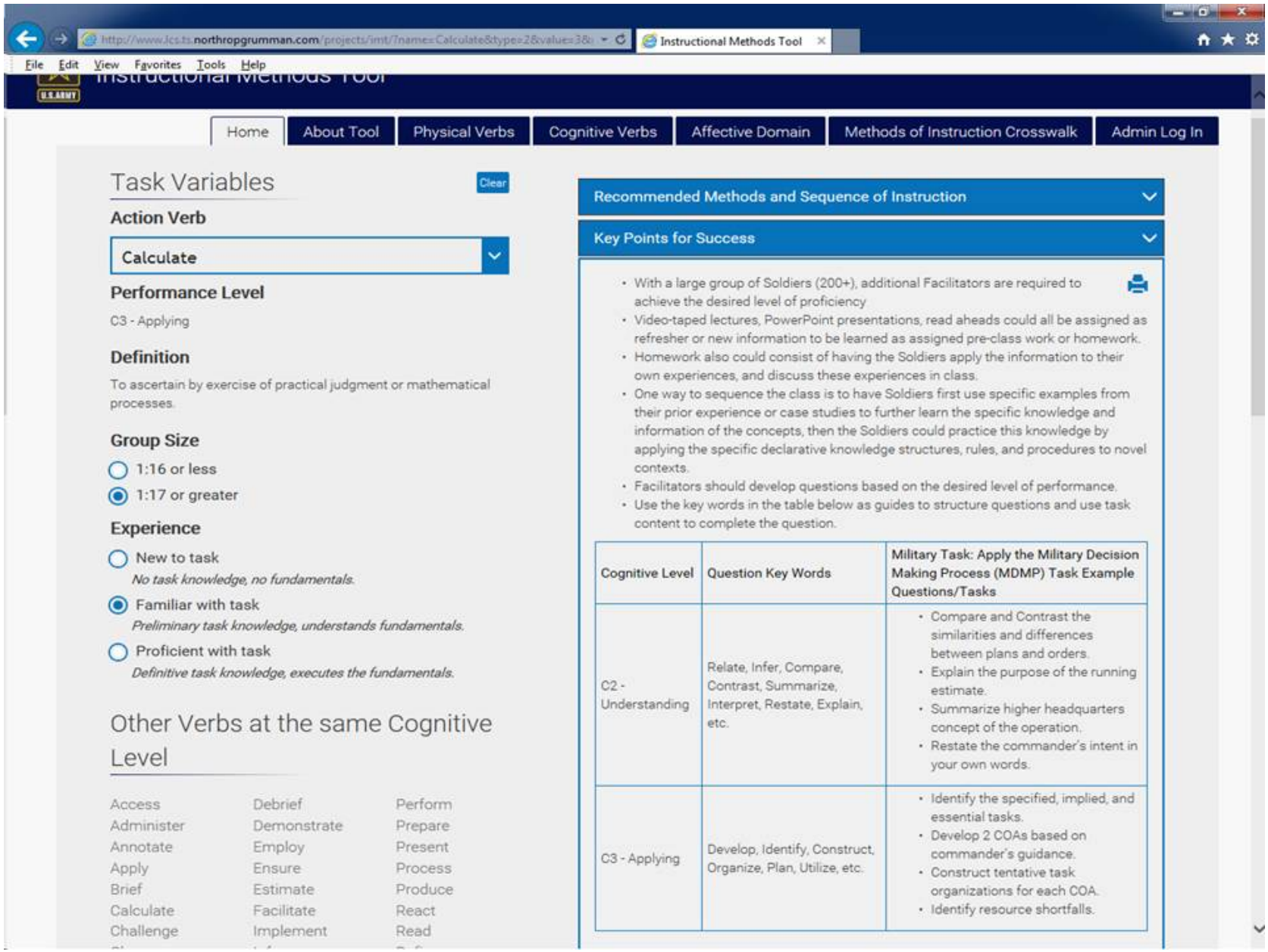
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Calculate
Performance Level
C3 - Applying
Definition
To ascertain by exercise of practical judgment or mathematical processes.
Group Size
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, 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
Debrief
Demonstrate
Employ
Ensure
Estimate
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
Method of Instruction
2 hours
Ideally, read aheads and pre-class work could be assigned. Initial class time could be used to review pre-class work then assign PEs as small group work. Discuss/summarize as a large group.
4-8 hours
More complex examples could be assigned in small groups followed by immediate feedback; additional procedural information could be provided in-between the additional PEs along with larger group discussions.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Other Considerations
Case Studies
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Examples
Backwards Fading Example
Memory Joggers Examples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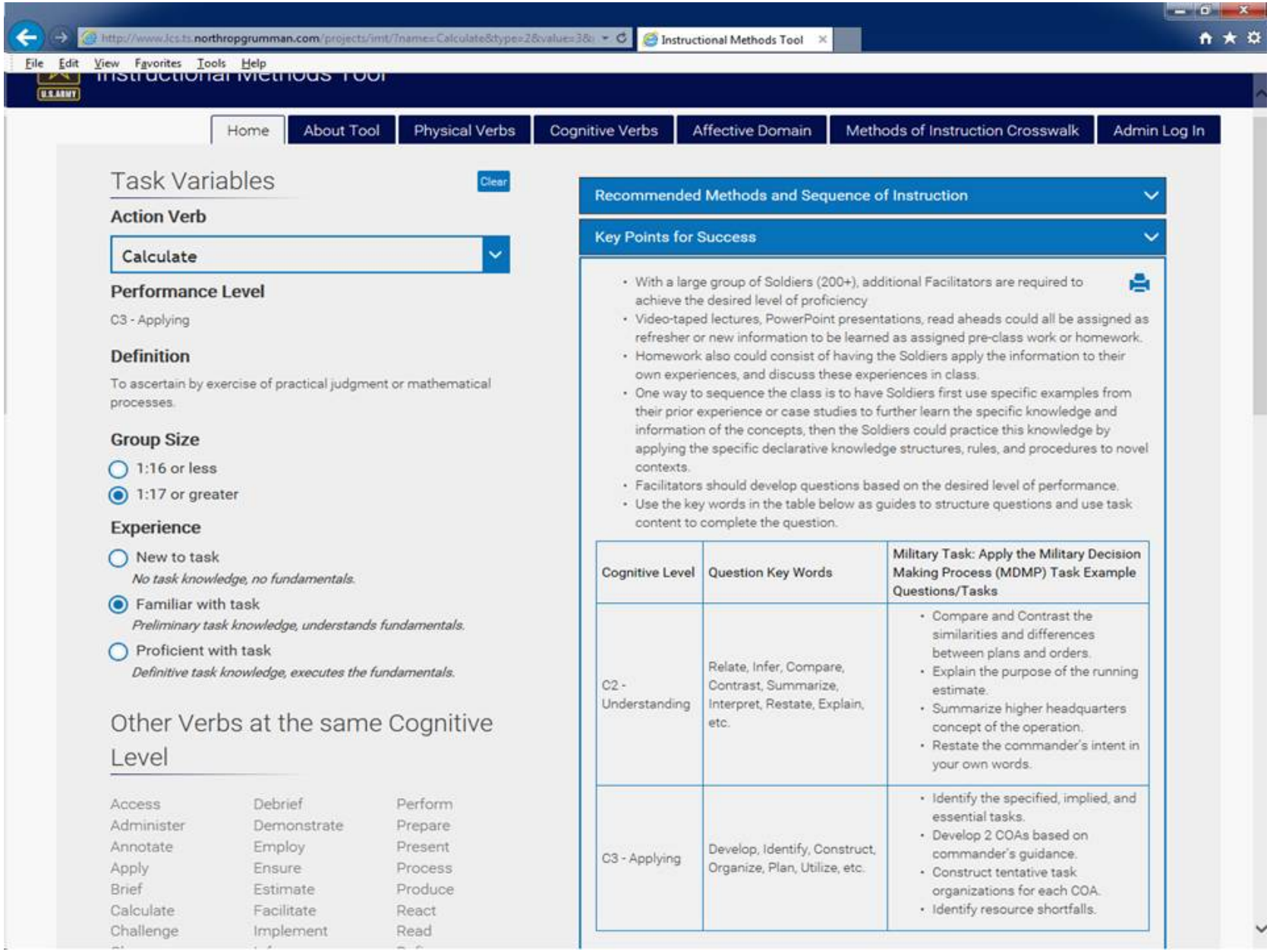
React
Read
Recommended Methods and Sequence of Instruction
Key Points for Success
With a large group of Soldiers (200+), additional Facilitators are required to achieve the desired level of proficiency
Video-taped lectures, PowerPoint presentations, read aheads could all be assigned as refresher or new information to be learned as assigned pre-class work or homework.
Homework also could consist of having the Soldiers apply the information to their own experiences, and discuss these experiences in class.
One way to sequence the class is to have Soldiers first use specific examples from their prior experience or case studies to further learn the specific knowledge and information of the concepts, then the Soldiers 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.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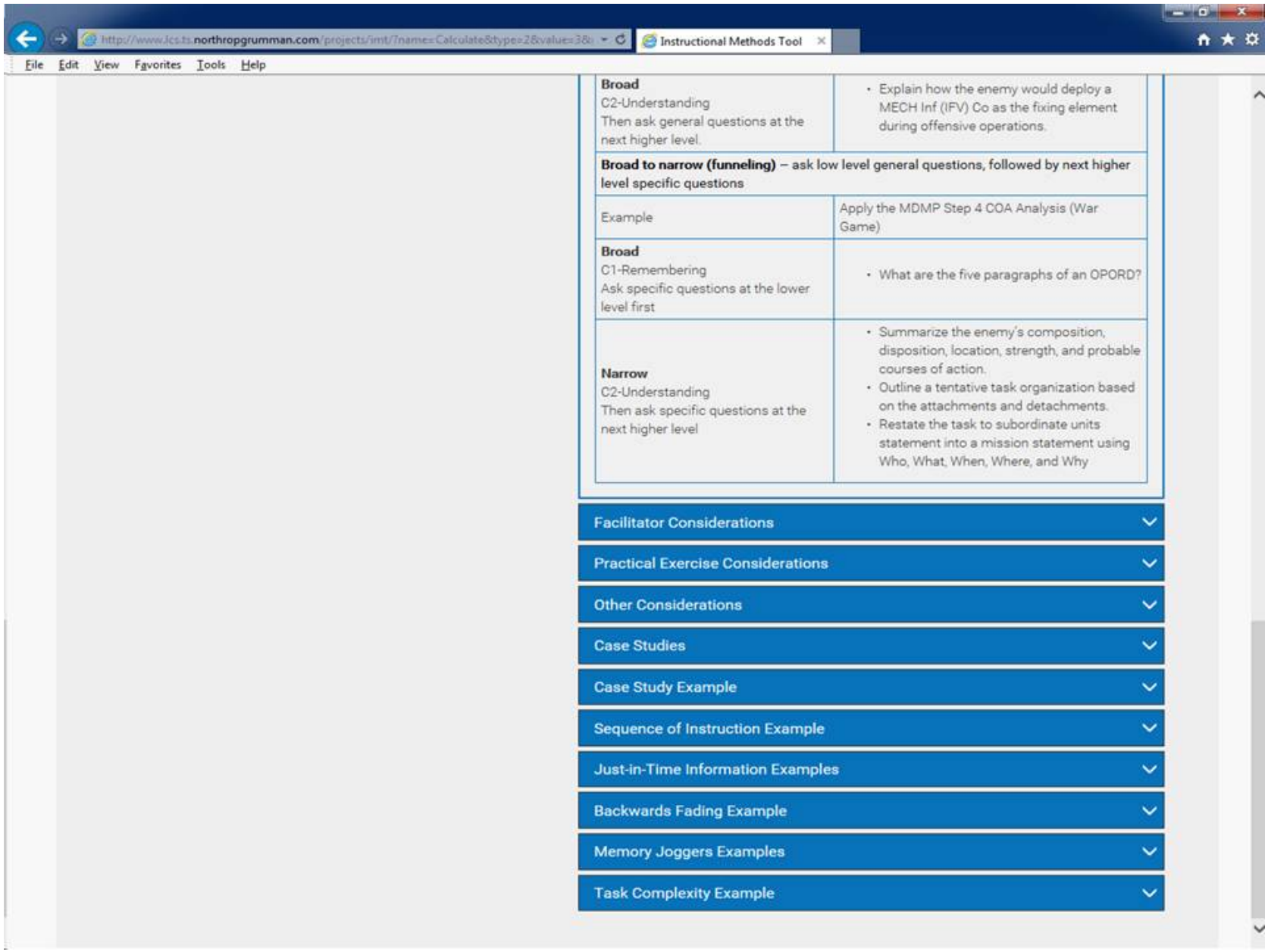
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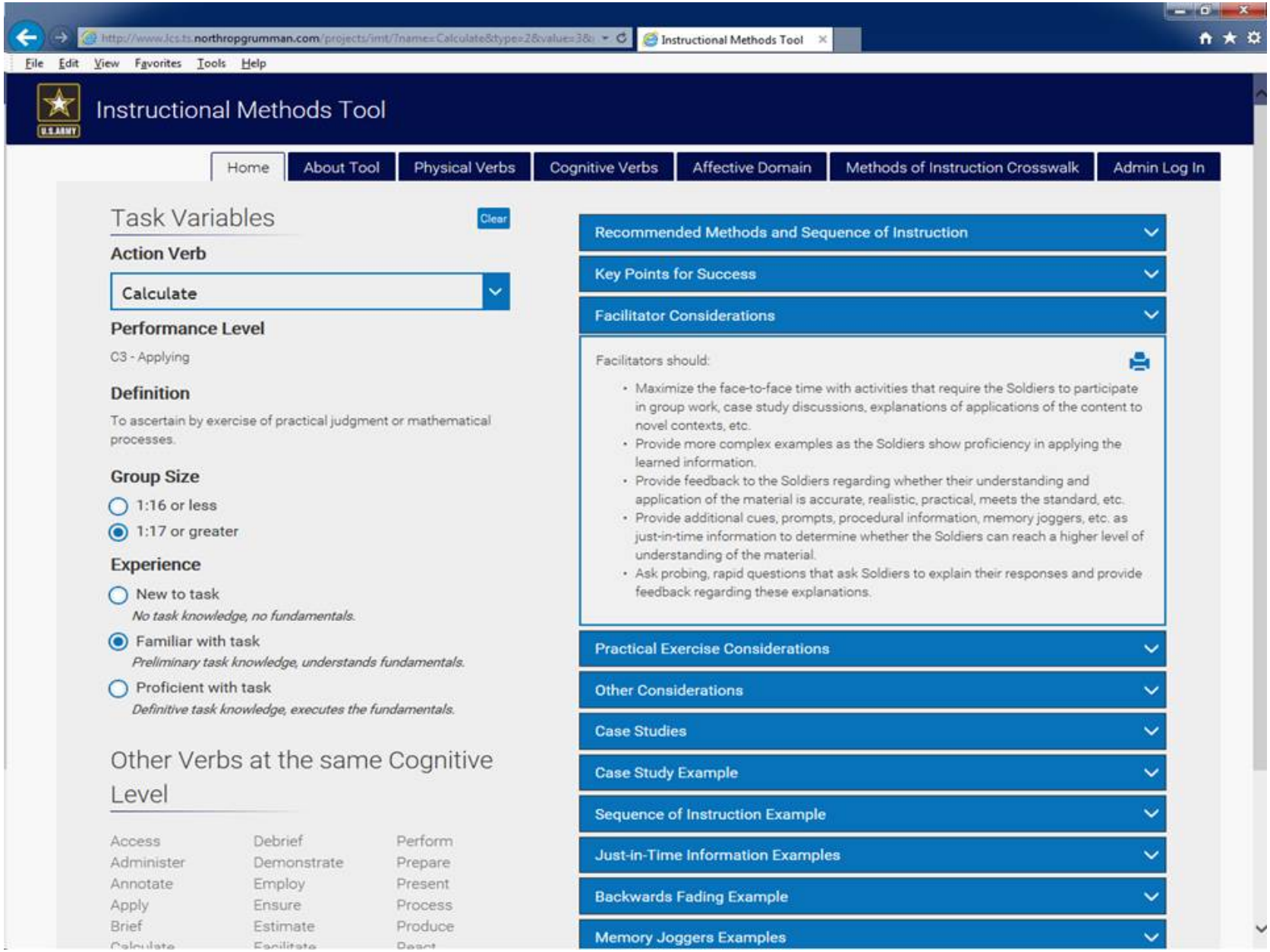
Broad
C2-Understanding
Then ask general questions at the next higher level.
• Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.
Broad to narrow (funneling) – ask low level general questions, followed by next higher level specific questions
Example
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
Other Considerations
Case Studies
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Examples
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example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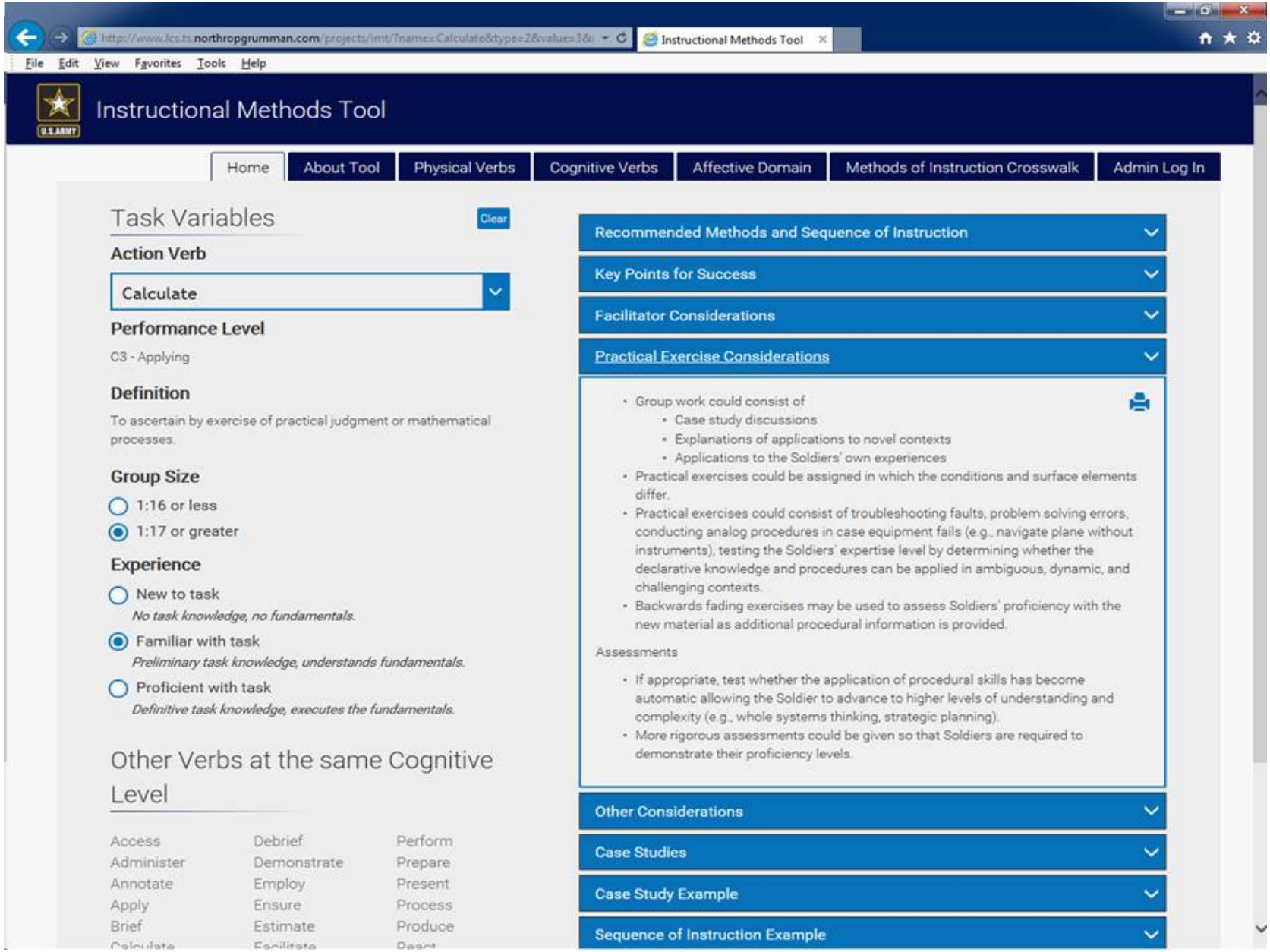
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Maximize the face-to-face time with activities that require the Soldiers to participate in group work, case study discussions, explanations of applications of the content to novel contexts, etc.
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, meets the standard, etc.
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.
Ask probing, rapid questions that ask Soldiers 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 Examples
Backwards Fading Example
Memory Joggers Examples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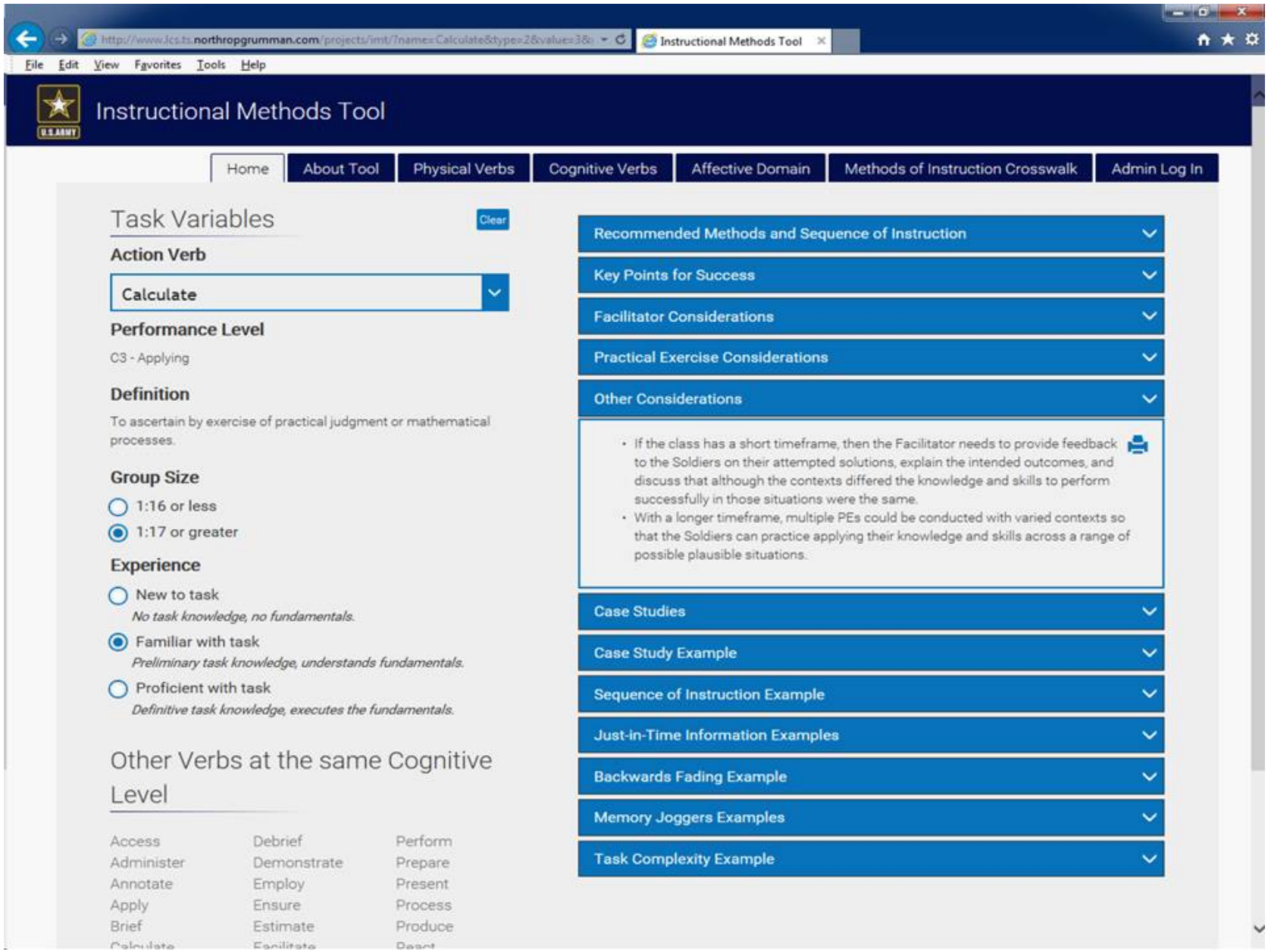
Facilitator Considerations
Practical Exercise Considerations
Group work could consist of
Case study discussions
Explanations of applications to novel contexts
Applications to the Soldiers' own experiences
Practical exercises could be assigned in which the conditions and surface elements differ.
Practical exercises could consist of troubleshooting faults, problem solving errors, conducting analog procedures in case equipment fails (e.g., navigate plane without instruments), testing the Soldiers' expertise level by determining whether the declarative knowledge and procedures can be applied in ambiguous, dynamic, and challenging contexts.
Backwards fading exercises may be used to assess Soldiers' proficiency with the new material as additional procedural information is provided.
Assessments
If appropriate, test whether the application of procedural skills has become automatic allowing the Soldier to advance to higher levels of understanding and complexity (e.g., whole systems thinking, strategic planning).
More rigorous assessments could be given so that Soldiers are required to demonstrate their proficiency levels.
Other Considerations
Case Studies
Case Study Example
Sequence of Instruction Example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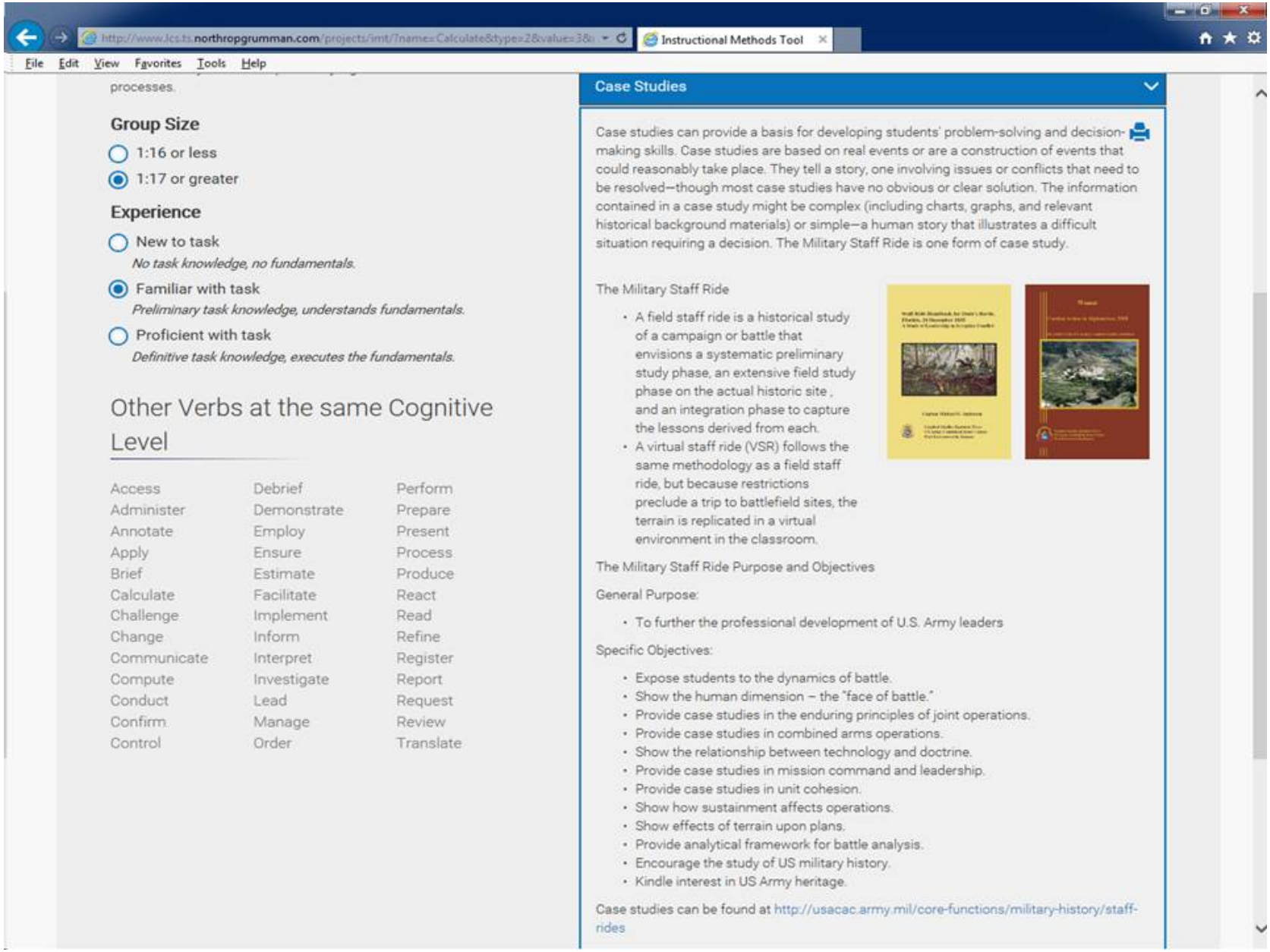
Practical Exercise Considerations
Other Considerations
If the class has a short timeframe, then the Facilitator needs to provide feedback to the Soldiers on their attempted solutions, explain the intended outcomes, and discuss that although the contexts differed the knowledge and skills to perform successfully in those situations were the same.
With a longer timeframe, multiple PEs could be conducted with varied contexts so that the Soldiers can practice applying their knowledge and skills across a range of possible plausible situations.
Case Studies
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Examples
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example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Investigate
Lead
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Order
Perform
Prepare
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React
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Refine
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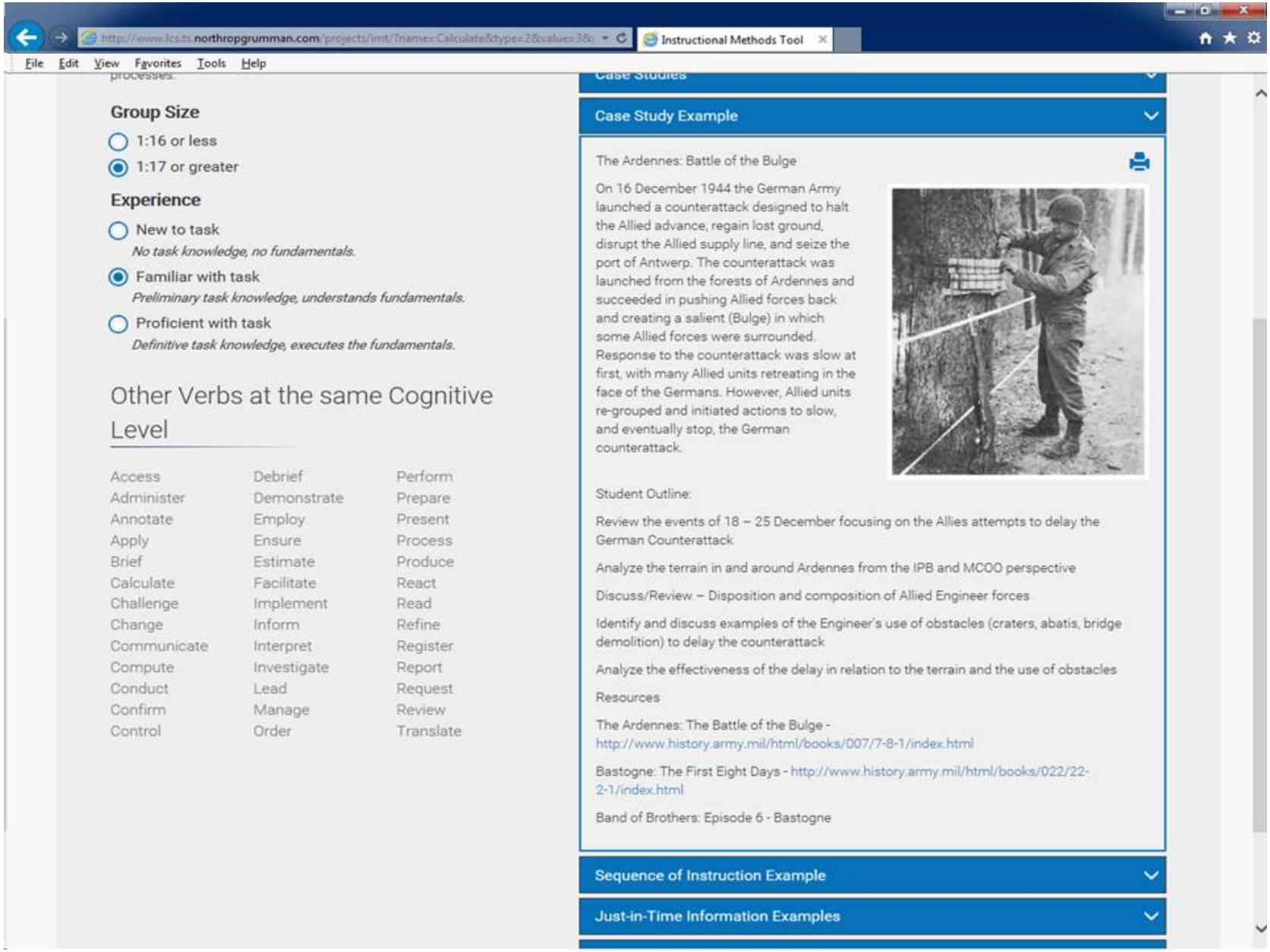
Translate
Case Studies
Case studies can provide a basis for developing students' problem-solving and decision-making skills. Case studies are based on real events or are a construction of events that could reasonably take place. They tell a story, one involving issues or conflicts that need to be resolved—though 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.
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.
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 US military history.
Kindle interest in US Army heritage.
Case studies can be found at http://usacac.army.mil/core-functions/military-history/staff-rides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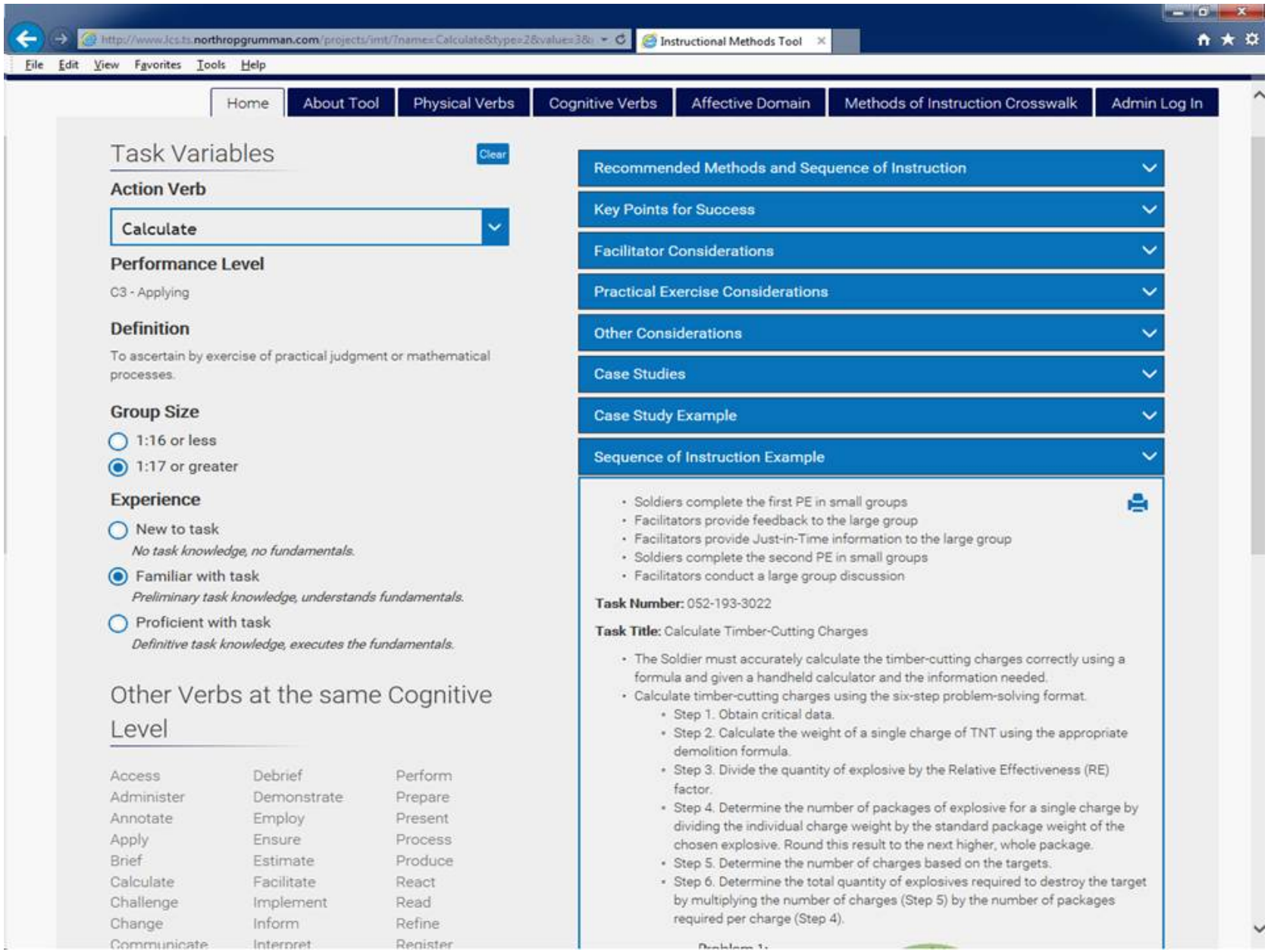
Case Study Example
The Ardennes: Battle of the Bulge
On 16 December 1944 the German Army launched a counterattack designed to halt the Allied advance, regain lost ground, disrupt the Allied supply line, and seize the port of Antwerp. The counterattack was launched from the forests of Ardennes and succeeded 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 MCOO 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
The Ardennes: The Battle of the Bulge - http://www.history.army.mil/html/books/007/7-8-1/index.html
Bastogne: The First Eight Days - http://www.history.army.mil/html/books/022/22-2-1/index.html
Band of Brothers: Episode 6 - Bastogne
Sequence of Instruction Example
Just-in-Time Information Examples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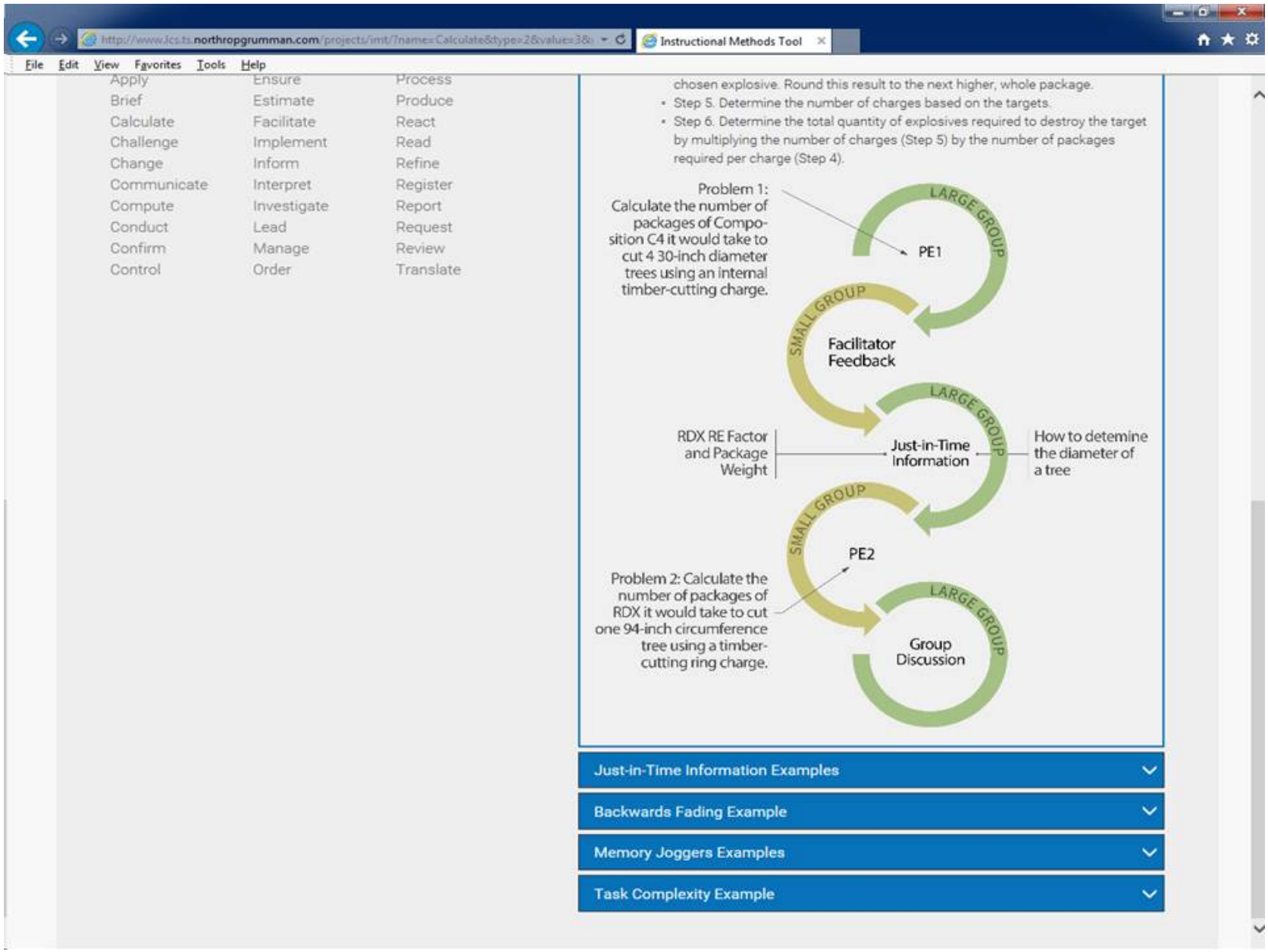
Sequence of Instruction Example
Soldiers complete the first PE in small groups
Facilitators provide feedback to the large group
Facilitators provide Just-in-Time information to the large group
Soldiers complete the second PE in small groups
Facilitators conduct a large group discussion
Task Number: 052-193-3022
Task Title: Calculate Timber-Cutting Charges
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).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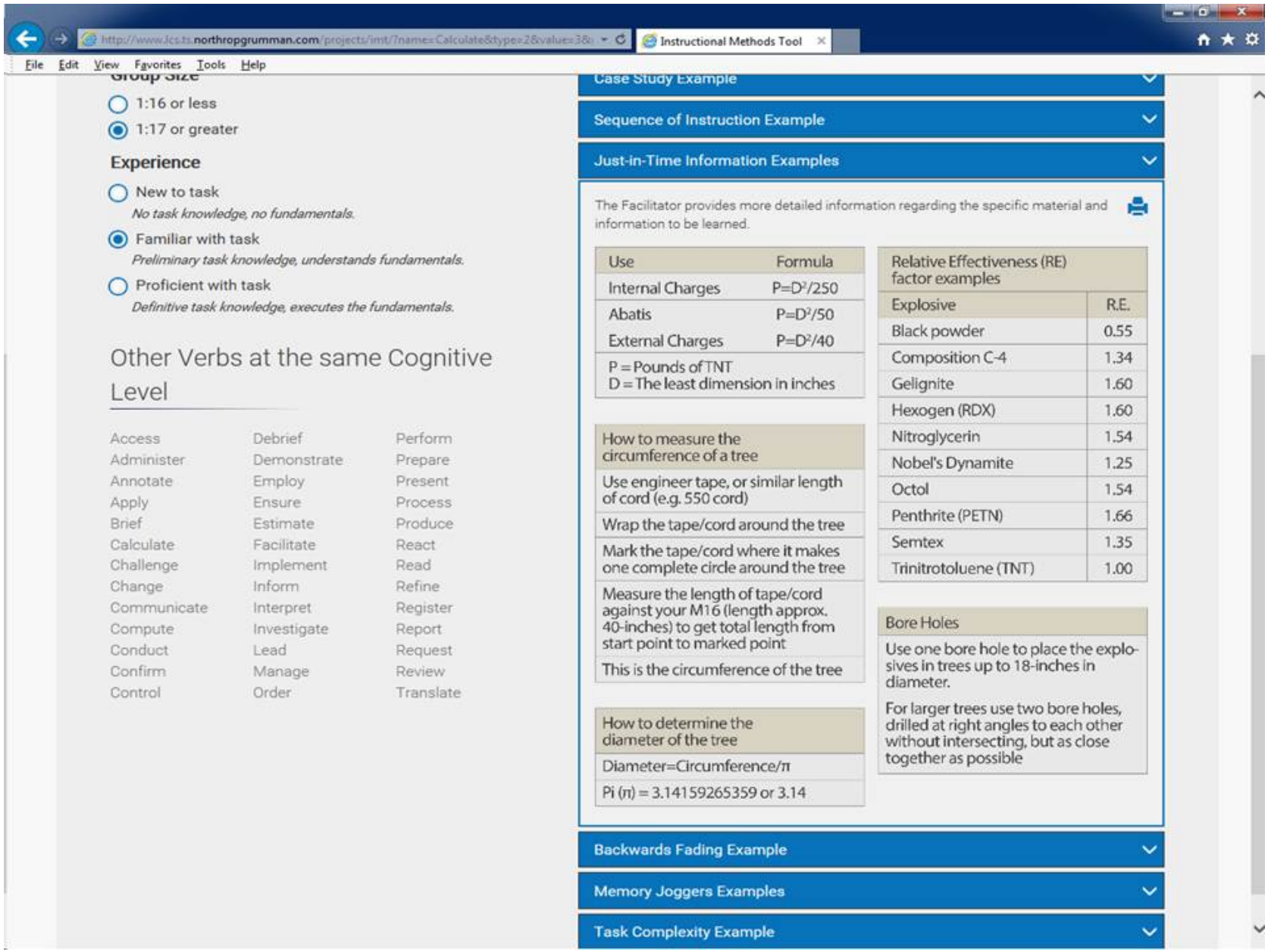
chosen explosive. Round this result to the next higher, whole package.
• Step 5. Determine the number of charges based on the targets.
• Step 6. Determine the total quantity of explosives required to destroy the target by multiplying the number of charges (Step 5) by the number of packages required per charge (Step 4).
Problem 1: Calculate the number of packages of Composition C4 it would take to cut 4 30-inch diameter trees using an internal timber-cutting charge.
LARGE GROUP
PE1
SMALL GROUP
Facilitator Feedback
LARGE GROUP
RDX RE Factor and Package Weight
Just-in-Time Information
How to detemine the diameter of a tree
SMALL GROUP
PE2
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.
LARGE GROUP
Group Discussion
Just-in-Time Information Examples
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example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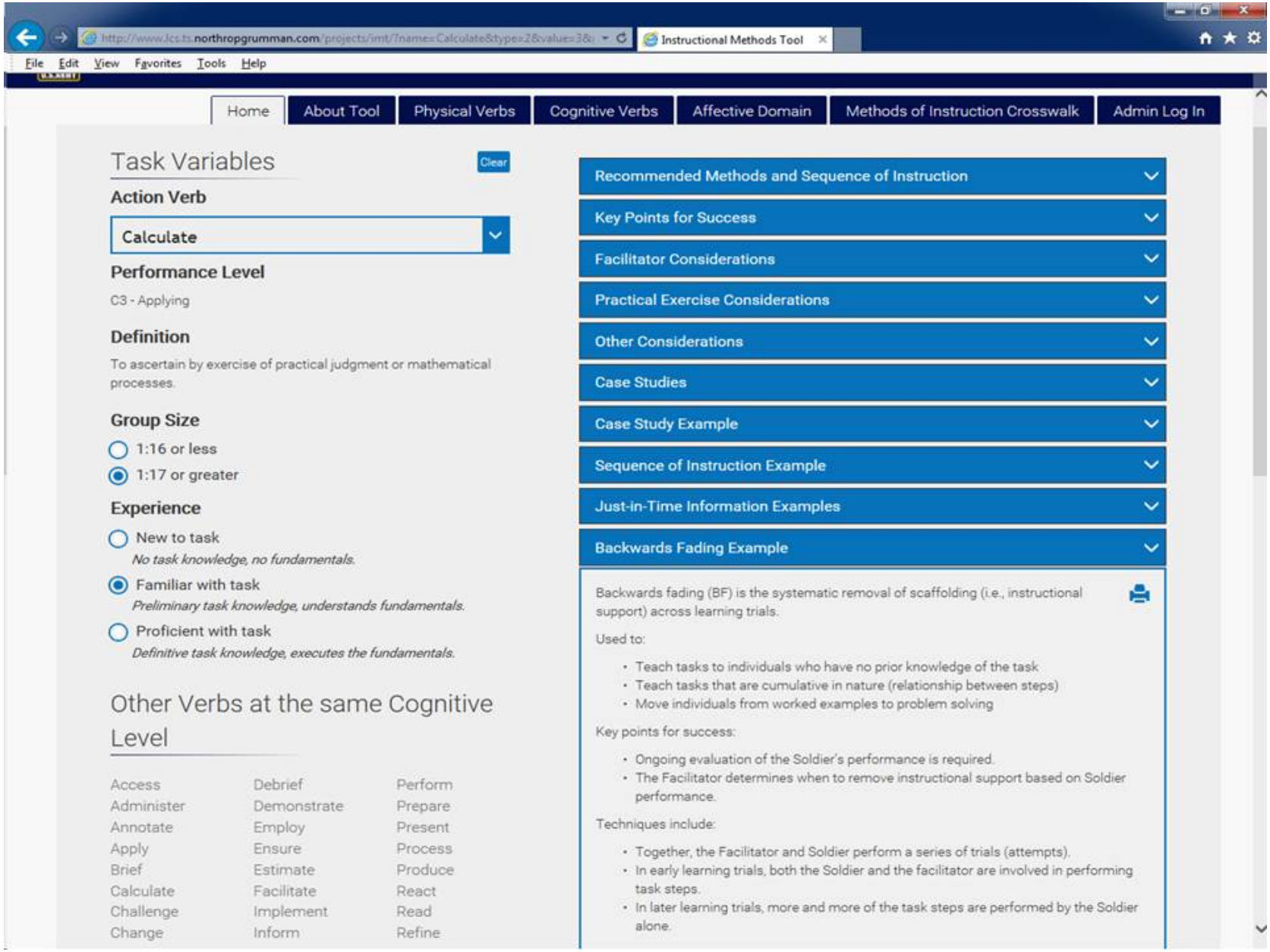
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Examples
The Facilitator provides more detailed information regarding the specific material and information to be learned.
Use
Formula
Internal Charges
P=D²/250
Abatis
P=D²/50
External Charges
P=D²/40
P = Pounds of TNT
D = The least dimension in inches
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 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
Diameter=Circumference/π
Pi (π) = 3.14159265359 or 3.14
Relative Effectiveness (RE) factor examples
Explosive
R.E.
Black powder
0.55
Composition C-4
1.34
Gelignite
1.60
Hexogen (RDX)
1.60
Nitroglycerin
1.54
Nobel's Dynamite
1.25
Octol
1.54
Penthrite (PETN)
1.66
Semtex
1.35
Trinitrotoluene (TNT)
1.00
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
Backwards Fading Example
Memory Joggers Examples
Task Complexity Example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Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
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Action Verb
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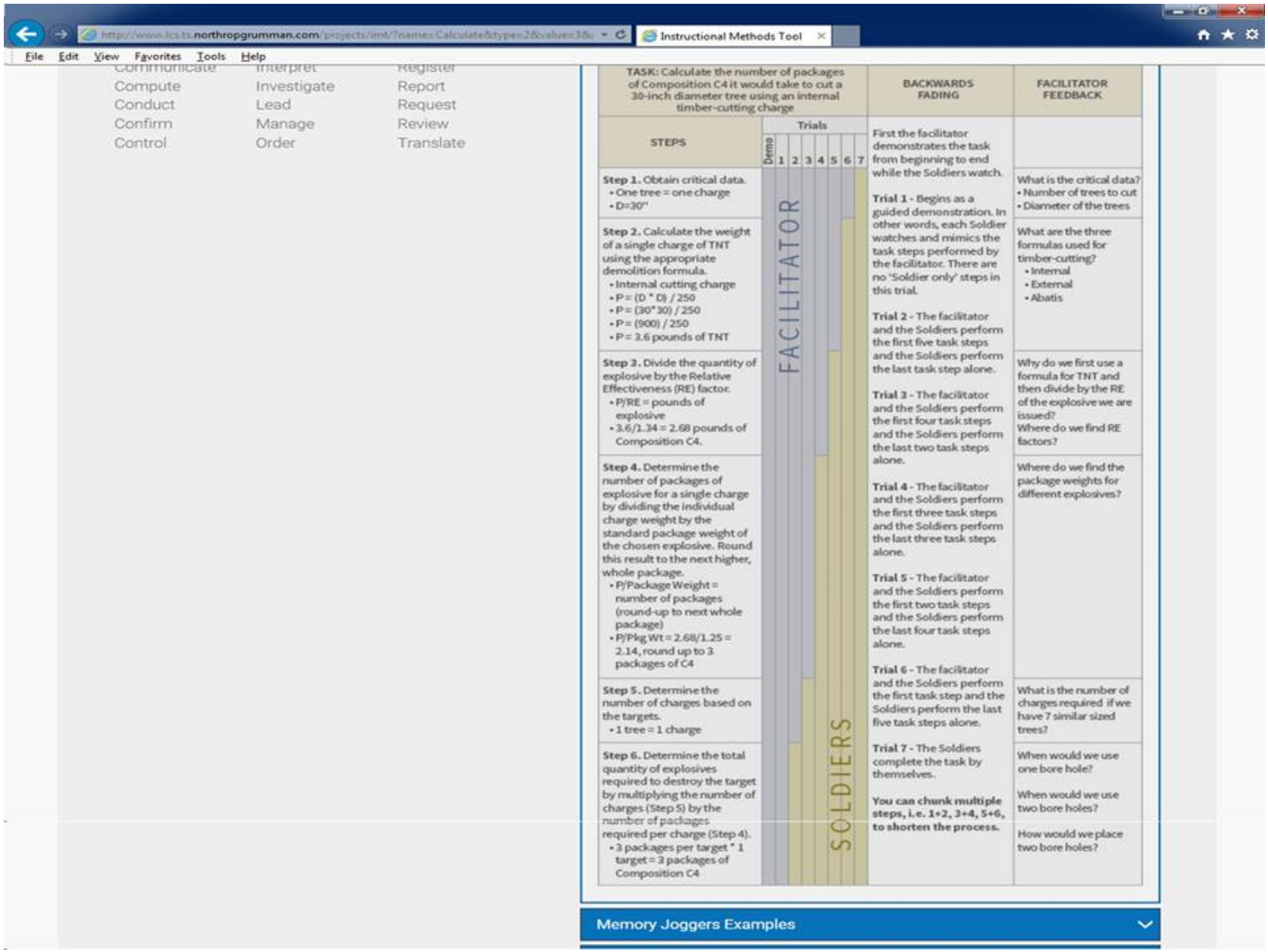
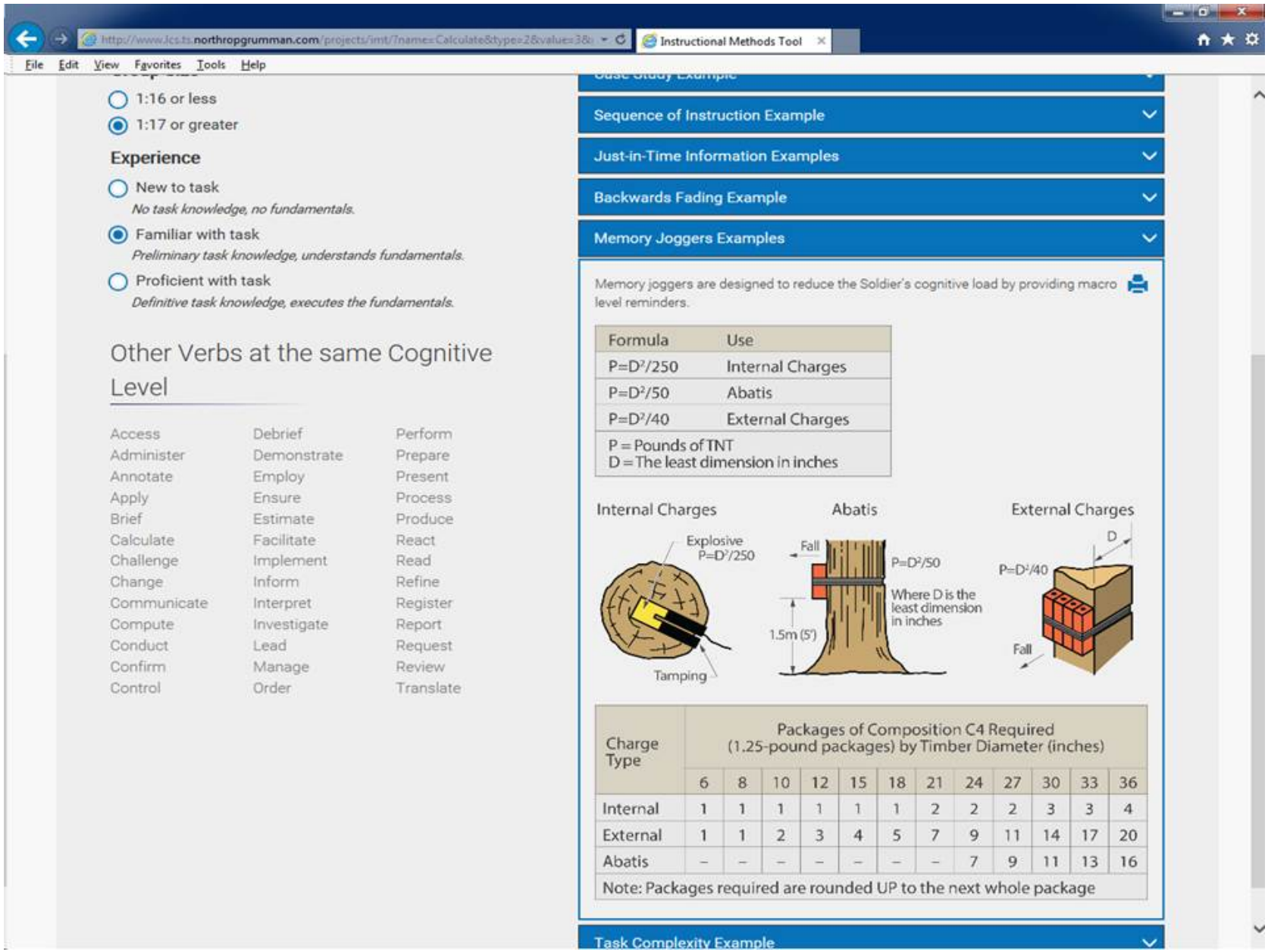
Read
Refine
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Other Considerations
Case Studies
Case Study Example
Sequence of Instruction Example
Just-in-Time Information Examples
Backwards Fading Example
Backwards fading (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.


Instructional Methods Tool
File Edit View Favorites Tools Help
Communicate Interpret Register
Compute Investigate Report
Conduct Lead Request
Confirm Manage Review
Control Order Translate
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
BACKWARDS FADING
FACILITATOR FEEDBACK
STEPS
Trials
Demo 1 2 3 4 5 6 7
Step 1. Obtain critical data.
• One tree = one charge
• D=30"
Step 2. Calculate the weight of a single charge of TNT using the appropriate demolition formula.
• Internal cutting charge
• P = (D * D) / 250
• P = (30*30) / 250
• P = (900) / 250
• P = 3.6 pounds of TNT
Step 3. Divide the quantity of explosive by the Relative Effectiveness (RE) factor.
• P/RE = pounds of explosive
• 3.6/1.34 = 2.68 pounds of Composition C4.
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.
• P/Package Weight = number of packages (round-up to next whole package)
• P/Pkg Wt = 2.68/1.25 = 2.14, round up to 3 packages of C4
Step 5. Determine the number of charges based on the targets.
• 1 tree = 1 charge
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).
• 3 packages per target * 1 target = 3 packages of Composition C4
FACILITATOR
SOLDIERS
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 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.
You can chunk multiple steps, i.e. 1+2, 3+4, 5+6, to shorten the process.
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
• Abatis
Why do we first use a formula for TNT and then divide by the RE of the explosive we are issued?
Where do we find RE factors?
Where do we find the package weights for different explosives?
What is the number of charges required if we have 7 similar sized trees?
When would we use one bore hole?
When would we use two bore holes?
How would we place two bore holes?
Memory Joggers Examples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Sequence of Instruction Example
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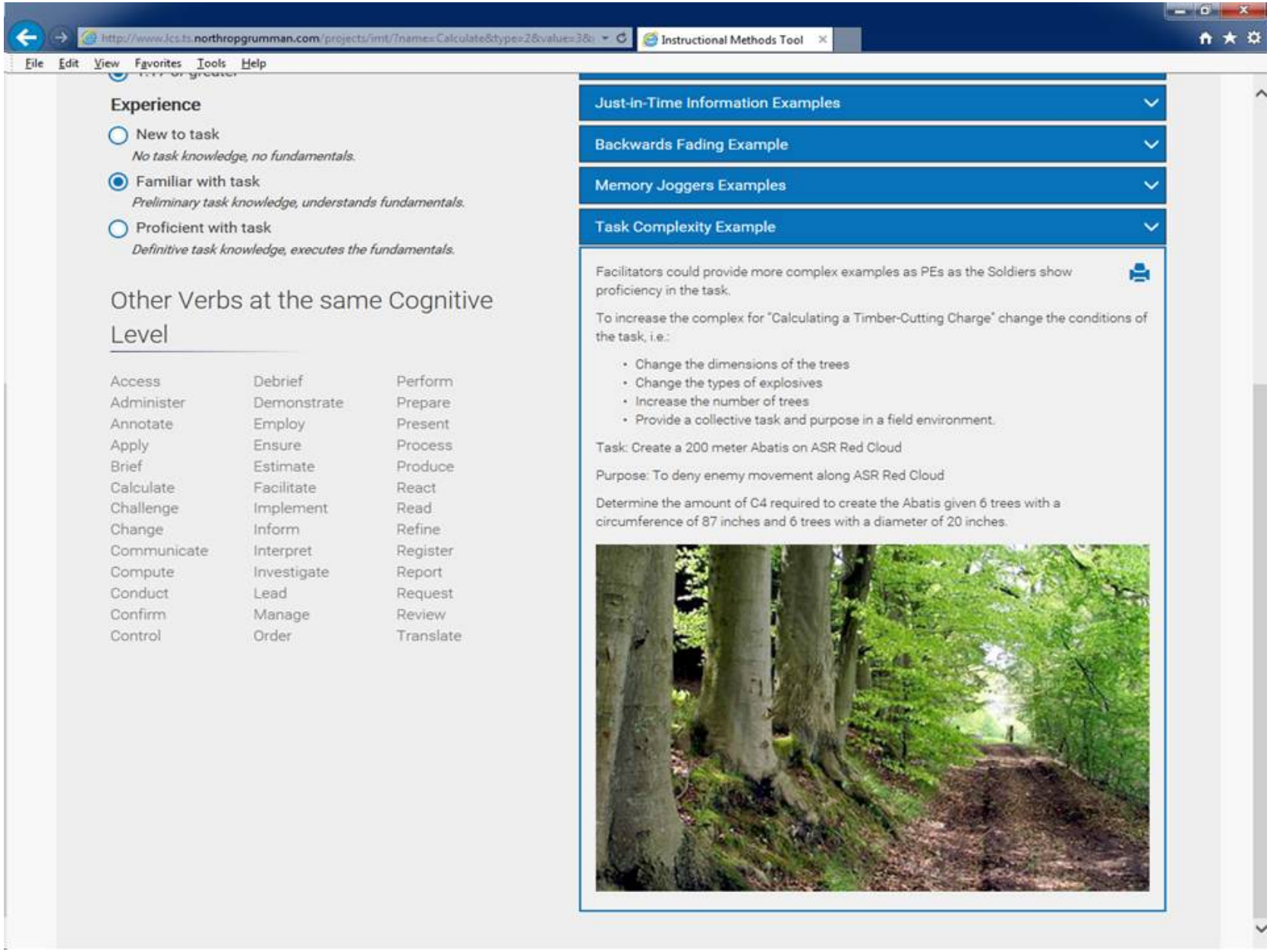
Backwards Fading Example
Memory Joggers Examples
Memory joggers are designed to reduce the Soldier's cognitive load by providing macro level reminders.
Formula
Use
P=D²/250
Internal Charges
P=D²/50
Abatis
P=D²/40
External Charges
P = Pounds of TNT
D = The least dimension in inches
Internal Charges
Explosive
P=D²/250
Tamping
Abatis
Fall
P=D²/50
Where D is the least dimension in inches
1.5m (5')
External Charges
D
P=D²/40
Fall
Charge Type
Packages of Composition C4 Required (1.25-pound packages) by Timber Diameter (inches)
6 8 10 12 15 18 21 24 27 30 33 36
Internal 1 1 1 1 1 1 2 2 2 3 3 4
External 1 1 2 3 4 5 7 9 11 14 17 20
Abatis – – – – – – – 7 9 11 13 16
Note: Packages required are rounded UP to the next whole package
Task Complexity Example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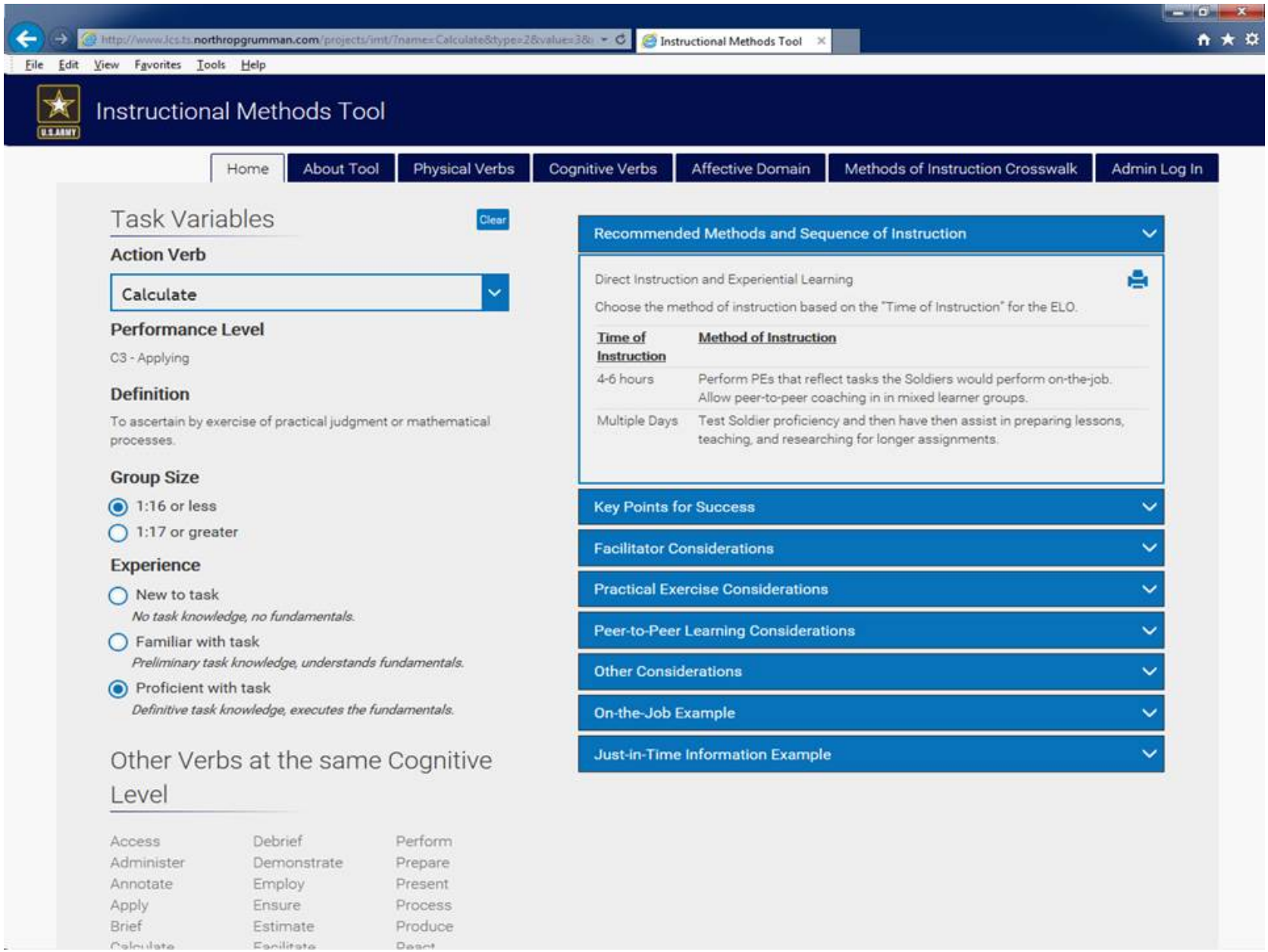
Task Complexity Example
Facilitators could provide more complex examples as PEs as the Soldiers show proficiency in the task.
To increase the complex for "Calculating a Timber-Cutting Charge" change the conditions of the task, i.e.:
Change the dimensions of the trees
Change the types of explosives
Increase 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 C4 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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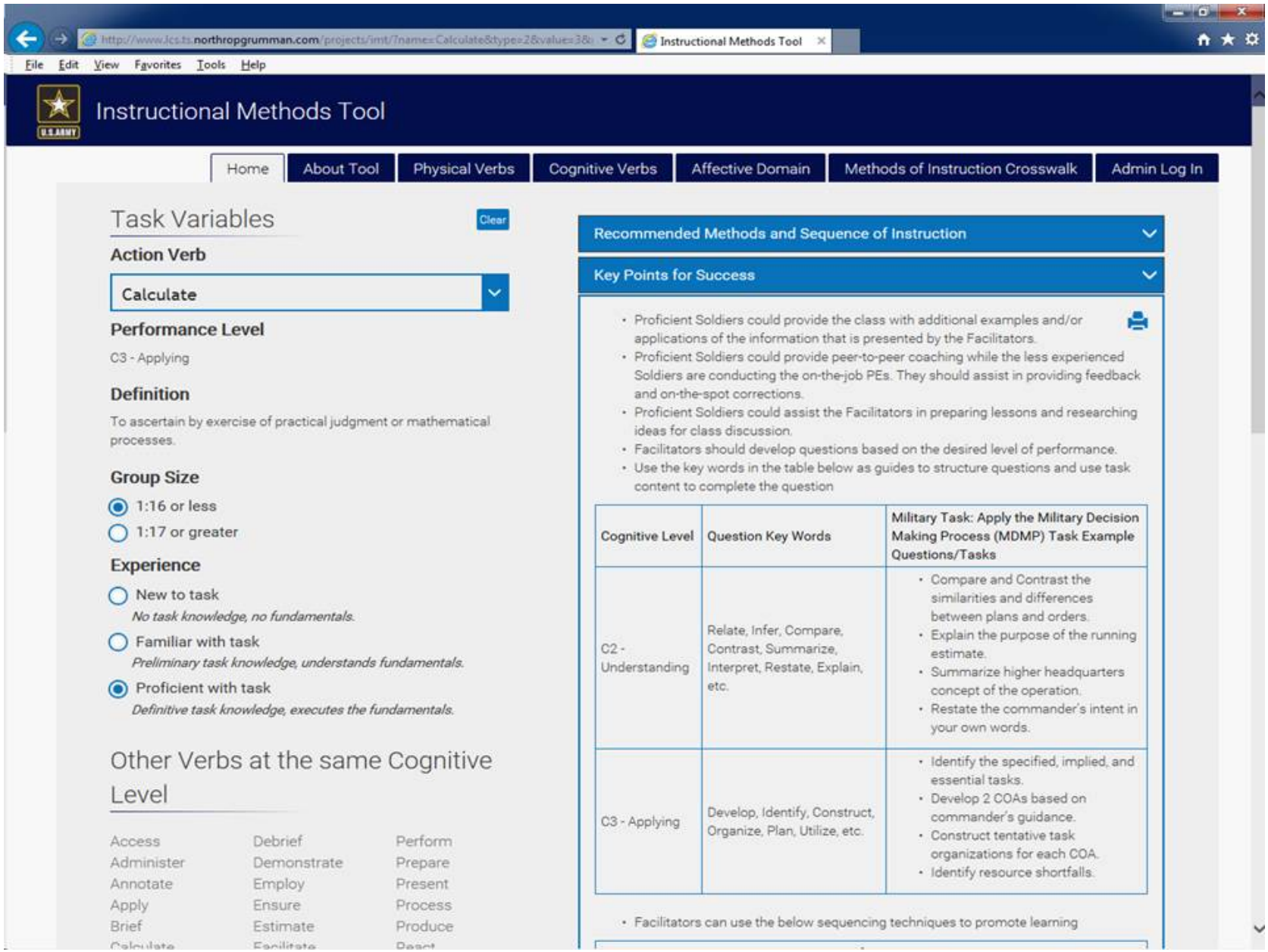
Recommended Methods and Sequence of Instruction
Direct Instruction and Experiential Learning
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-6 hours
Perform PEs that reflect tasks the Soldiers would perform on-the-job. Allow peer-to-peer coaching in in mixed learner groups.
Multiple Days
Test Soldier proficiency and then have then 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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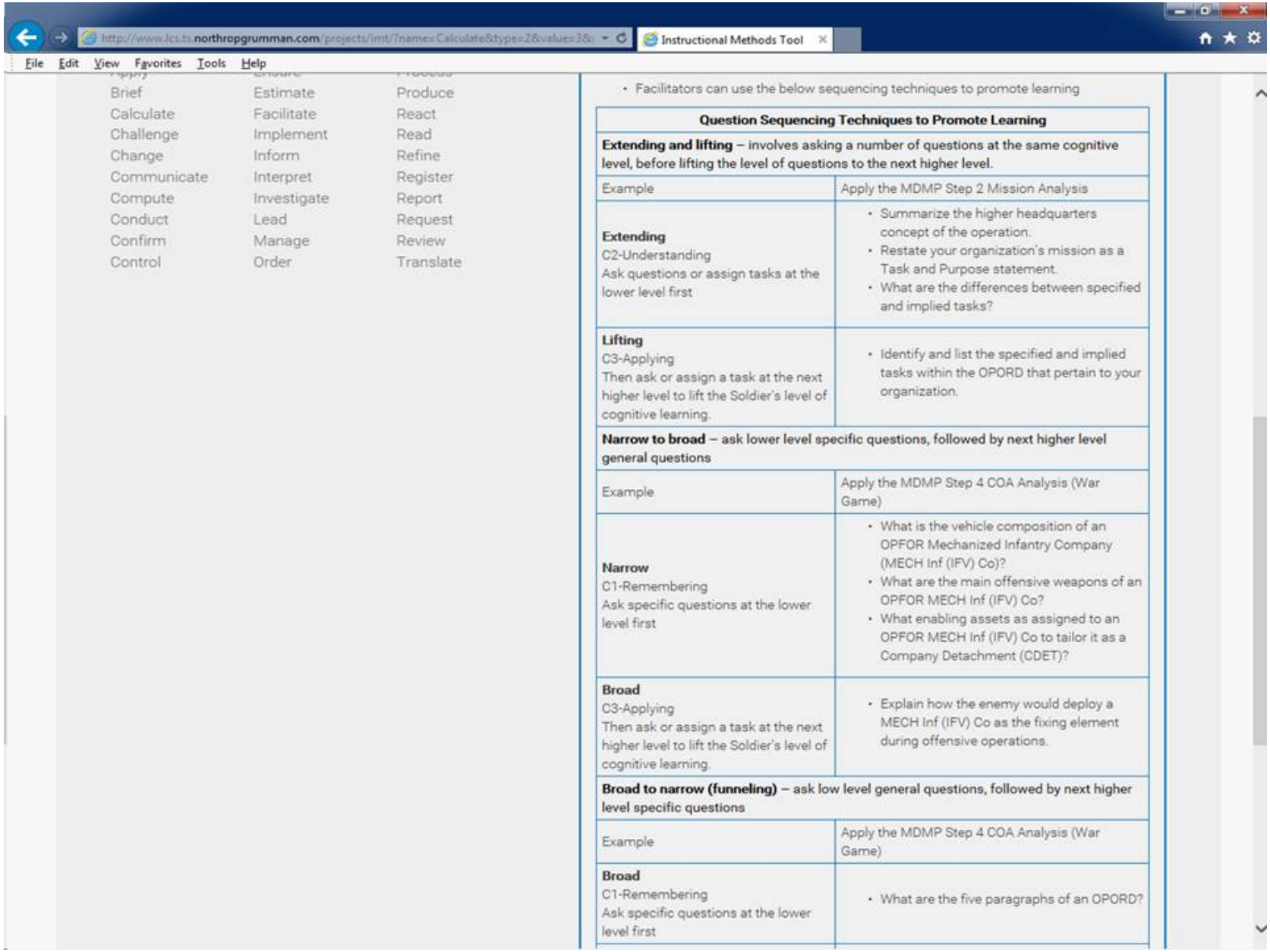
Recommended Methods and Sequence of Instruction
Key Points for Success
Proficient Soldiers could provide the class with additional examples and/or applications of the information that is presented by the Facilitators.
Proficient Soldiers could provide peer-to-peer coaching while the less experienced 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
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.
Facilitators can use the below sequencing techniques to promote learning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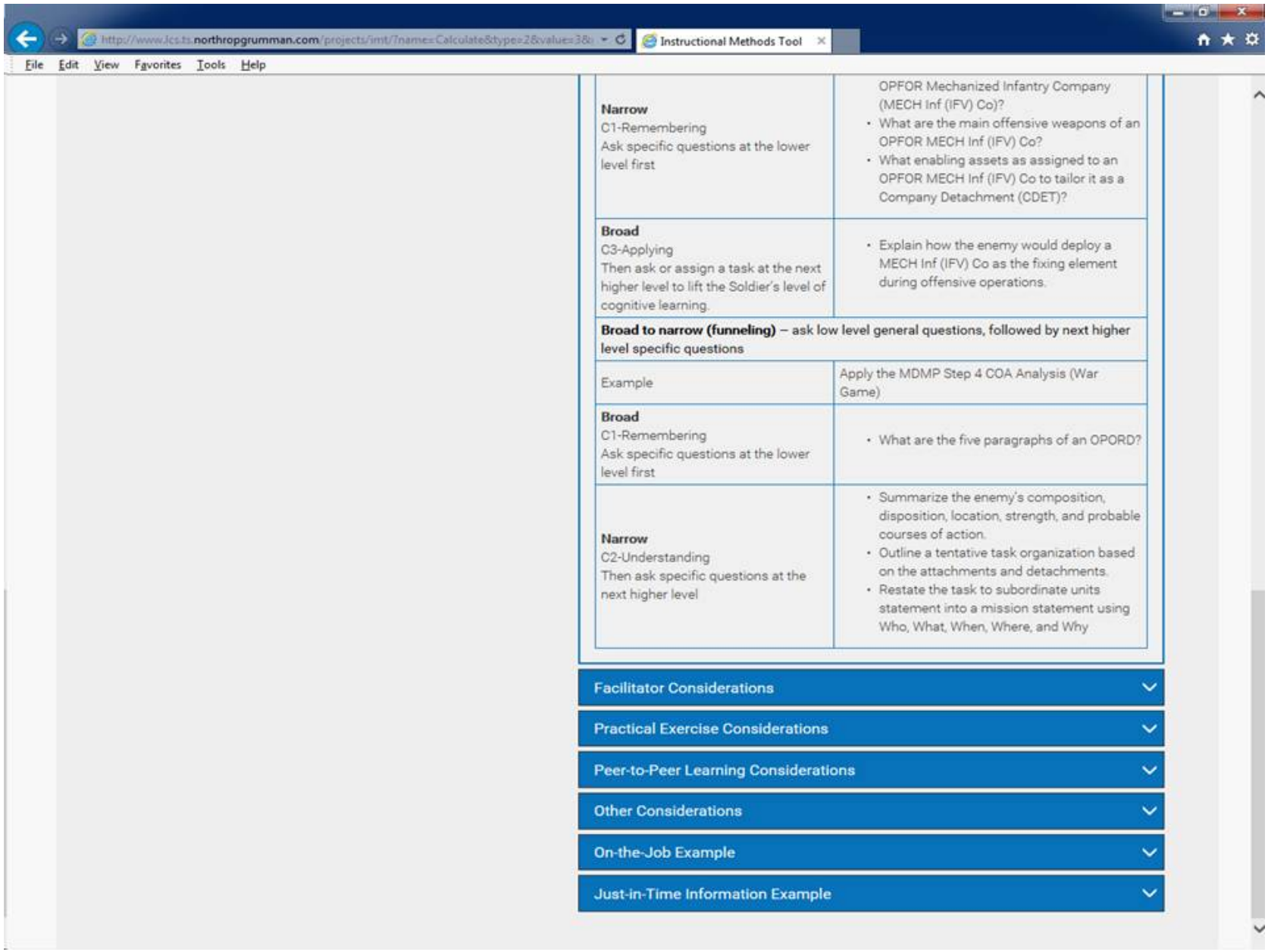
• Facilitators can use the below sequencing techniques to promote learning
Question Sequencing Techniques to Promote Learning
Extending and lifting – involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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
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 as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?
Broad
C3-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 fixing 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?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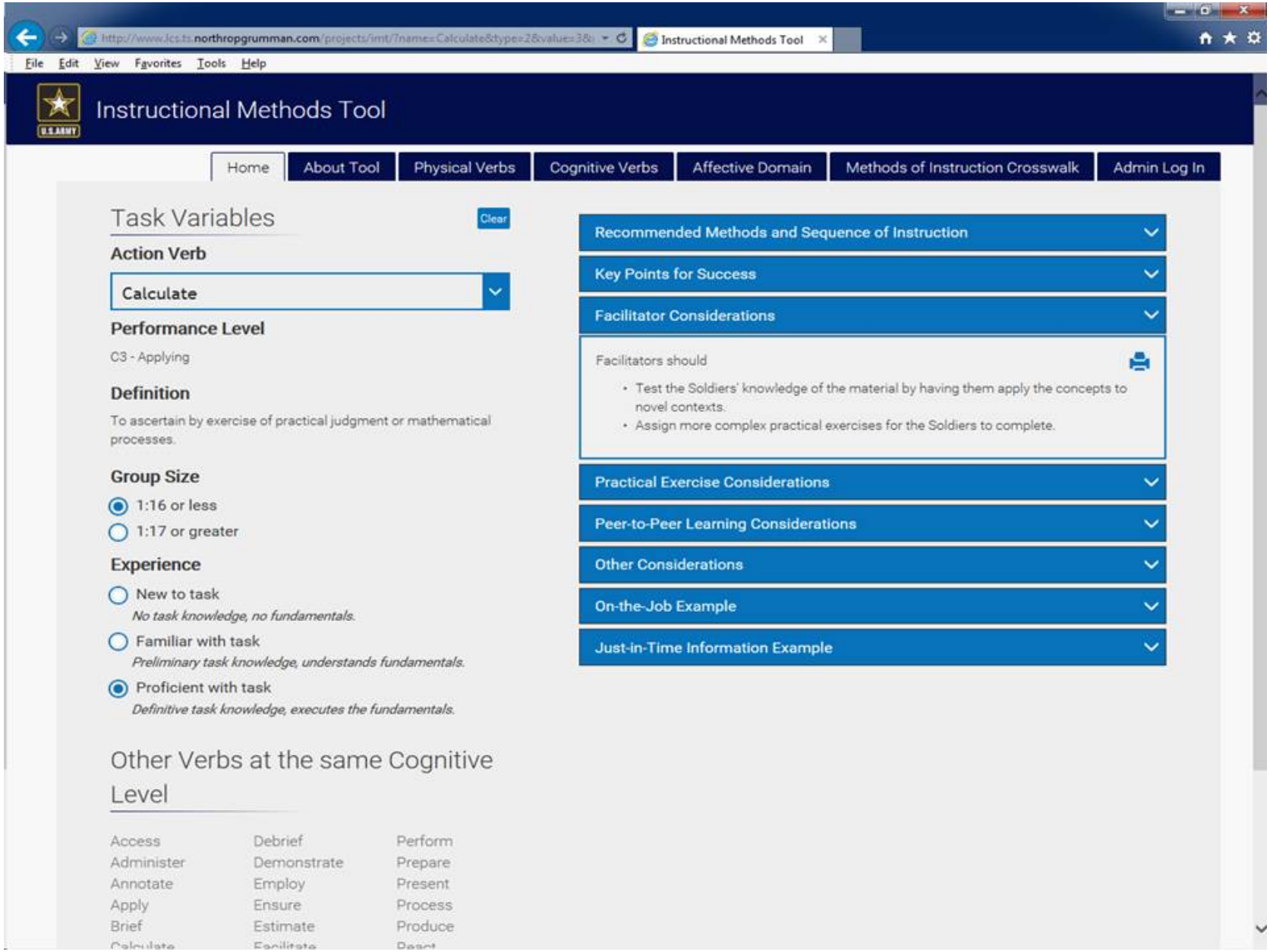
Example
Apply the MDMP Step 4 COA Analysis (War Game)
Broad
C1-Remembering
Ask specific questions at the lower level first
What are the five paragraphs of an OPORD?
Narrow
C2-Understanding
Then ask specific questions at the next higher level
Summarize the enemy's composition, disposition, location, strength, 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
Peer-to-Peer Learning Considerations
Other Considerations
On-the-Job Example
Just-in-Time Information Example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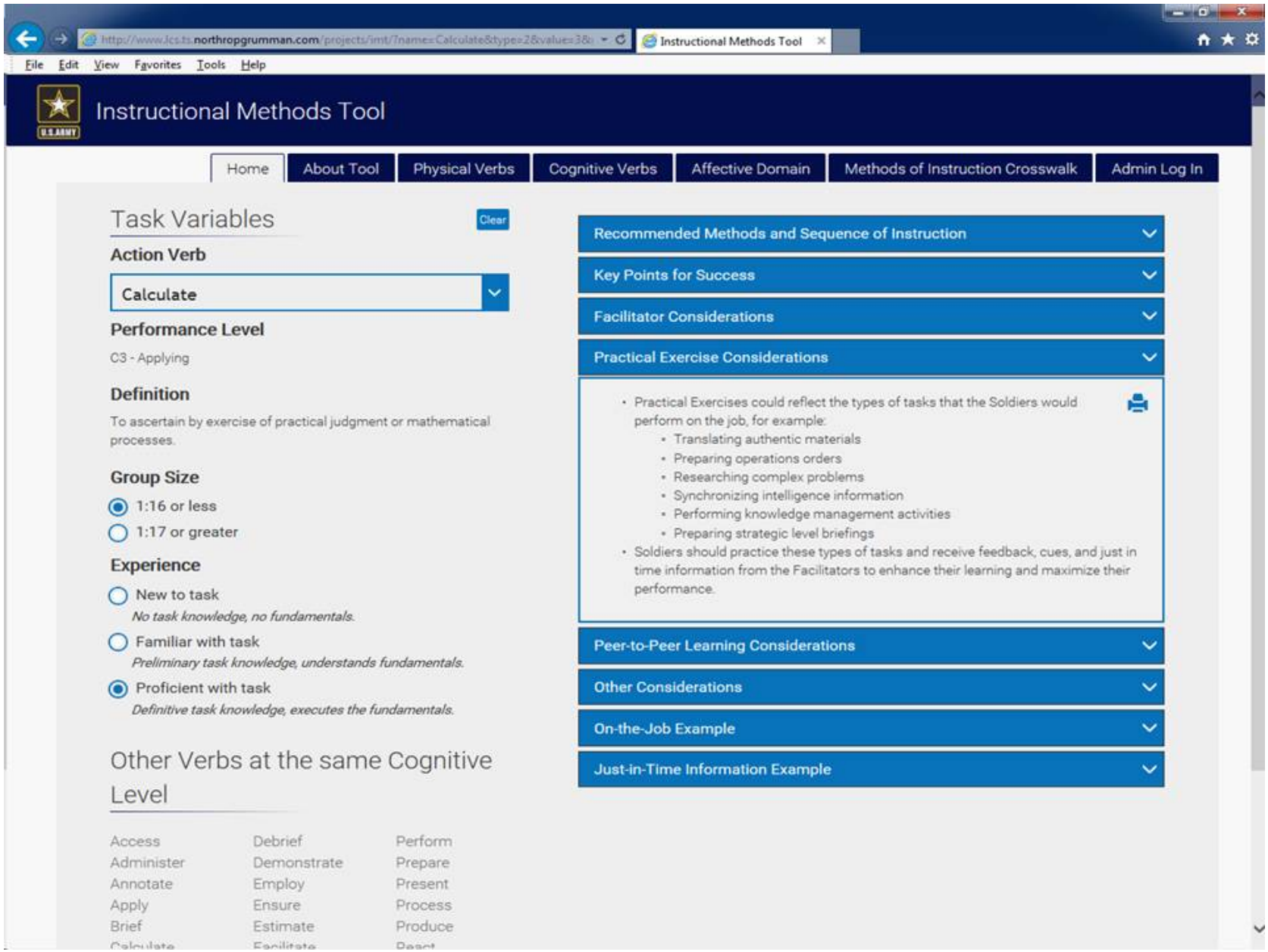
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should
Test the Soldiers' knowledge of the material by having them apply the concepts to novel contexts.
Assign more complex practical exercises for the Soldiers to complete.
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Other Considerations
On-the-Job Example
Just-in-Time Information Example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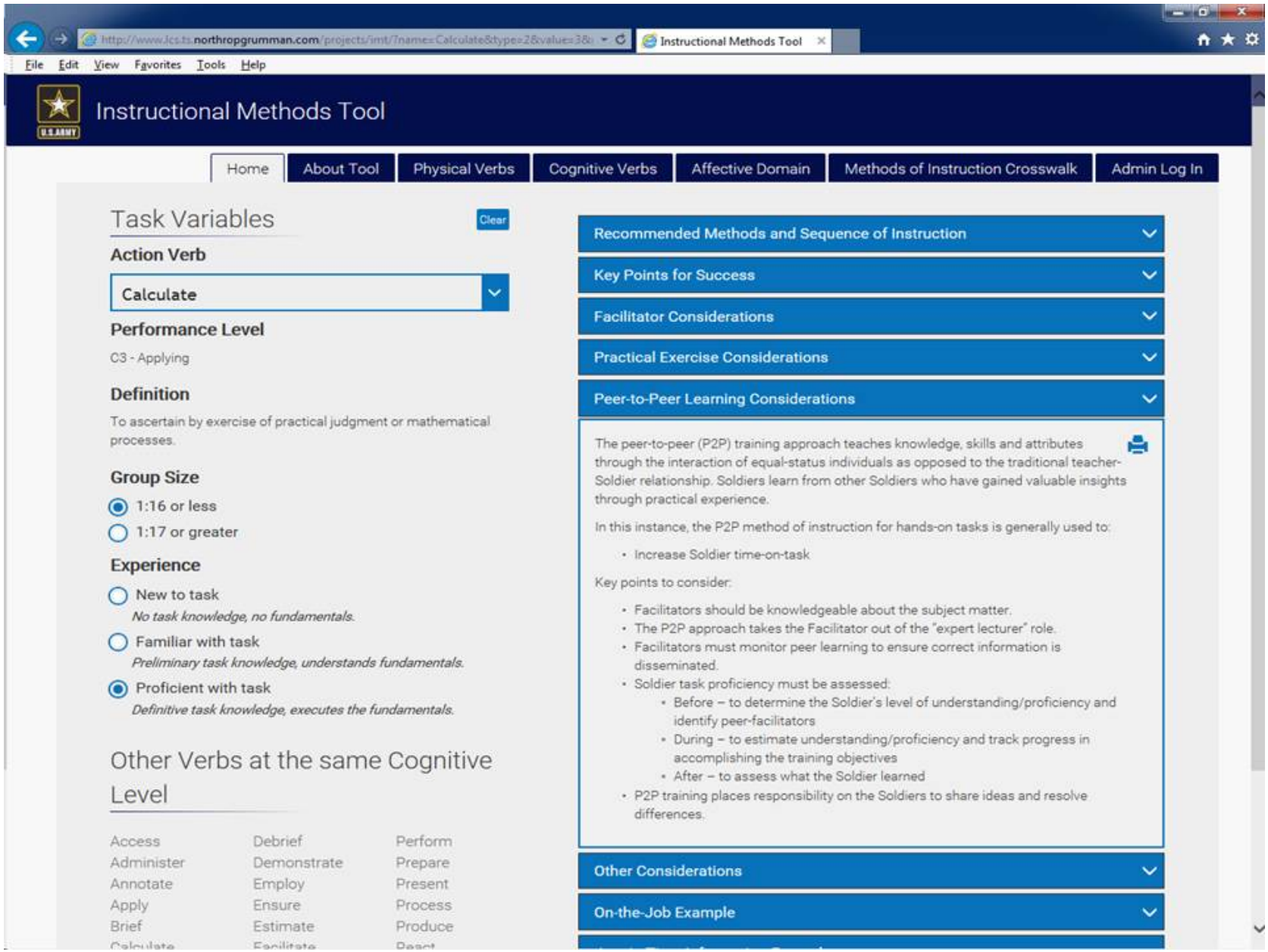
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Practical Exercises could reflect the types of tasks that the Soldiers would perform on the job, for example:
Translating authentic materials
Preparing operations orders
Researching complex problems
Synchronizing intelligence 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 Example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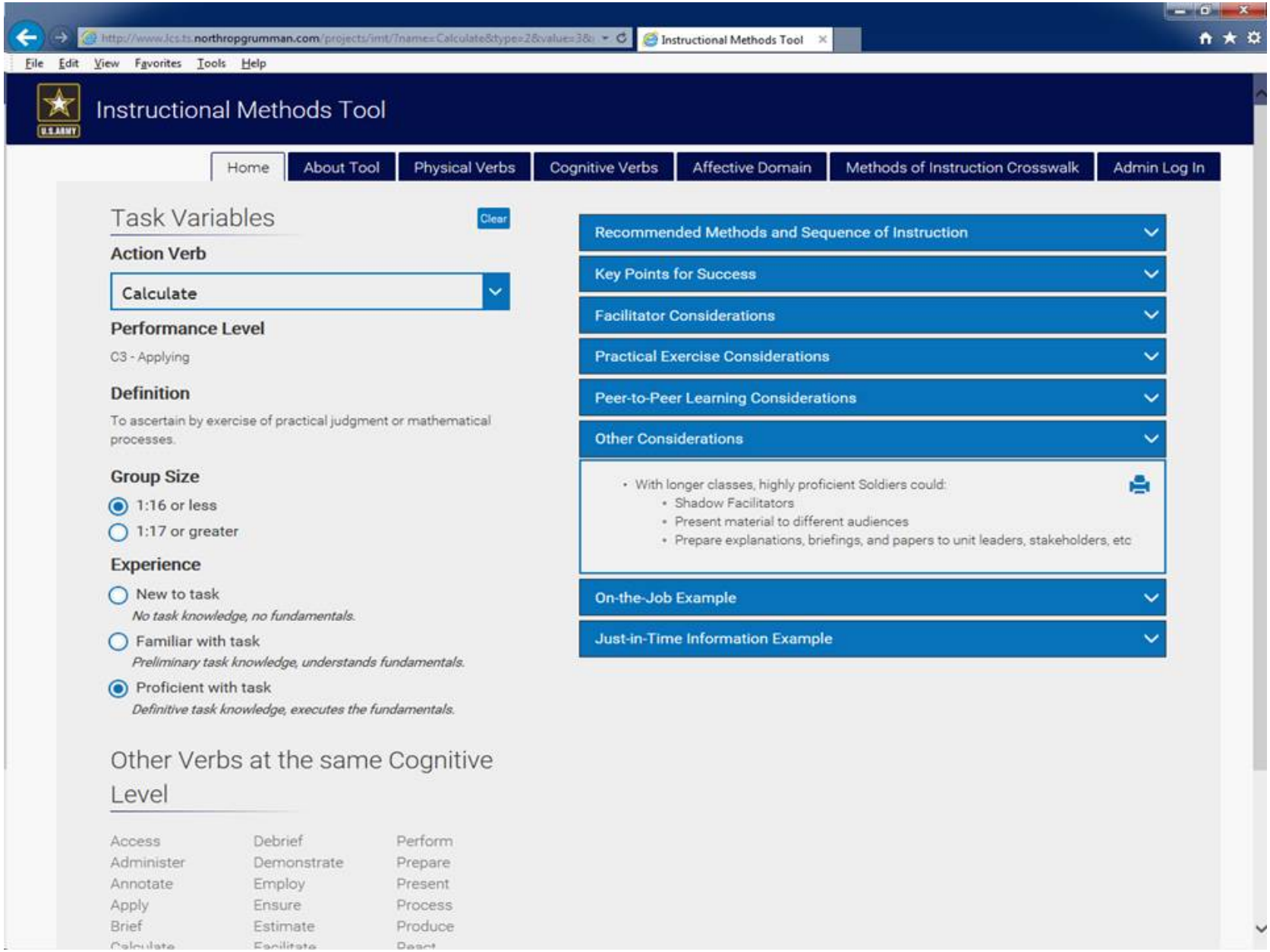
Peer-to-Peer Learning Considerations
The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier relationship. Soldiers learn from other Soldiers who have gained valuable insights through 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.
Other Considerations
On-the-Job Example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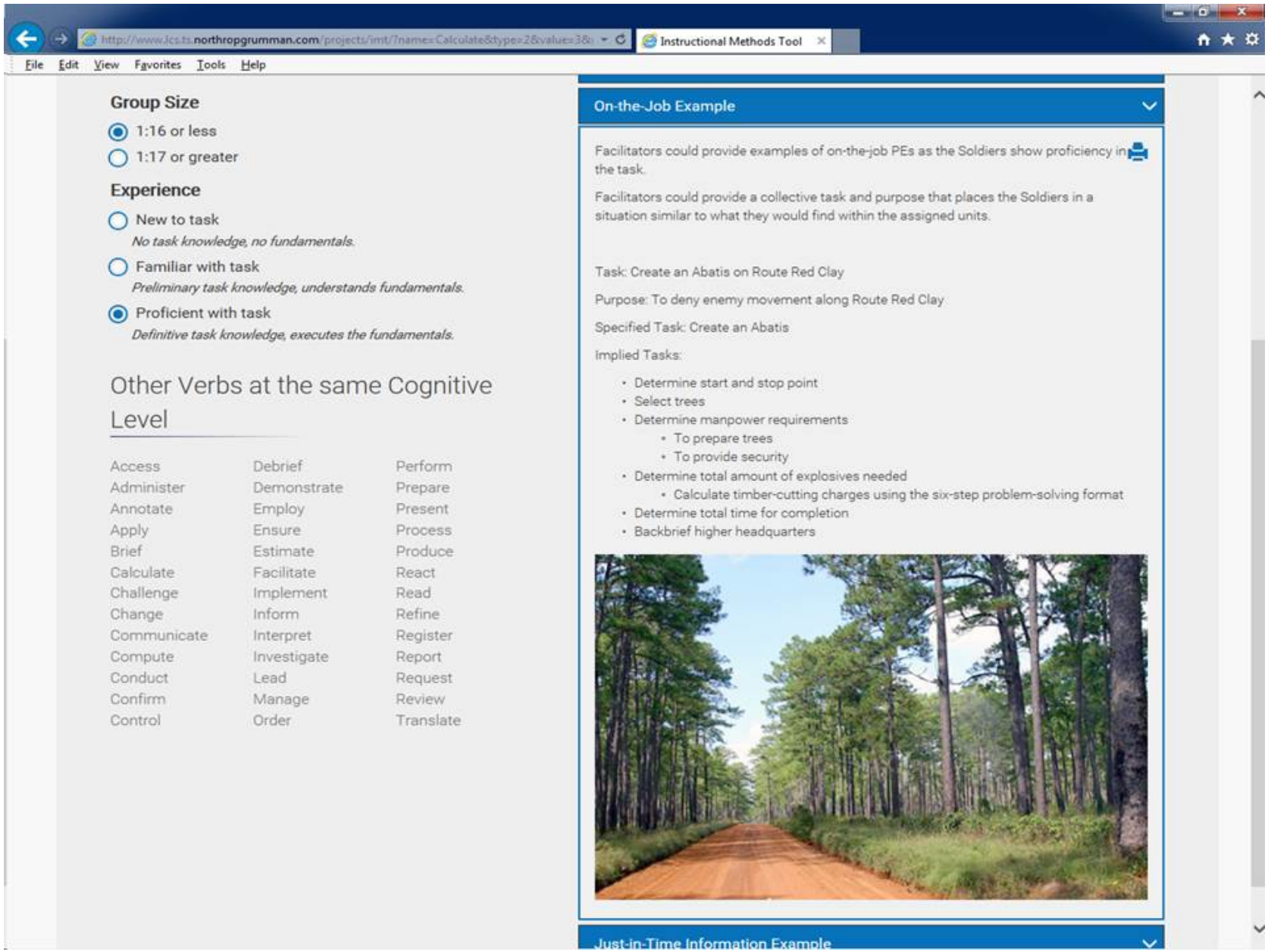
Other Considerations
With longer classes, highly proficient Soldiers could:
Shadow Facilitators
Present material to different audiences
Prepare explanations, briefings, and papers to unit leaders, stakeholders, etc
On-the-Job Example
Just-in-Time Information Example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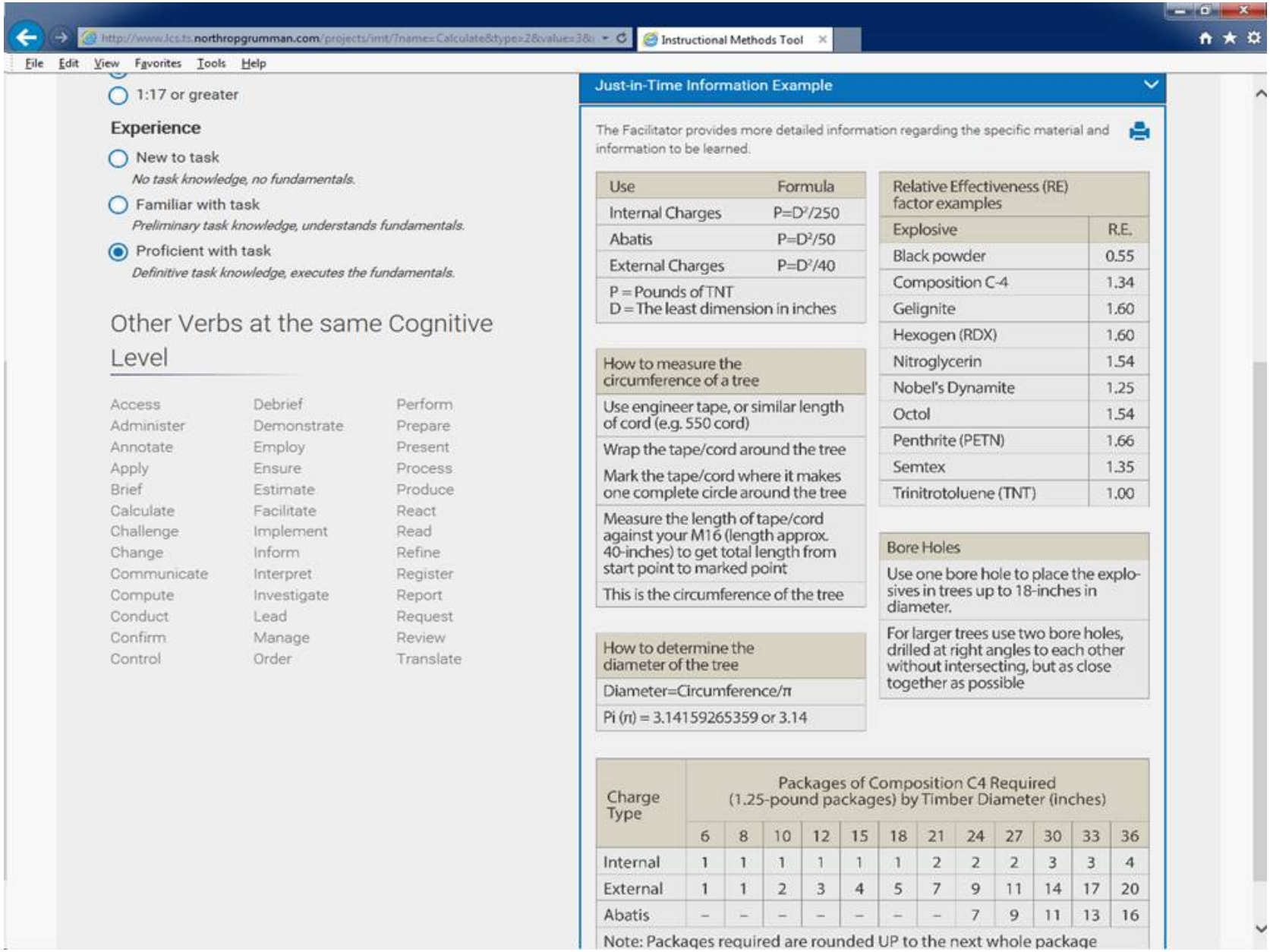
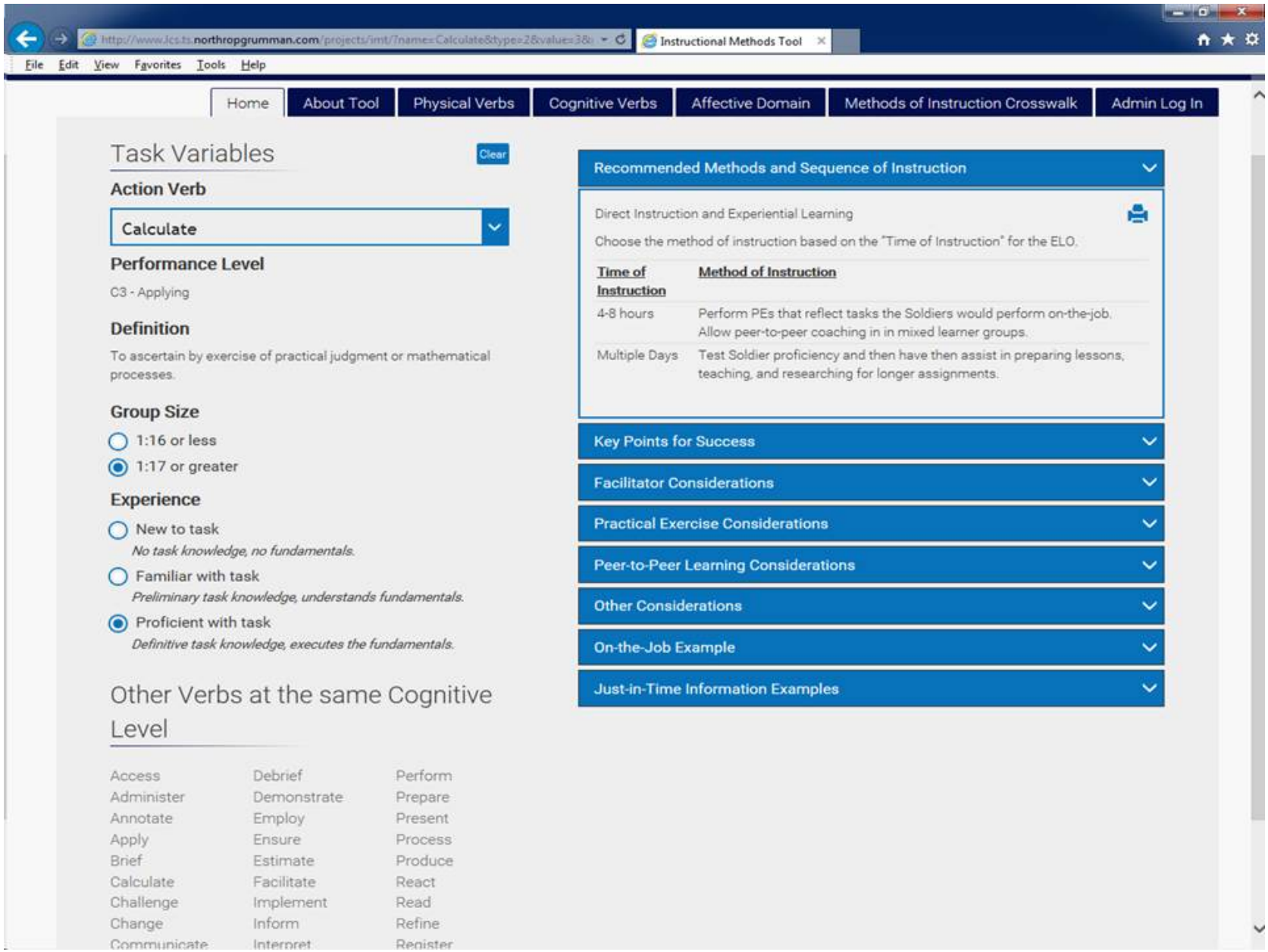
Produce
React
Read
Refine
Register
Report
Request
Review
Translate
On-the-Job Example
Facilitators could provide examples of on-the-job PEs as the Soldiers show proficiency in the task.
Facilitators could provide a collective task and purpose that places the Soldiers in a situation similar to what they 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
Just-in-Time Information Example


Instructional Methods Tool
File Edit View Favorites Tools Help
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
Perform
Prepare
Present
Process
Produce
React
Read
Refine
Register
Report
Request
Review
Translate
Just-in-Time Information Example
The Facilitator provides more detailed information regarding the specific material and information to be learned.
Use | Formula
Internal Charges | P=D²/250
Abatis | P=D²/50
External Charges | P=D²/40
P = Pounds of TNT
D = The least dimension in inches
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 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
Diameter=Circumference/π
Pi (π) = 3.14159265359 or 3.14
Relative Effectiveness (RE) factor examples
Explosive | R.E.
Black powder | 0.55
Composition C-4 | 1.34
Gelignite | 1.60
Hexogen (RDX) | 1.60
Nitroglycerin | 1.54
Nobel's Dynamite | 1.25
Octol | 1.54
Penthrite (PETN) | 1.66
Semtex | 1.35
Trinitrotoluene (TNT) | 1.00
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
Charge Type | Packages of Composition C4 Required (1.25-pound packages) by Timber Diameter (inches)
6 8 10 12 15 18 21 24 27 30 33 36
Internal 1 1 1 1 1 1 2 2 2 3 3 4
External 1 1 2 3 4 5 7 9 11 14 17 20
Abatis – – – – – – – 7 9 11 13 16
Note: Packages required are rounded UP to the next whole package

Appendix V

Military Task Examples
C2+C3 – Understanding and Applying / Large Group / Proficient with Task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Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
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.
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Preliminary task knowledge, understands fundamentals.
Proficient with task
Definitive task knowledge, executes the fundamentals.
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Estimate
Facilitate
Implement
Inform
Interpret
Perform
Prepare
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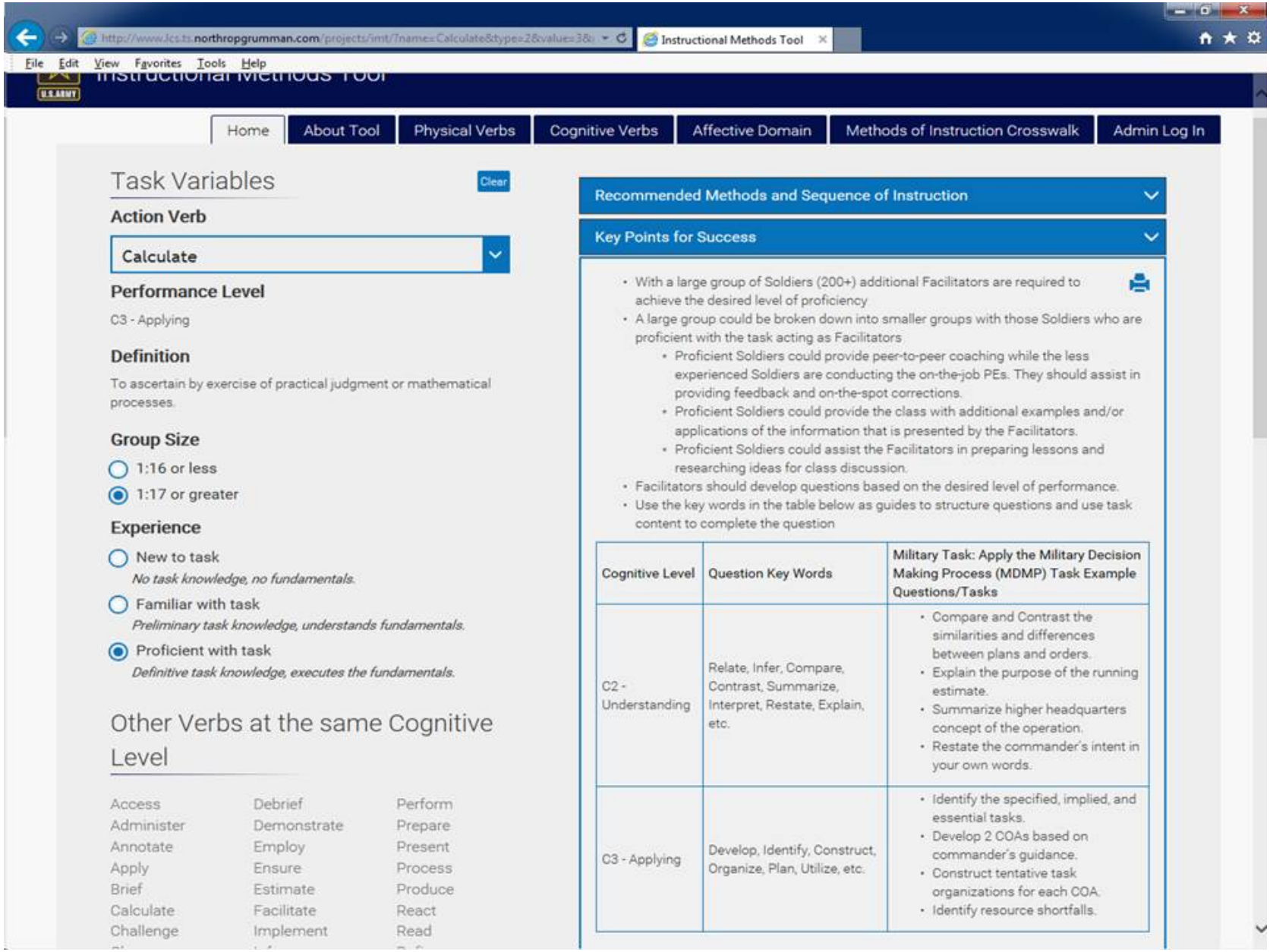
Process
Produce
React
Read
Refine
Register
Recommended Methods and Sequence of Instruction
Direct Instruction and Experiential Learning
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-8 hours
Perform PEs that reflect tasks the Soldiers would perform on-the-job. Allow peer-to-peer coaching in in mixed learner groups.
Multiple Days
Test Soldier proficiency and then have then 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 Examples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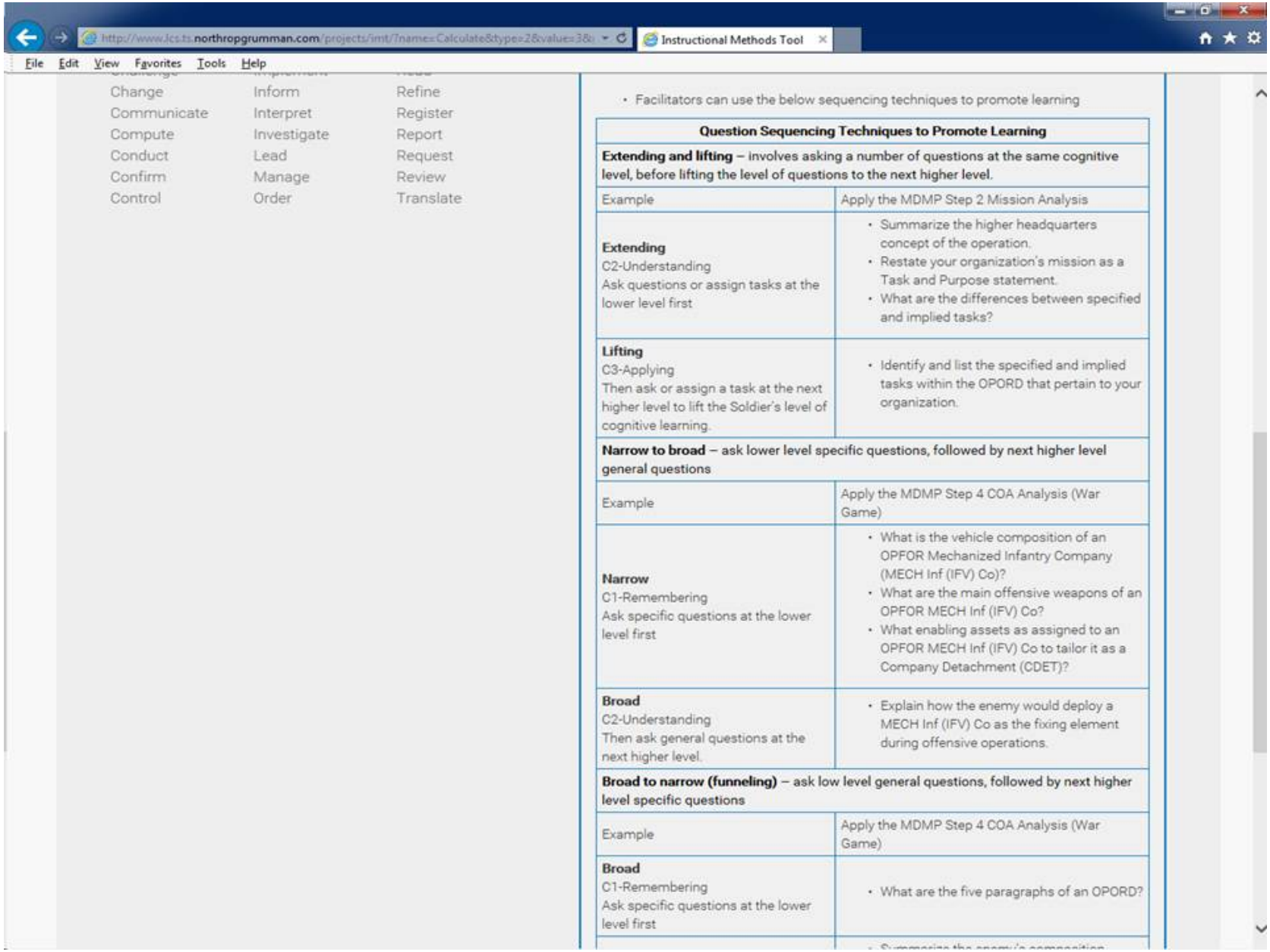
Estimate
Facilitate
Implement
Perform
Prepare
Present
Process
Produce
React
Read
Recommended Methods and Sequence of Instruction
Key Points for Success
With a large group of Soldiers (200+) additional Facilitators are required to achieve the desired level of proficiency
A large group could be broken down into smaller groups with those Soldiers who are proficient with the task acting as 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 provide the class with additional examples and/or applications of the information that is presented by the Facilitators.
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
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.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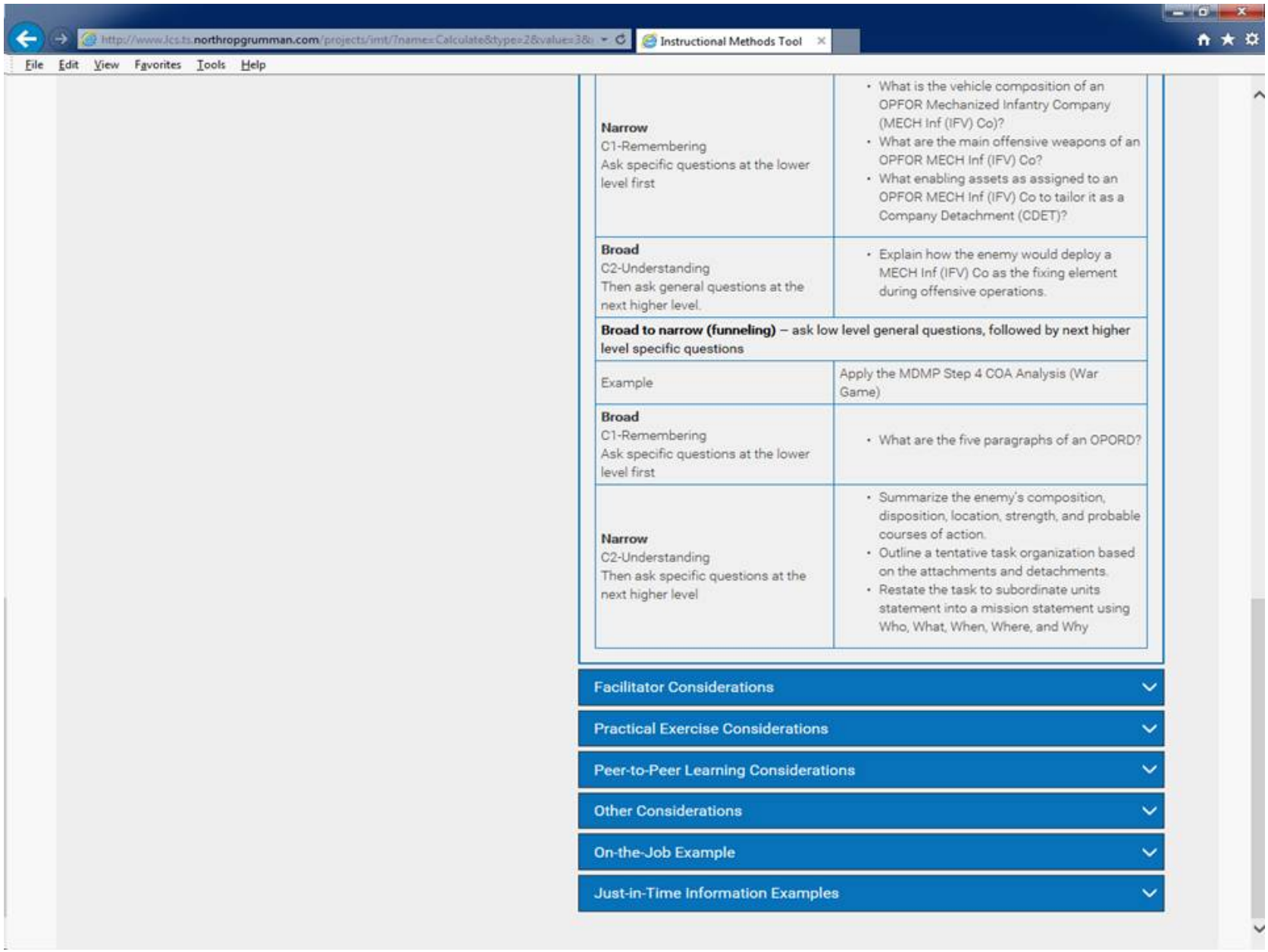
Request
Review
Translate
• Facilitators can use the below sequencing techniques to promote learning
Question Sequencing Techniques to Promote Learning
Extending and lifting – involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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
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 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
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?


http://www.jcs.ts.northropgrumman.com/projects/imt/?name=Calculate&type=2&value=3&
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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 as assigned to an OPFOR MECH Inf (IFV) Co to tailor it as a Company Detachment (CDET)?
Broad
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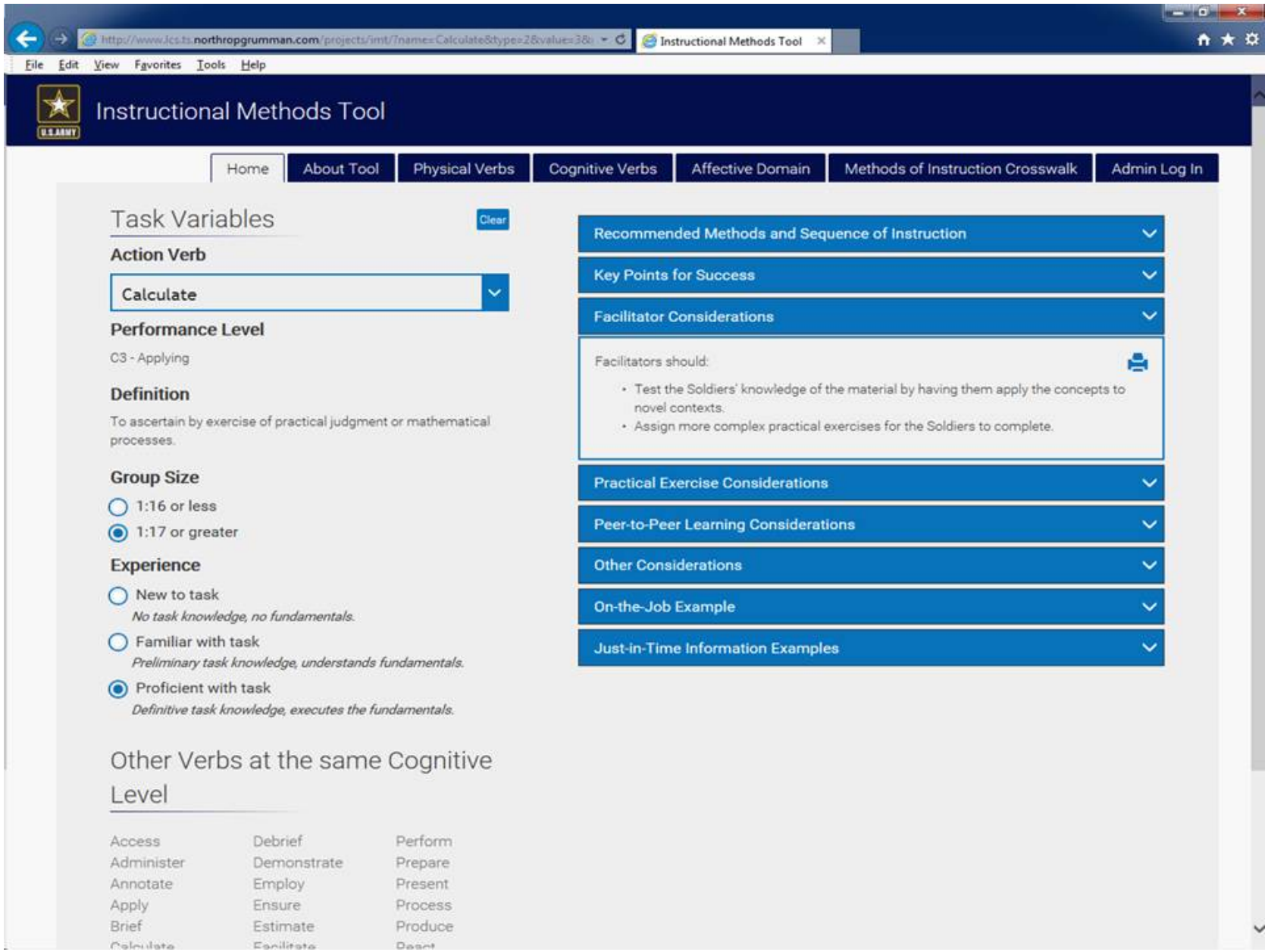
Broad to narrow (funneling) – ask low level general questions, followed by next higher level specific questions
Example
Apply the MDMP Step 4 COA Analysis (War Game)
Broad
C1-Remembering
Ask specific questions at the lower level first
What are the five paragraphs of an OPORD?
Narrow
C2-Understanding
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
Peer-to-Peer Learning Considerations
Other Considerations
On-the-Job Example
Just-in-Time Information Examples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Affective Domain
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Task Variables
Clear
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Calculate
Performance Level
C3 - Applying
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1:17 or greater
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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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Administer
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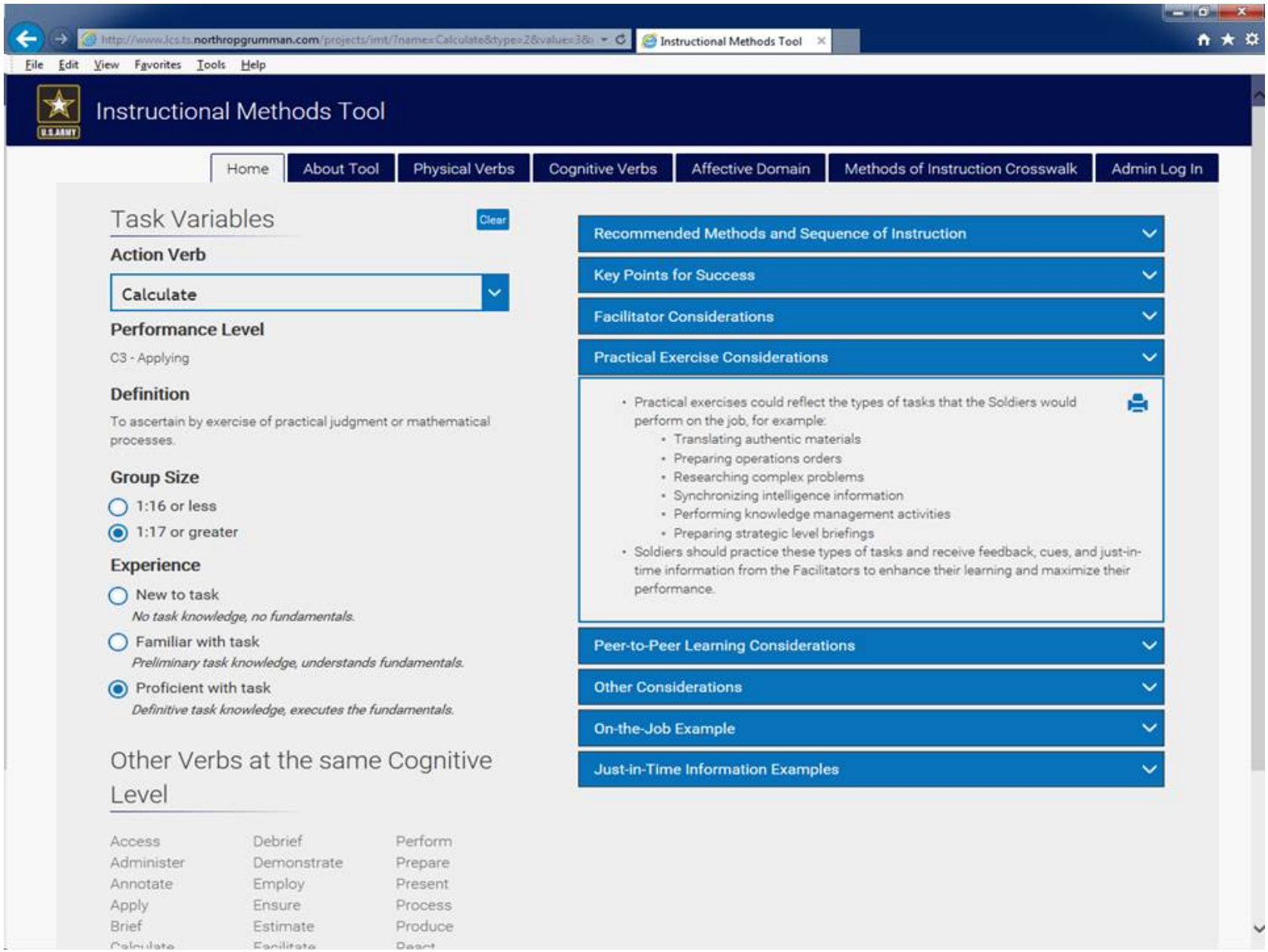
Apply
Brief
Debrief
Demonstrate
Employ
Ensure
Estimate
Perform
Prepare
Present
Process
Produce
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Test the Soldiers' knowledge of the material by having them apply the concepts to novel contexts.
Assign more complex practical exercises for the Soldiers to complete.
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Other Considerations
On-the-Job Example
Just-in-Time Information Examples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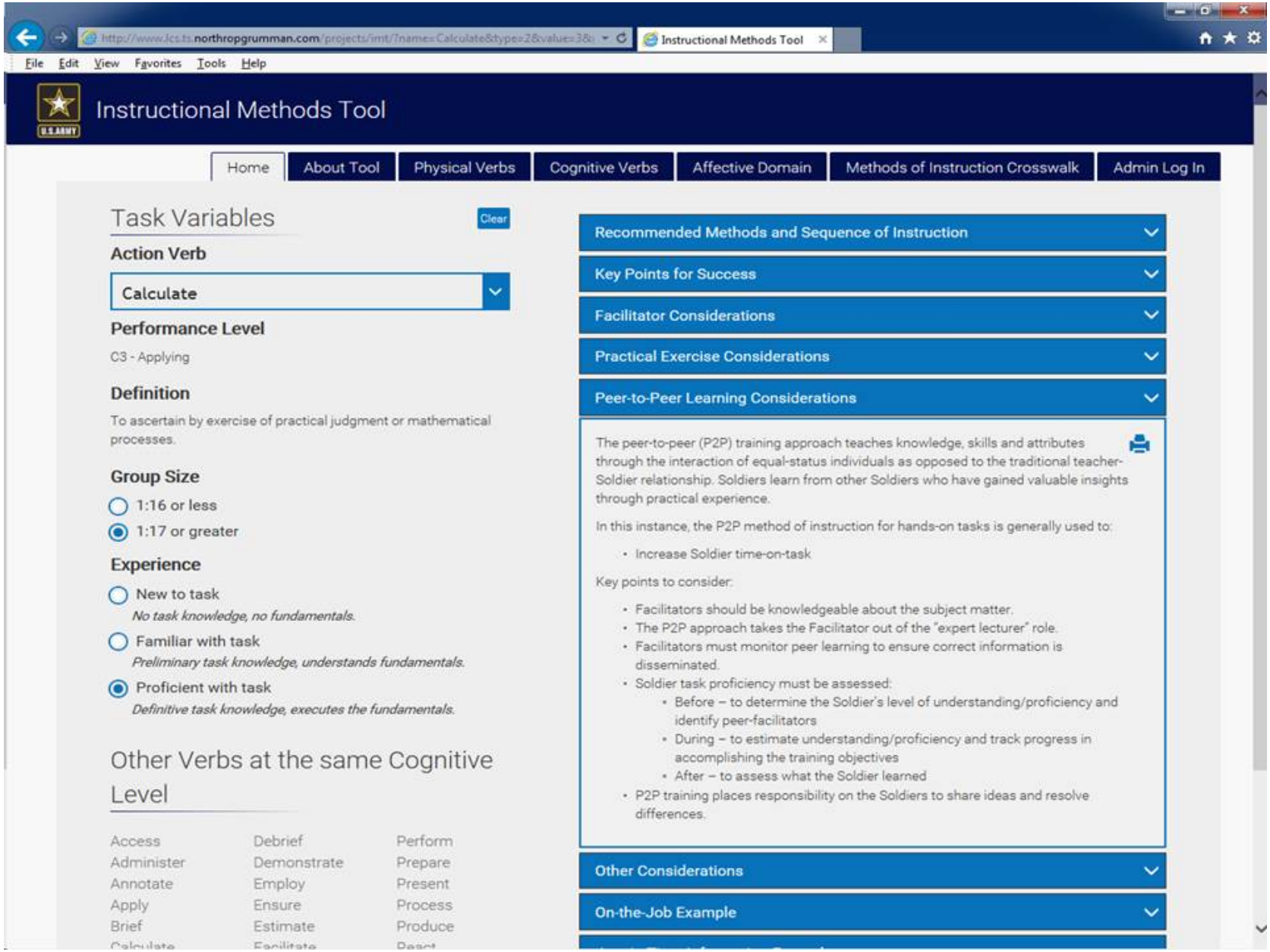
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Practical exercises could reflect the types of tasks that the Soldiers would perform on the job, for example:
Translating authentic materials
Preparing operations orders
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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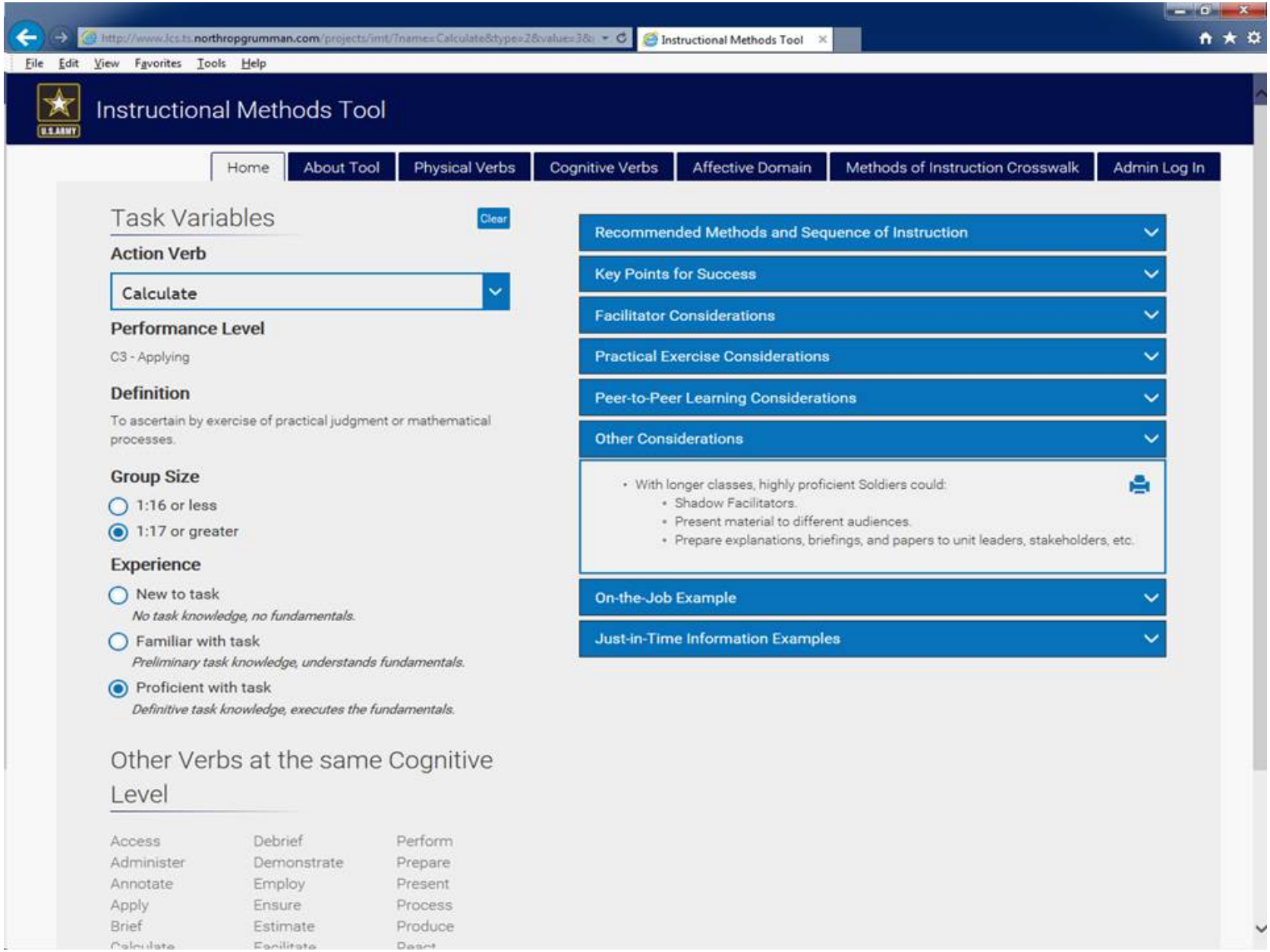
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier 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.
Other Considerations
On-the-Job Example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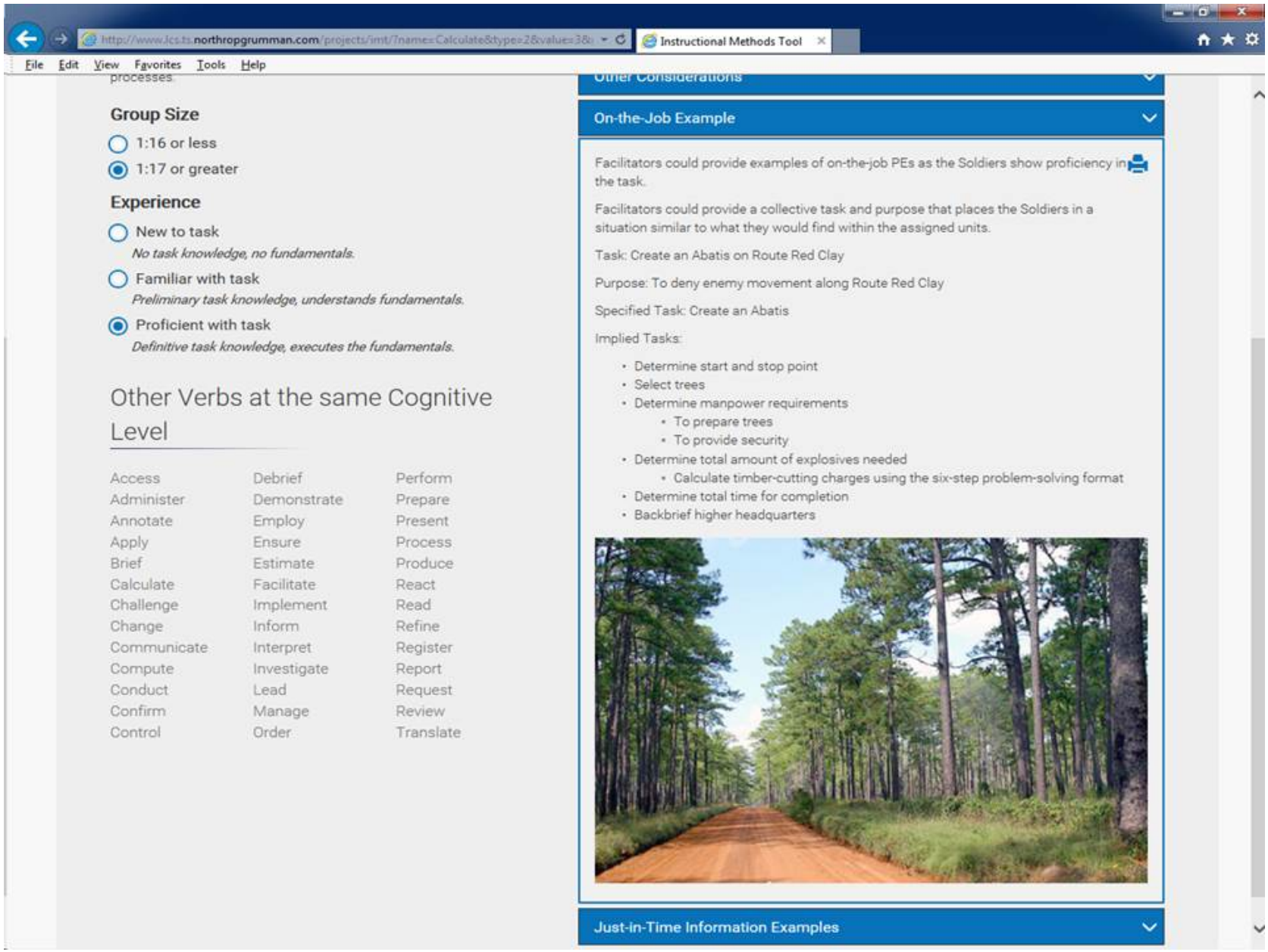
Produce
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Other Considerations
With longer classes, highly proficient Soldiers could:
Shadow Facilitators.
Present material to different audiences.
Prepare explanations, briefings, and papers to unit leaders, stakeholders, etc.
On-the-Job Example
Just-in-Time Information Examples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processes.
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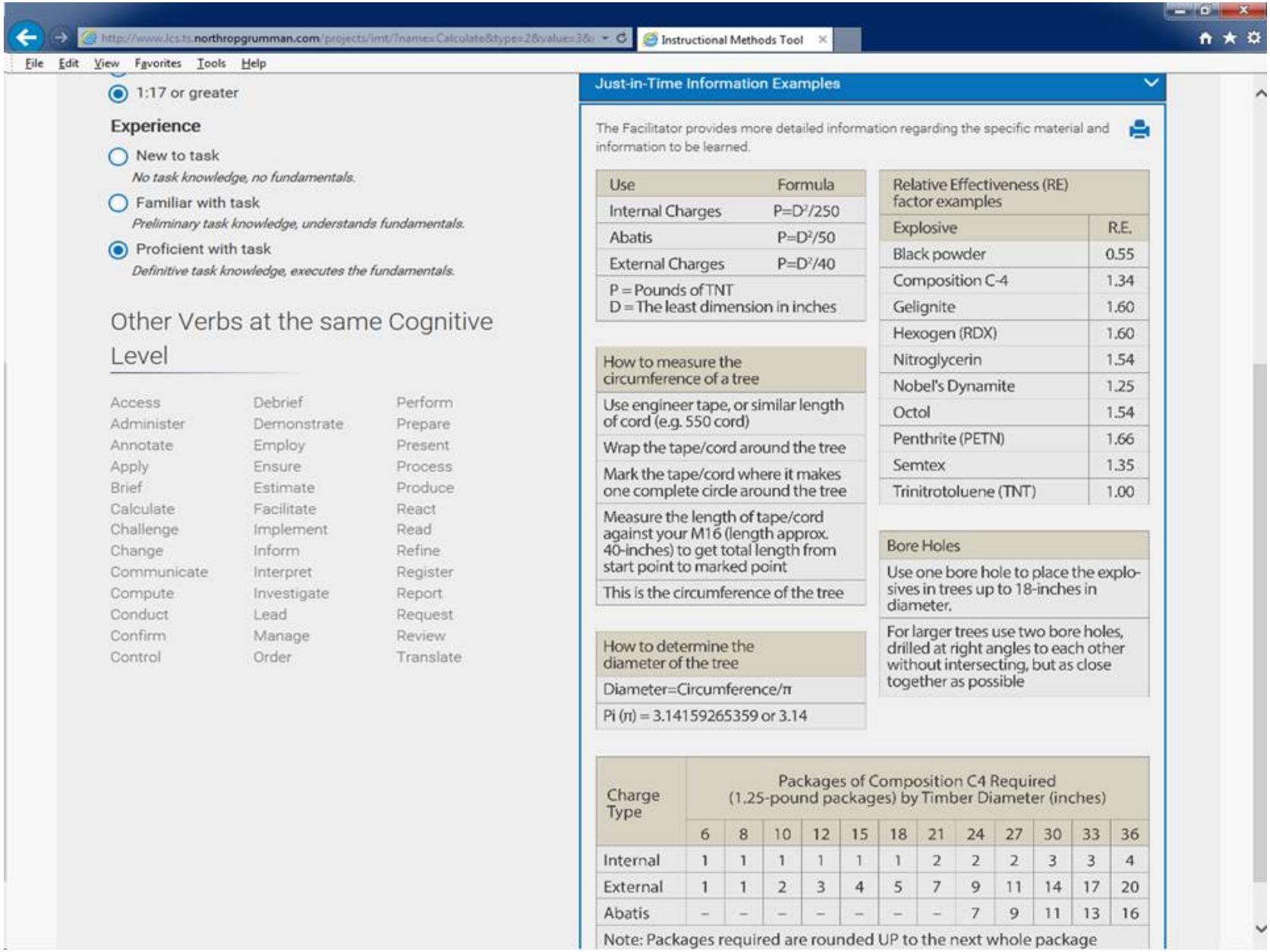
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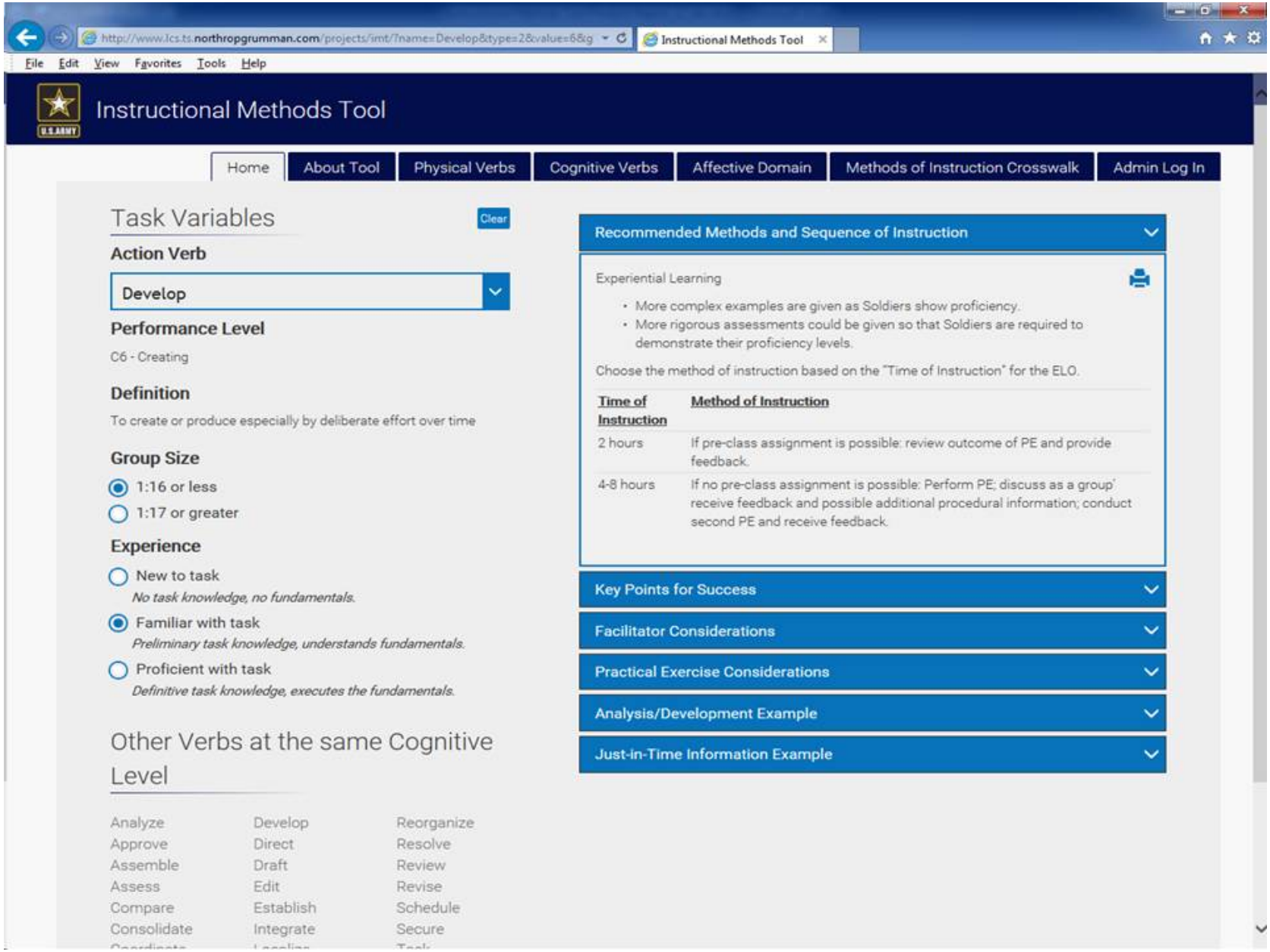
Abatis – – – – – – – 7 9 11 13 16
Note: Packages required are rounded UP to the next whole package

Appendix W

Military Task Examples
C4+C5+C6 – Analyzing, Evaluating, and Creating / Small Group / Familiar with Task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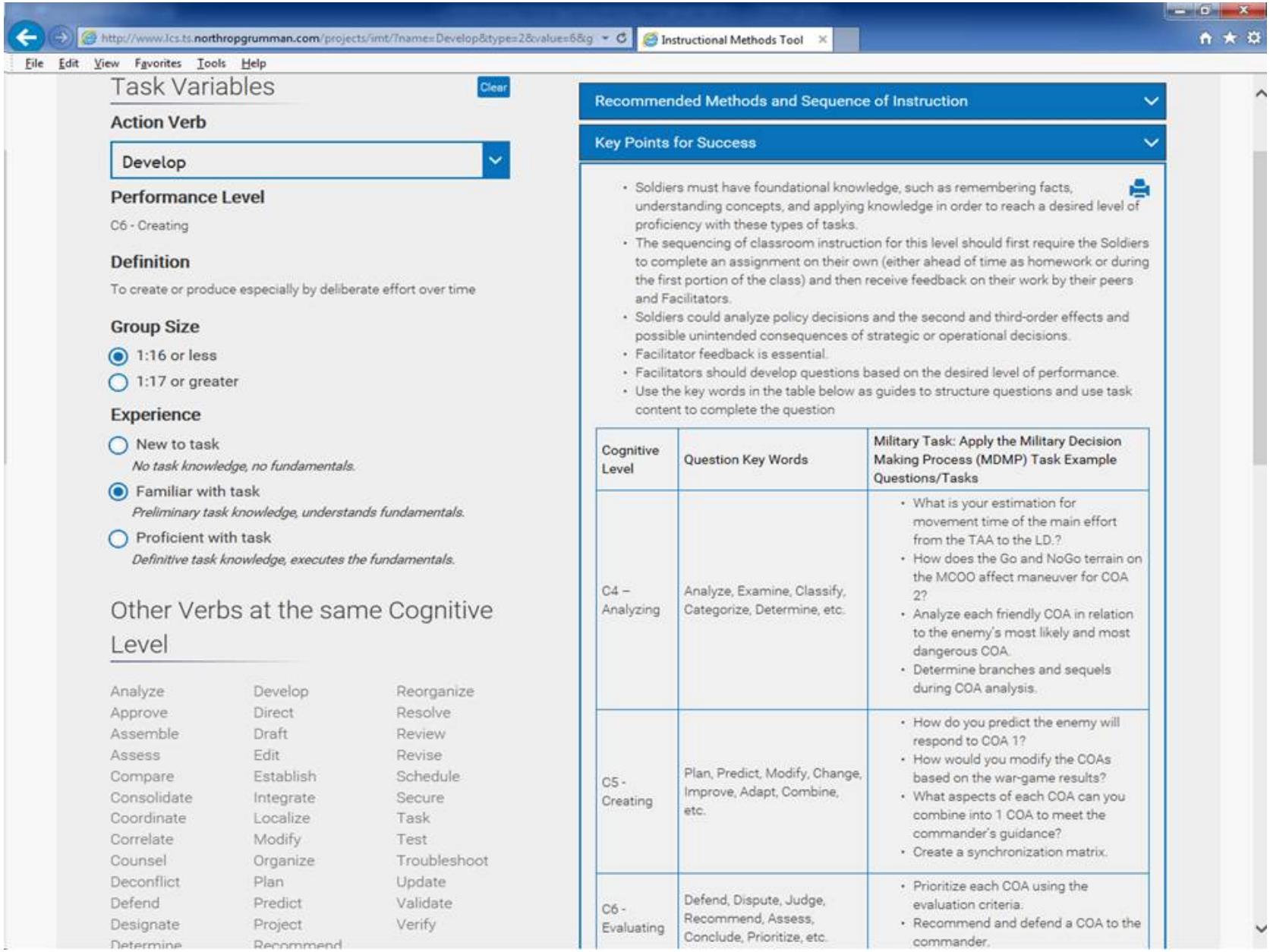
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Develop
Performance Level
C6 - Creating
Definition
To create or produce especially by deliberate effort over time
Group Size
1:16 or less
1:17 or greater
Experience
New to task
No task knowledge, no fundamentals.
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
More complex examples are given as Soldiers show proficiency.
More rigorous assessments could be given so that Soldiers are required to demonstrate their proficiency levels.
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
2 hours
If pre-class assignment is possible: review outcome of PE and provide feedback.
4-8 hours
If no pre-class assignment is possible: Perform PE; discuss as a group' receive feedback and possible additional procedural information; conduct second PE and receive feedback.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Analysis/Development Example
Just-in-Time Information Example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Instructional Methods Tool
File Edit View Favorites Tools Help
Task Variables
Clear
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
Coordinate
Correlate
Counsel
Deconflict
Defend
Designate
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Edit
Establish
Integrate
Localize
Modify
Organize
Plan
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Reorganize
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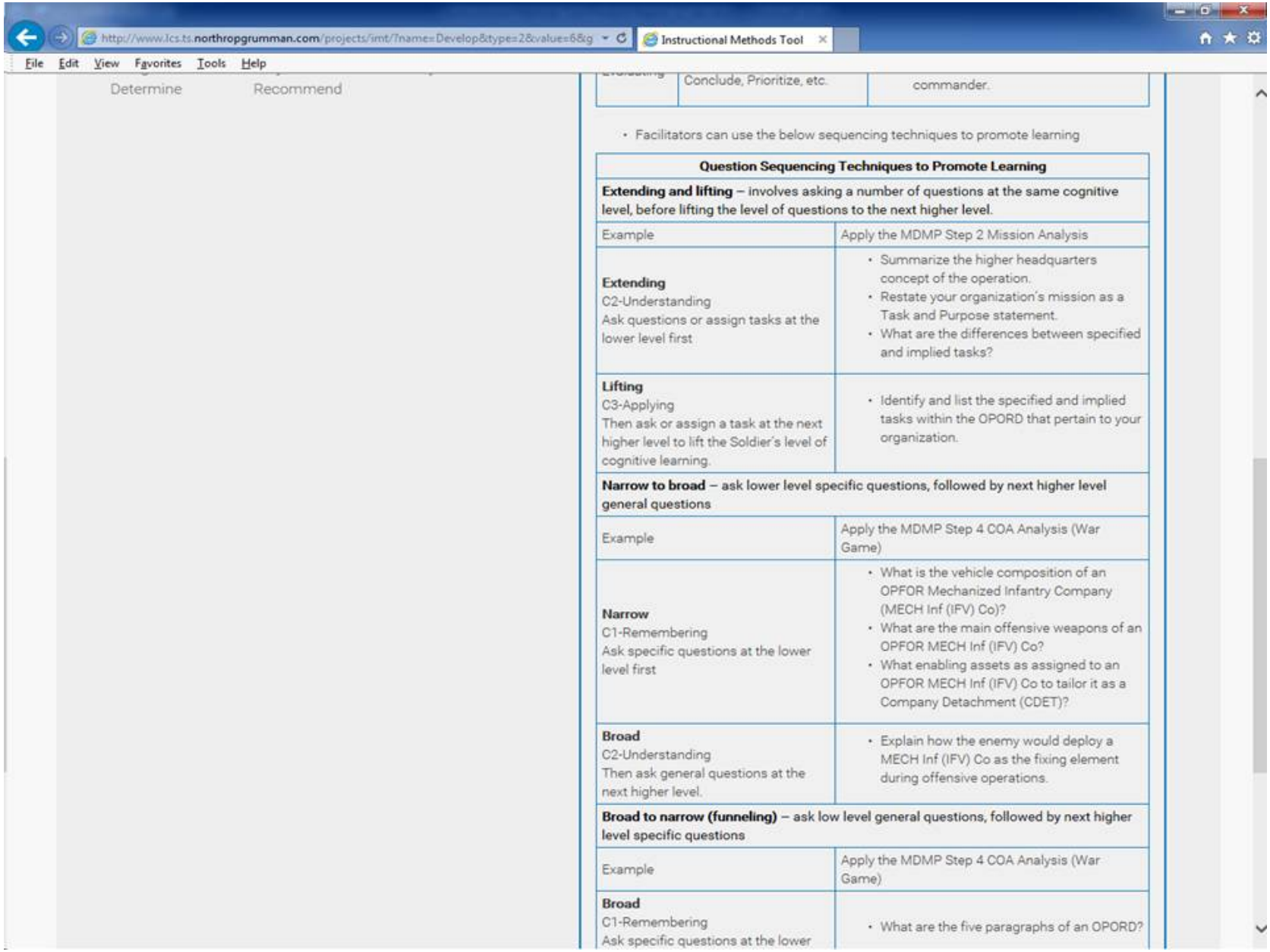
Recommended Methods and Sequence of Instruction
Key Points for Success
Soldiers must have foundational knowledge, such as remembering facts, understanding concepts, and applying knowledge in order to reach a desired level of proficiency with these types of tasks.
The sequencing of classroom instruction for this level should first require the Soldiers 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.
Soldiers could analyze policy decisions and the second and third-order effects and possible unintended consequences of strategic or operational decisions.
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
Cognitive Level
Question Key Words
Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks
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 MCOO 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.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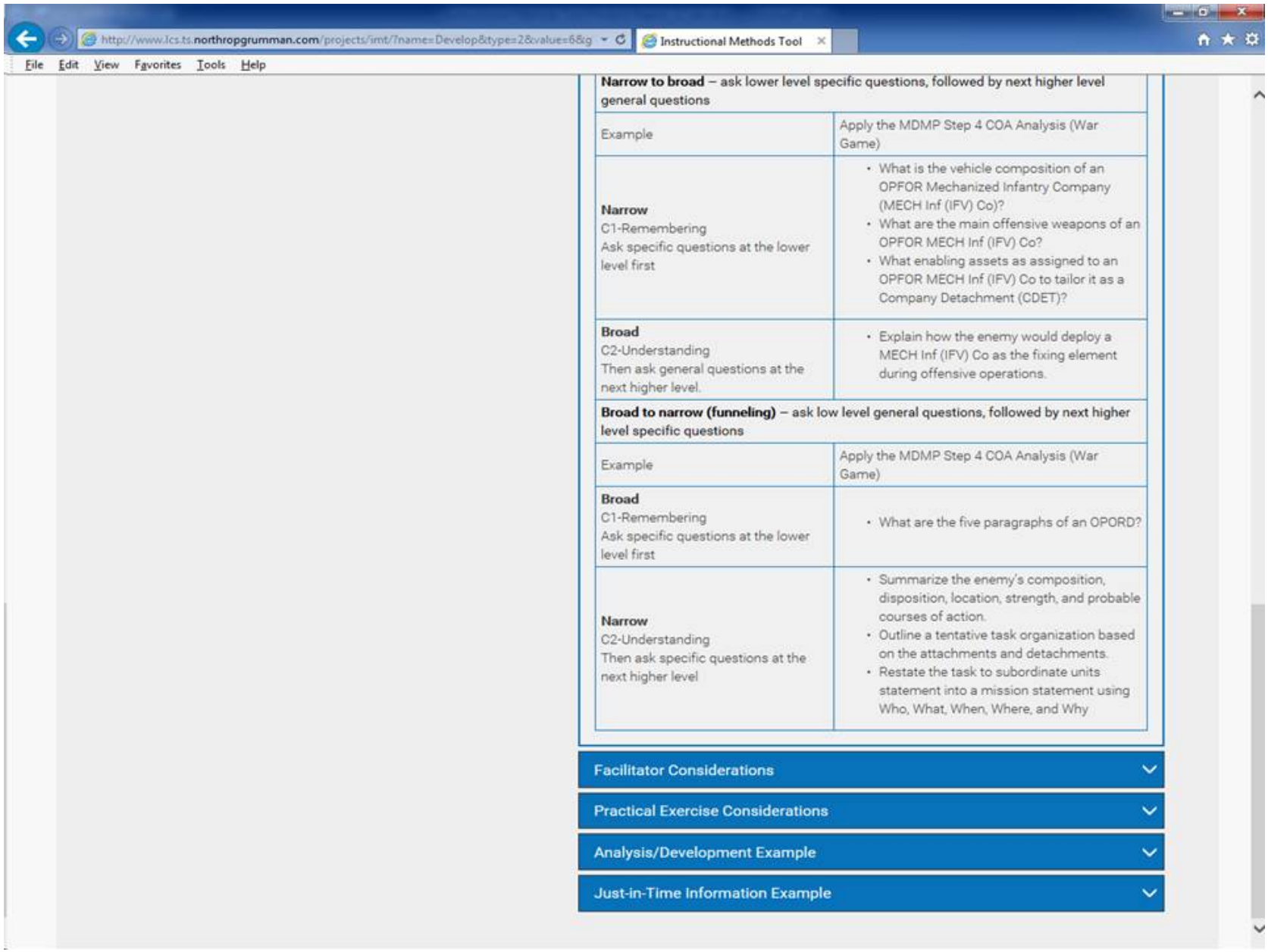
Determine
Recommend
Conclude, Prioritize, etc.
commander.
• Facilitators can use the below sequencing techniques to promote learning
Question Sequencing Techniques to Promote Learning
Extending and lifting – involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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
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 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
Example
Apply the MDMP Step 4 COA Analysis (War Game)
Broad
C1-Remembering
Ask specific questions at the lower
• What are the five paragraphs of an OPORD?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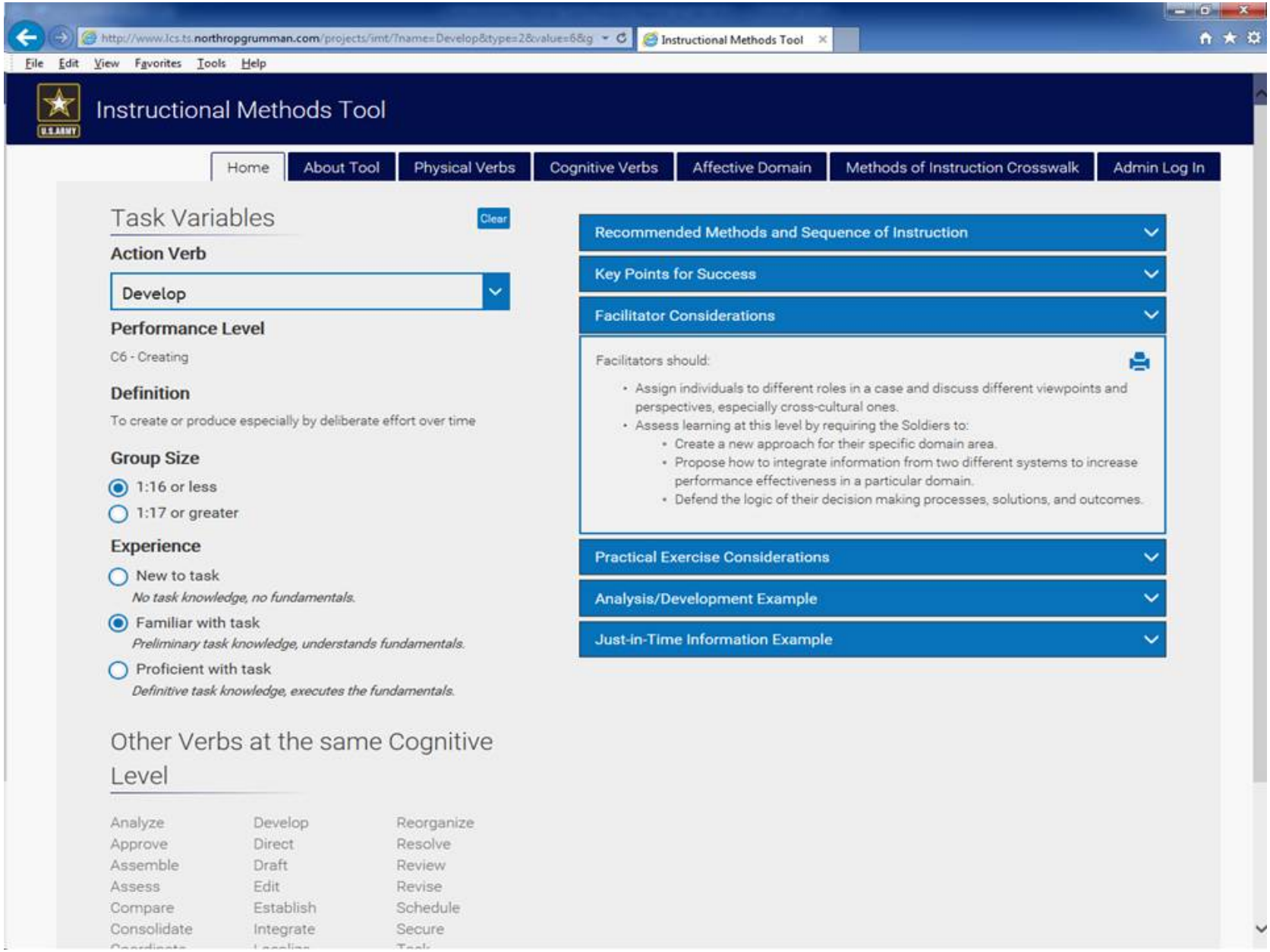
Then ask general questions at the next higher level.
Explain how the enemy would deploy a MECH Inf (IFV) Co as the fixing element during offensive operations.
Broad to narrow (funneling) – ask low level general questions, followed by next higher level specific questions
Example
Apply the MDMP Step 4 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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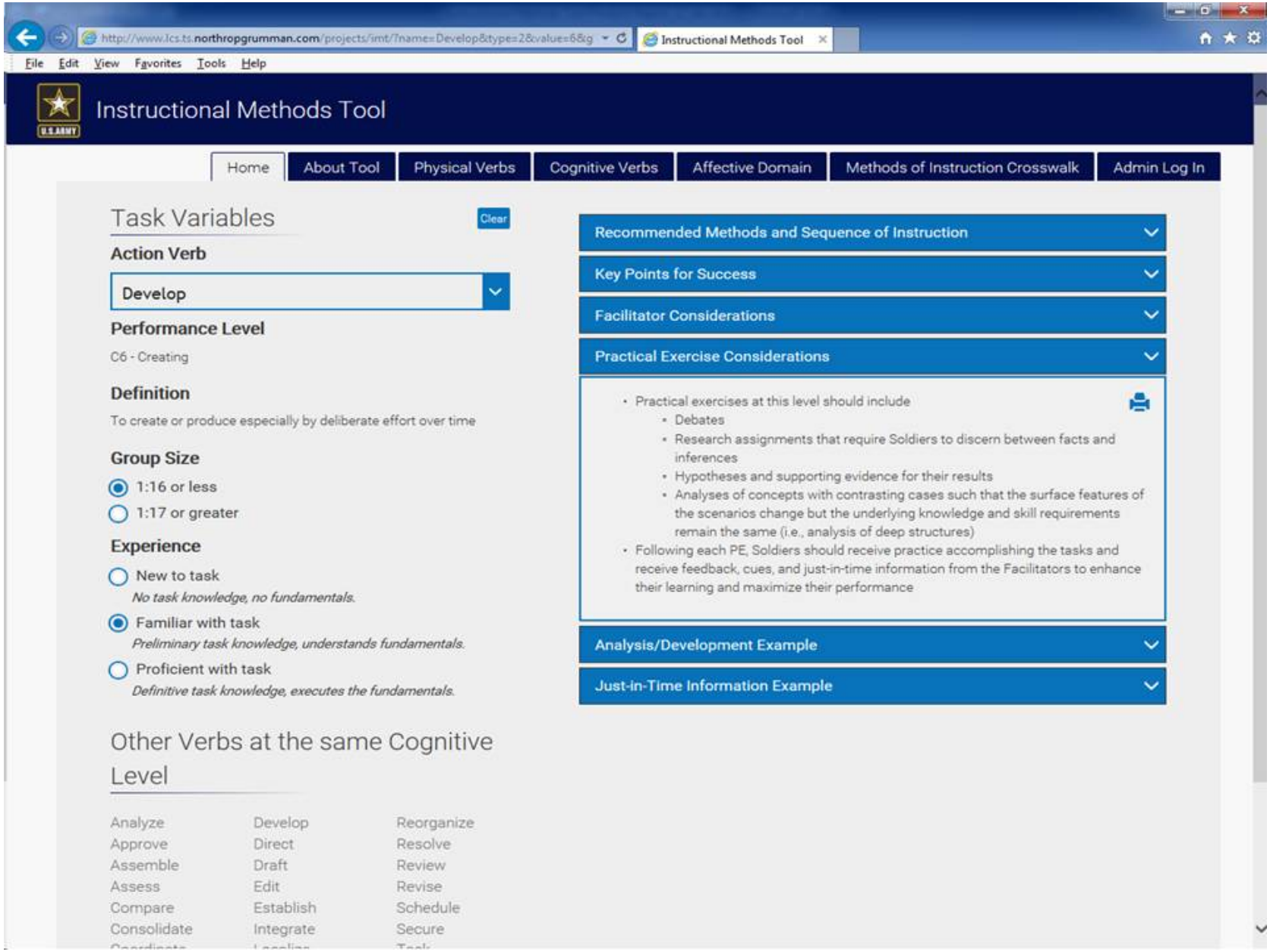
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Assign individuals to different roles in a case and discuss different viewpoints and perspectives, especially cross-cultural ones.
Assess learning at this level by requiring the Soldiers 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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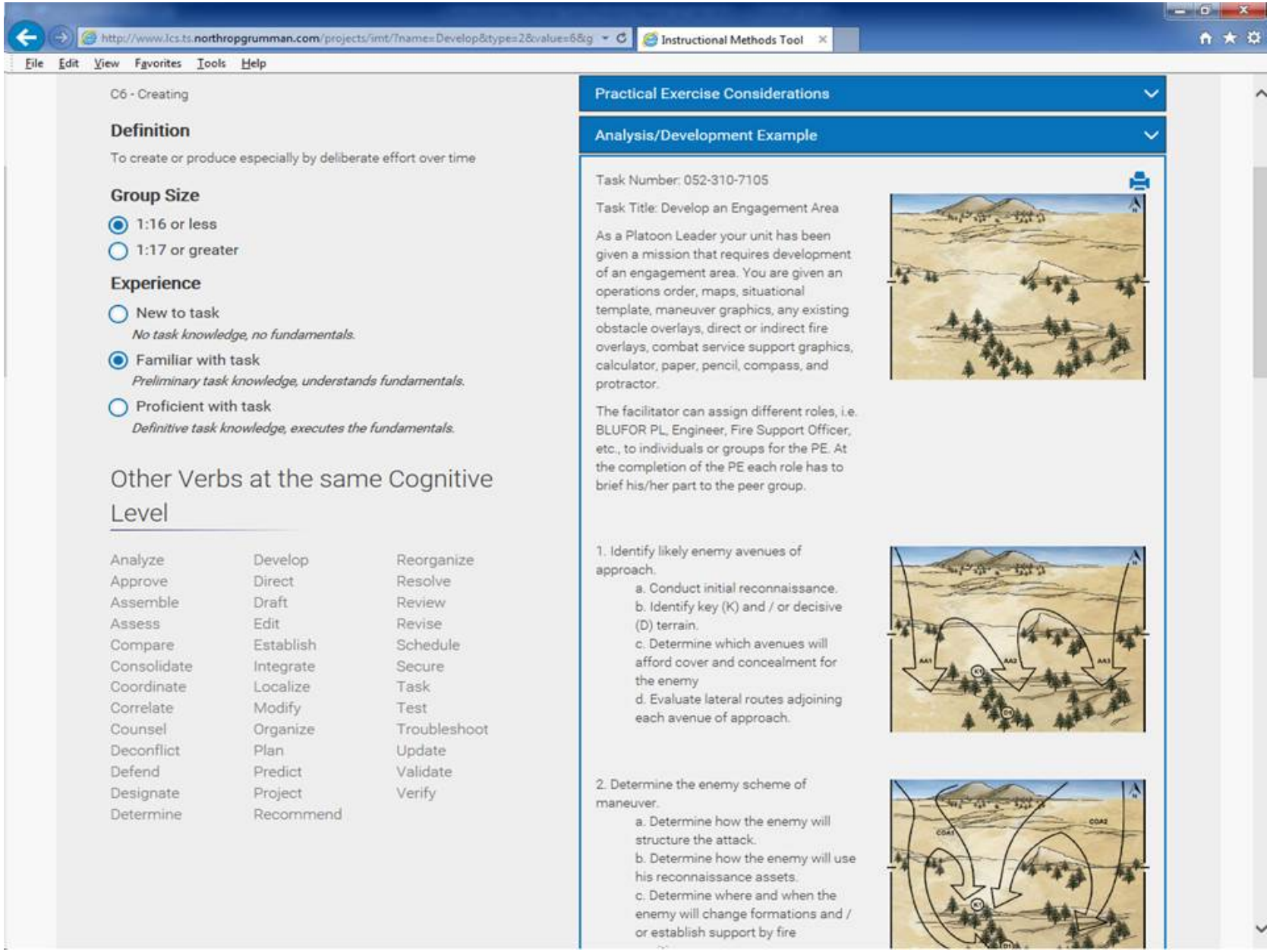
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Practical exercises at this level should include
Debates
Research assignments that require Soldiers to discern between facts and inferences
Hypotheses and supporting evidence for their results
Analyses of 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)
Following each PE, Soldiers 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
Analysis/Development Example
Just-in-Time Information Example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Troubleshoot
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Practical Exercise Considerations
Analysis/Development Example
Task Number: 052-310-7105
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 establish support by fire

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 platoons 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

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.

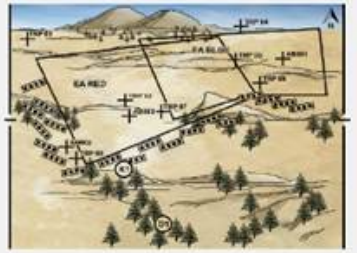
5. Plan and integrate obstacles
   a. Understand obstacle group intent.
   b. Coordinate with the engineers.
   c. Site and mark individual obstacle locations.
   d. Refine direct and indirect fire control measures.
   e. Identify lanes and gaps.
   f. Report obstacle locations and gaps to higher headquarters.

6. Plan and integrate indirect fires.
   a. Determine the purpose of fires and the essential fire support task

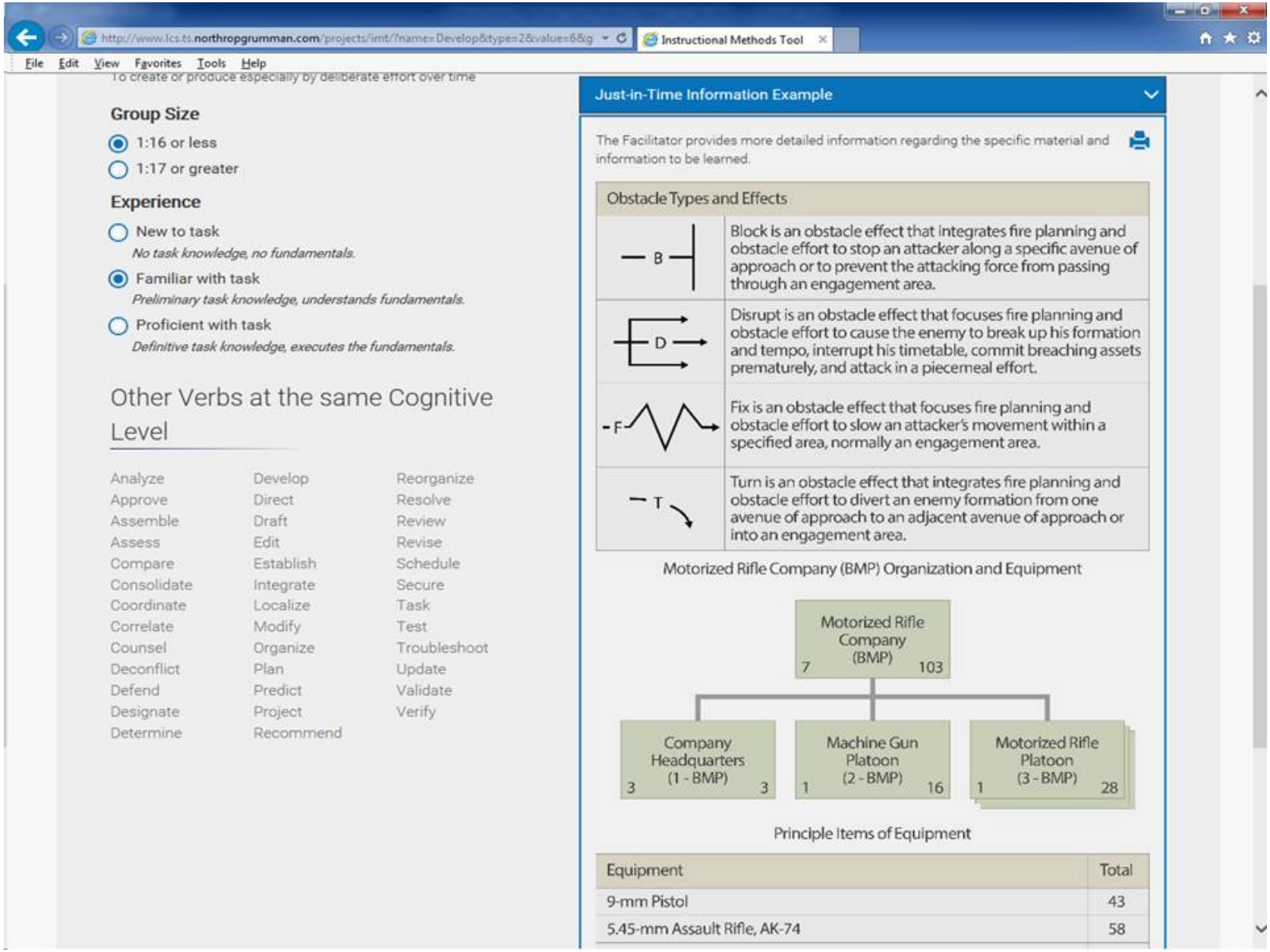
engineer assets depart.

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 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 FIST (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 lazing 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.



Just-in-Time Information Example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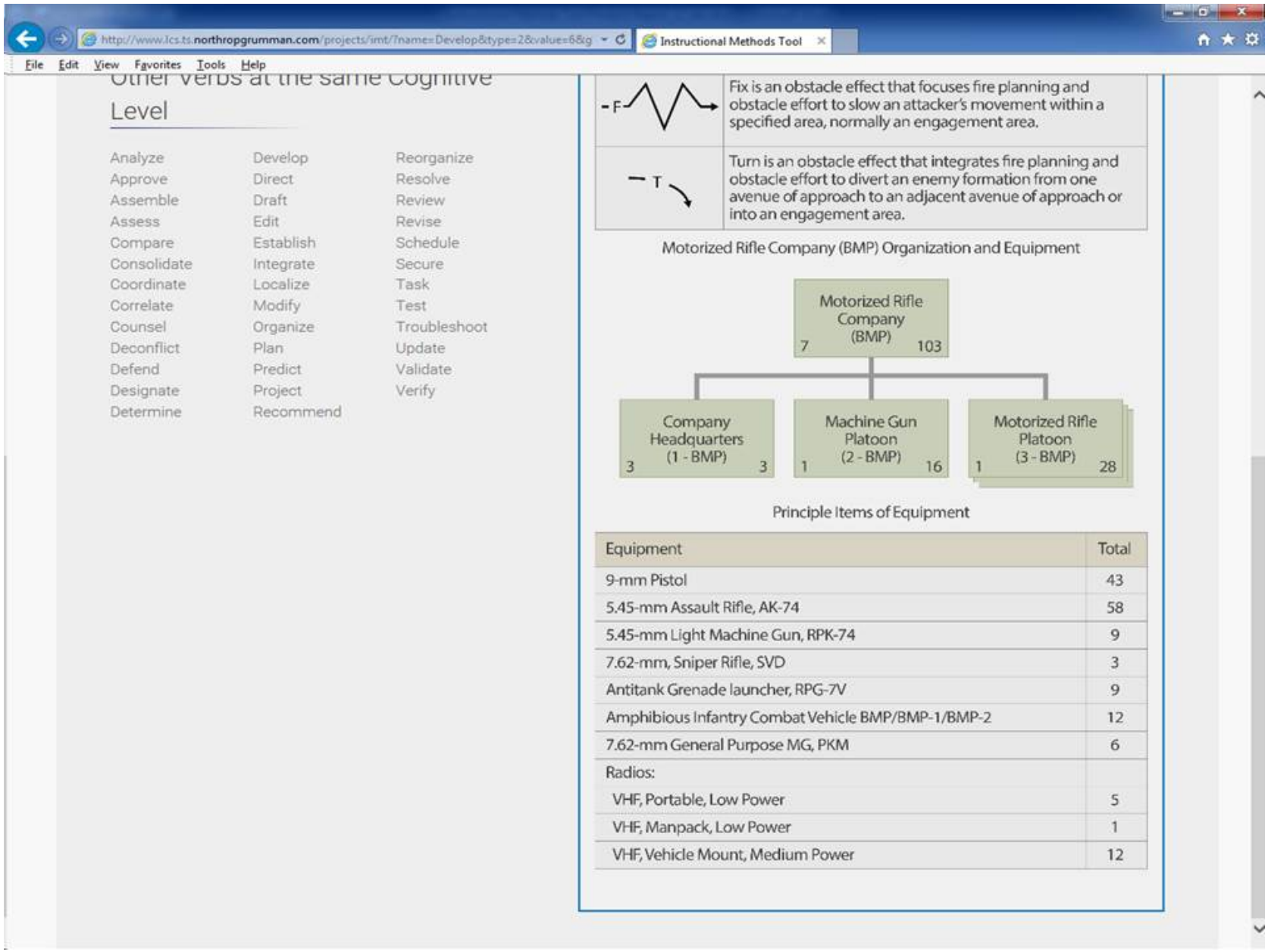
Just-in-Time Information Example
The Facilitator provides more detailed information regarding the specific material and information to be learned.
Obstacle Types and Effects
B
Block is an obstacle effect that integrates fire planning and obstacle effort to stop an attacker along a specific avenue of approach or to prevent the attacking force from passing through an engagement area.
D
Disrupt is 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.
F
Fix 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
Turn 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.
Motorized Rifle Company (BMP) Organization and Equipment
Motorized Rifle Company (BMP)
7
103
Company Headquarters (1 - BMP)
3
3
Machine Gun Platoon (2 - BMP)
1
16
Motorized Rifle Platoon (3 - BMP)
1
28
Principle Items of Equipment
Equipment
Total
9-mm Pistol
43
5.45-mm Assault Rifle, AK-74
58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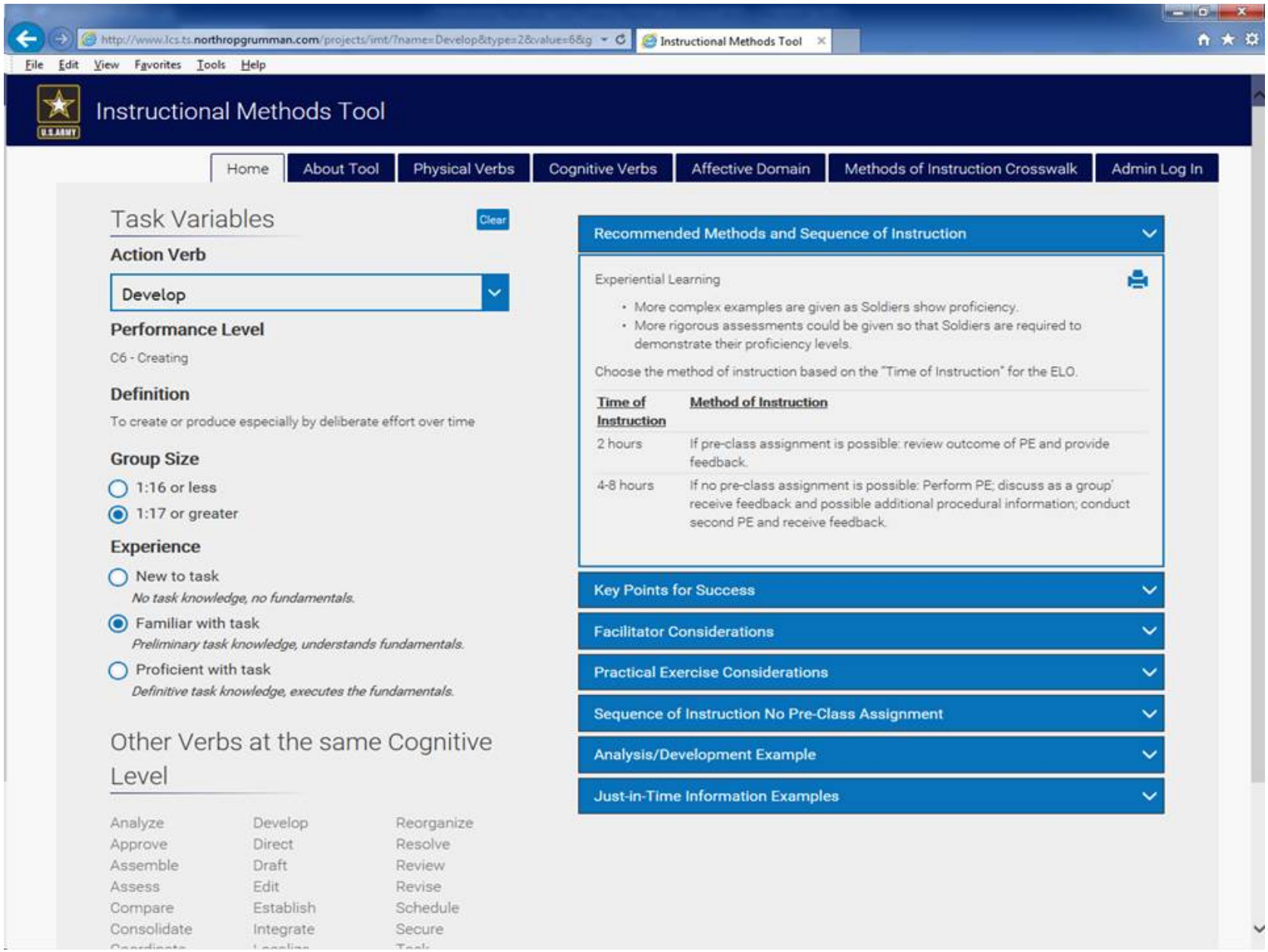
Principle Items of Equipment
Equipment | Total
9-mm Pistol | 43
5.45-mm Assault Rifle, AK-74 | 58
5.45-mm Light Machine Gun, RPK-74 | 9
7.62-mm, Sniper Rifle, SVD | 3
Antitank Grenade launcher, RPG-7V | 9
Amphibious Infantry Combat Vehicle BMP/BMP-1/BMP-2 | 12
7.62-mm General Purpose MG, PKM | 6
Radios:
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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Recommended Methods and Sequence of Instruction
Experiential Learning
More complex examples are given as Soldiers show proficiency.
More rigorous assessments could be given so that Soldiers are required to demonstrate their proficiency levels.
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
2 hours
If pre-class assignment is possible: review outcome of PE and provide feedback.
4-8 hours
If no pre-class assignment is possible: Perform PE; discuss as a group' receive feedback and possible additional procedural information; conduct second PE and receive feedback.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Sequence of Instruction No Pre-Class Assignment
Analysis/Development Example
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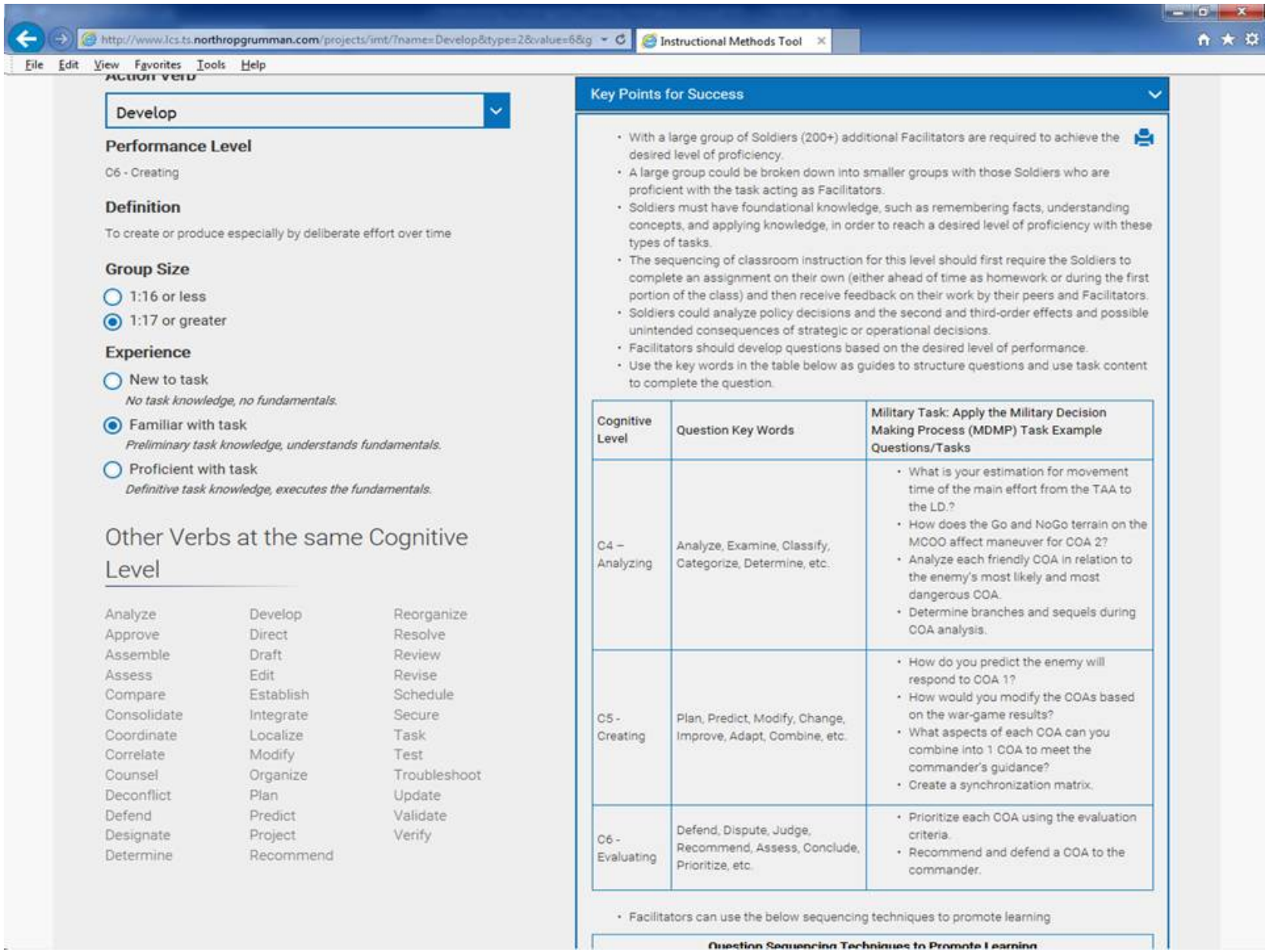
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With a large group of Soldiers (200+) additional Facilitators are required to achieve the desired level of proficiency.
A large group could be broken down into smaller groups with those Soldiers who are proficient with the task acting as Facilitators.
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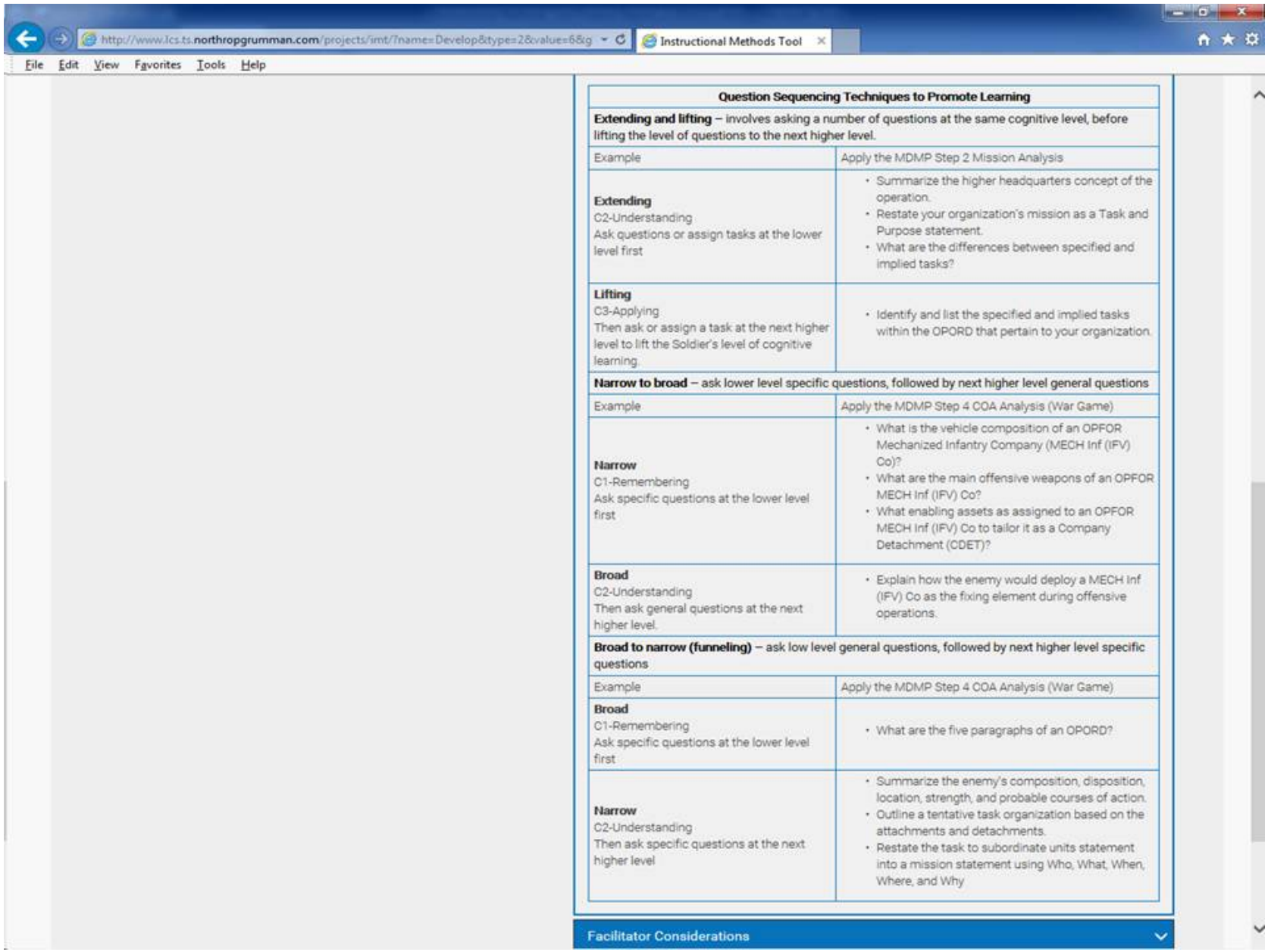
Question Sequencing Techniques to Promote Learning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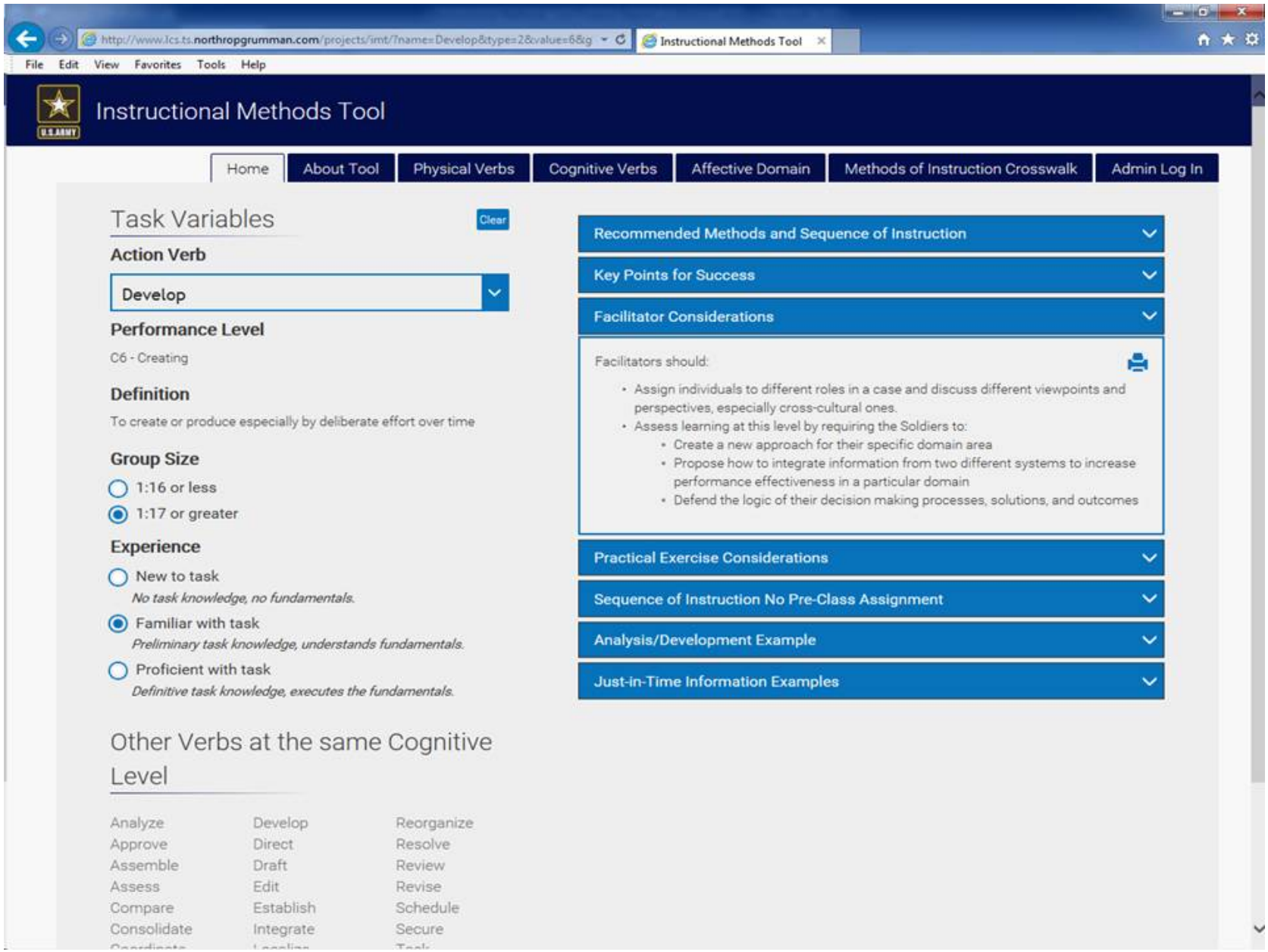
Question Sequencing Techniques to Promote Learning
Extending and lifting – involves asking a number of questions at the same cognitive level, before lifting the level of questions to the next higher level.
Example
Apply the MDMP Step 2 Mission Analysis
Extending
C2-Understanding
Ask questions or assign 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
C3-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
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 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
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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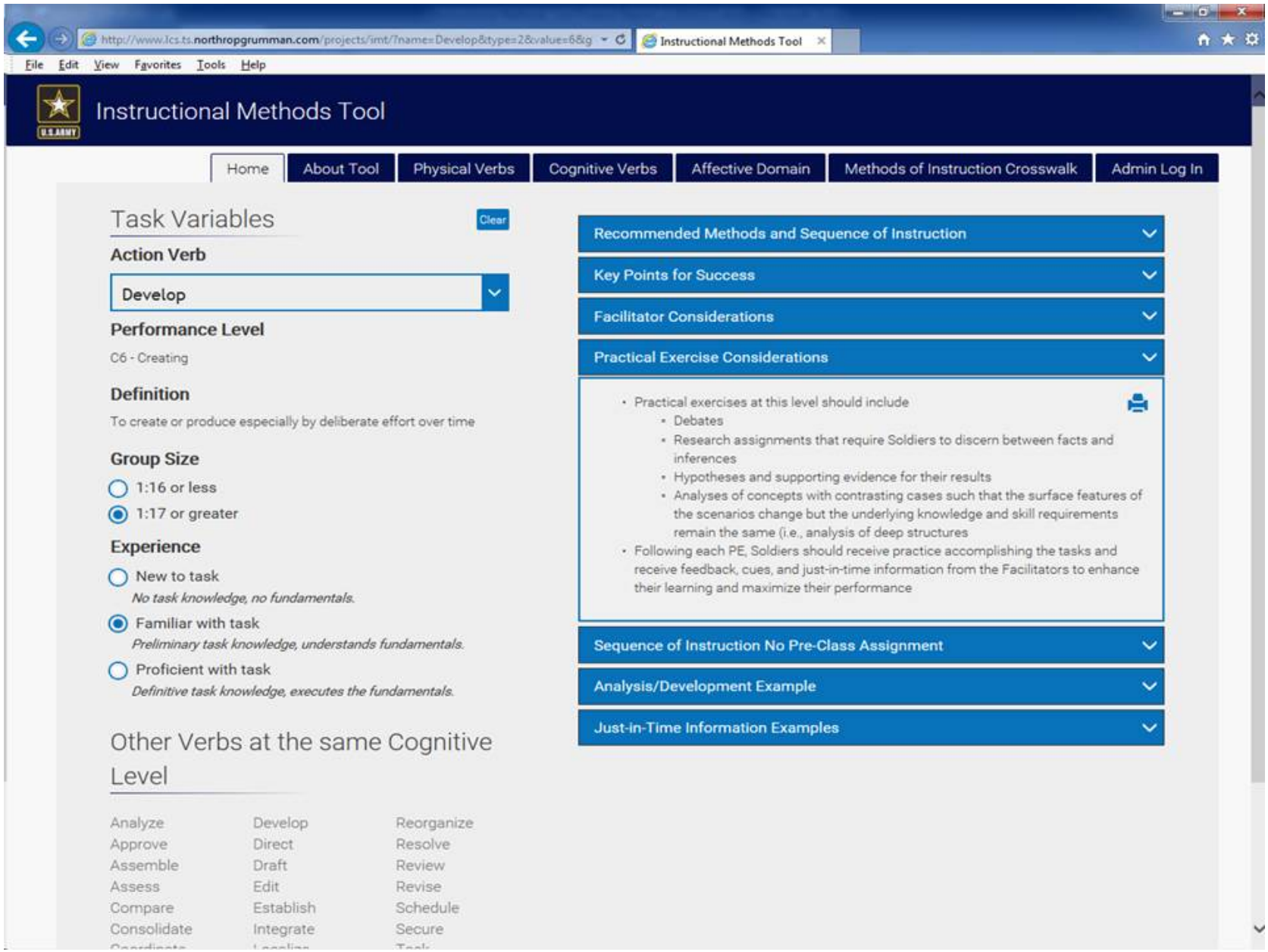
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
Action Verb
Develop
Performance Level
C6 - Creating
Definition
To create or produce especially by deliberate effort over time
Group Size
1:16 or less
1:17 or greater
Experience
New to task
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
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
Sequence of Instruction No Pre-Class Assignment
Analysis/Development Example
Just-in-Time Information Examples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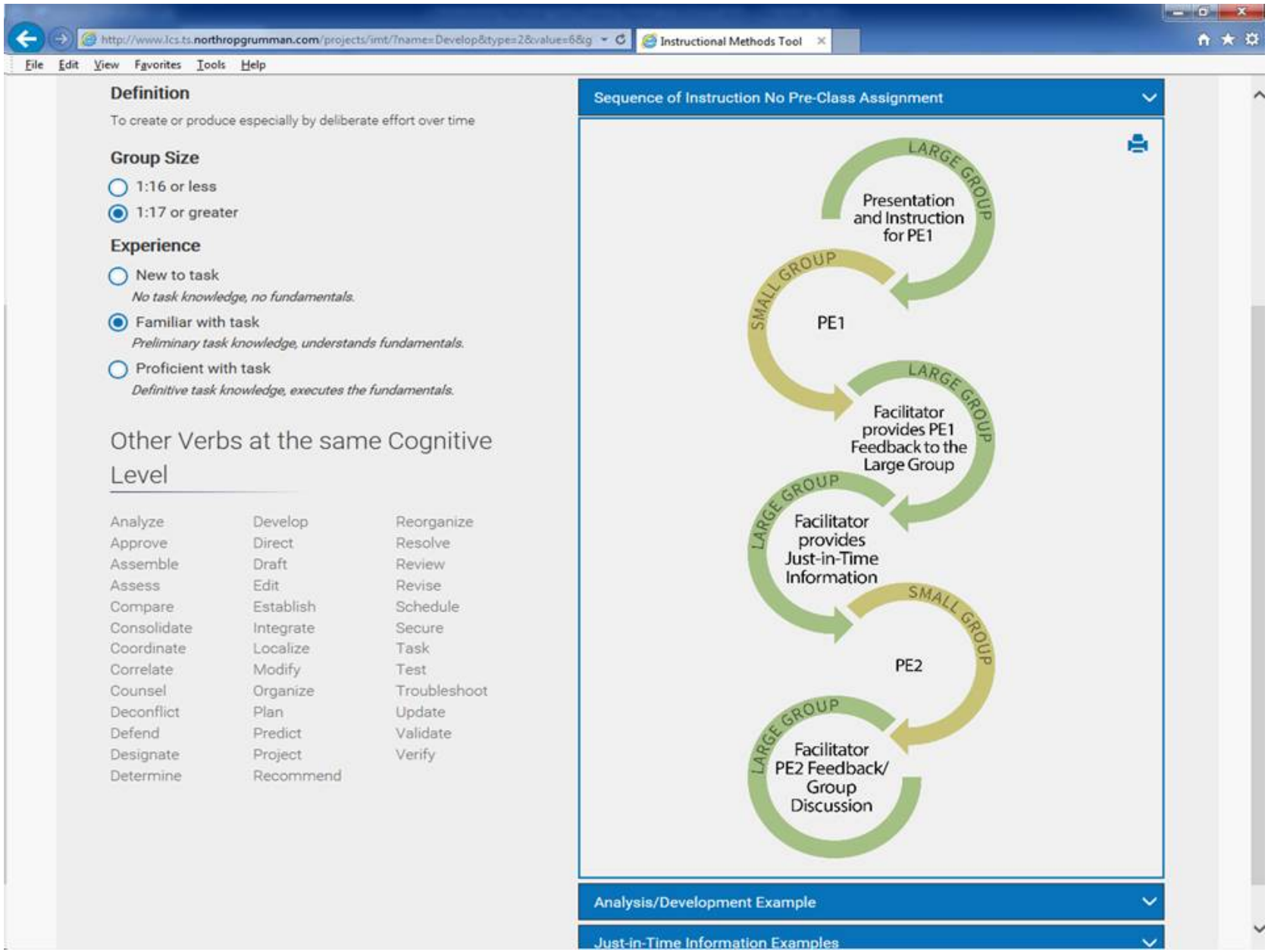
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Practical exercises at this level should include
Debates
Research assignments that require Soldiers to discern between facts and inferences
Hypotheses and supporting evidence for their results
Analyses of concepts with 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
Following each PE, Soldiers 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
Sequence of Instruction No Pre-Class Assignment
Analysis/Development Example
Just-in-Time Information Examples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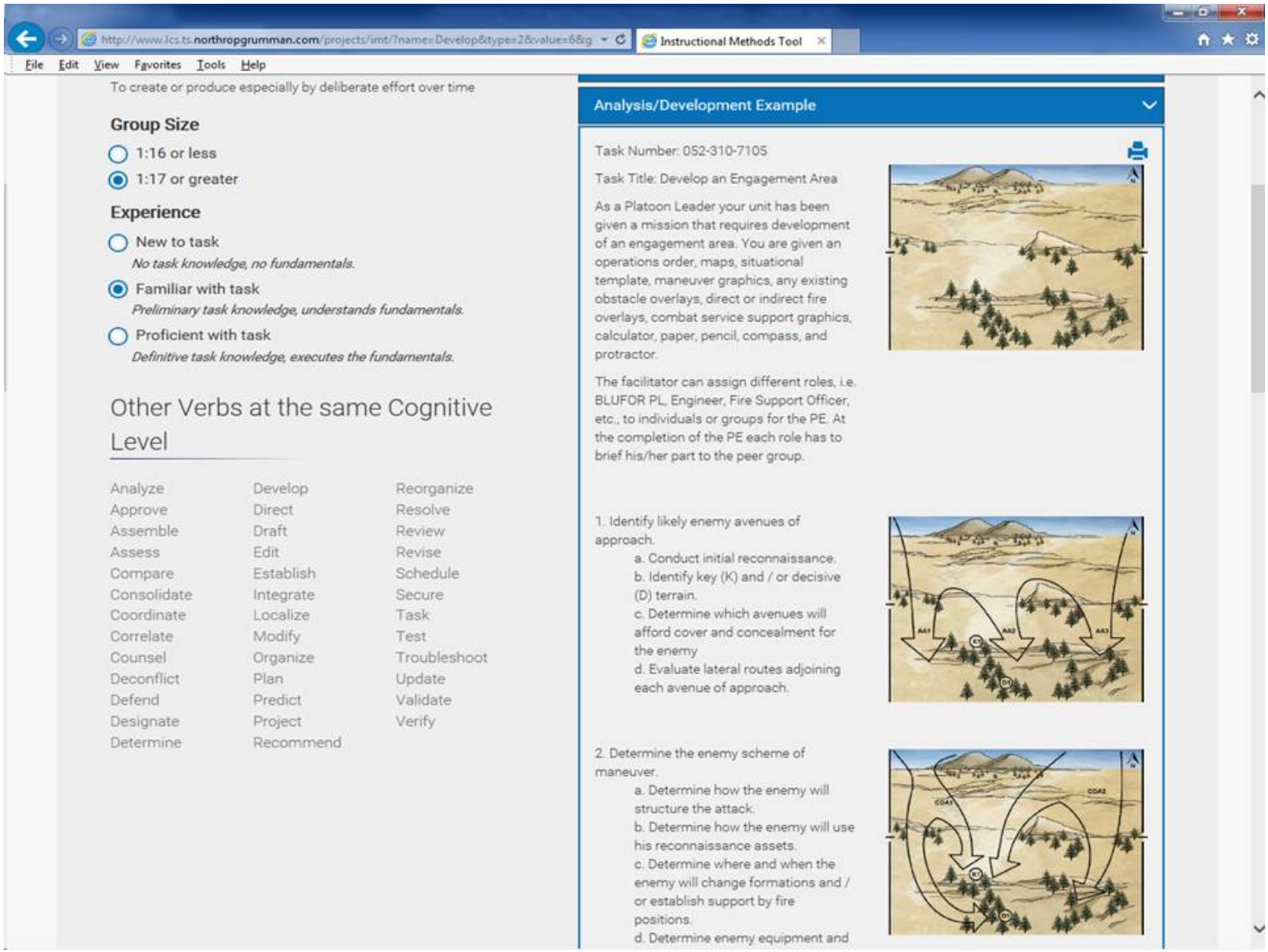
Correlate
Counsel
Deconflict
Defend
Designate
Determine
Develop
Direct
Draft
Edit
Establish
Integrate
Localize
Modify
Organize
Plan
Predict
Project
Recommend
Reorganize
Resolve
Review
Revise
Schedule
Secure
Task
Test
Troubleshoot
Update
Validate
Verify
Sequence of Instruction No Pre-Class Assignment
LARGE GROUP
Presentation and Instruction for PE1
SMALL GROUP
PE1
LARGE GROUP
Facilitator provides PE1 Feedback to the Large Group
LARGE GROUP
Facilitator provides Just-in-Time Information
SMALL GROUP
PE2
LARGE GROUP
Facilitator PE2 Feedback/ Group Discussion
Analysis/Development Example
Just-in-Time Information Examples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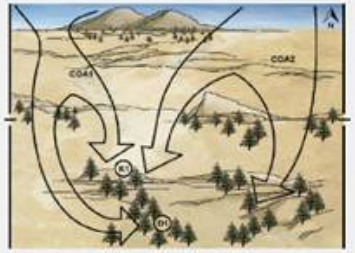
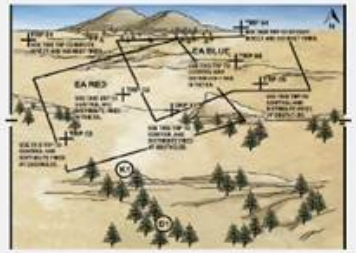
Reorganize
Resolve
Review
Revise
Schedule
Secure
Task
Test
Troubleshoot
Update
Validate
Verify
Analysis/Development Example
Task Number: 052-310-7105
Task Title: Develop an Engagement Area
As a Platoon Leader your unit has been given a mission that requires development of an engagement area. You are 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 establish support by fire positions.
d. Determine enemy equipment and

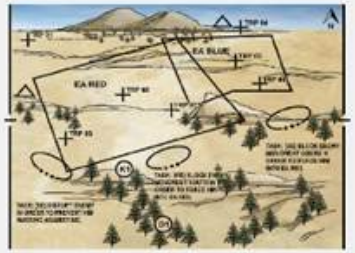
2. Determine the enemy scheme of maneuver.
   a. Determine how the enemy will structure the attack.
   b. Determine how the enemy will use his reconnaissance assets.
   c. Determine where and when the enemy will change formations and / or establish support by fire positions.
   d. Determine enemy equipment 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.



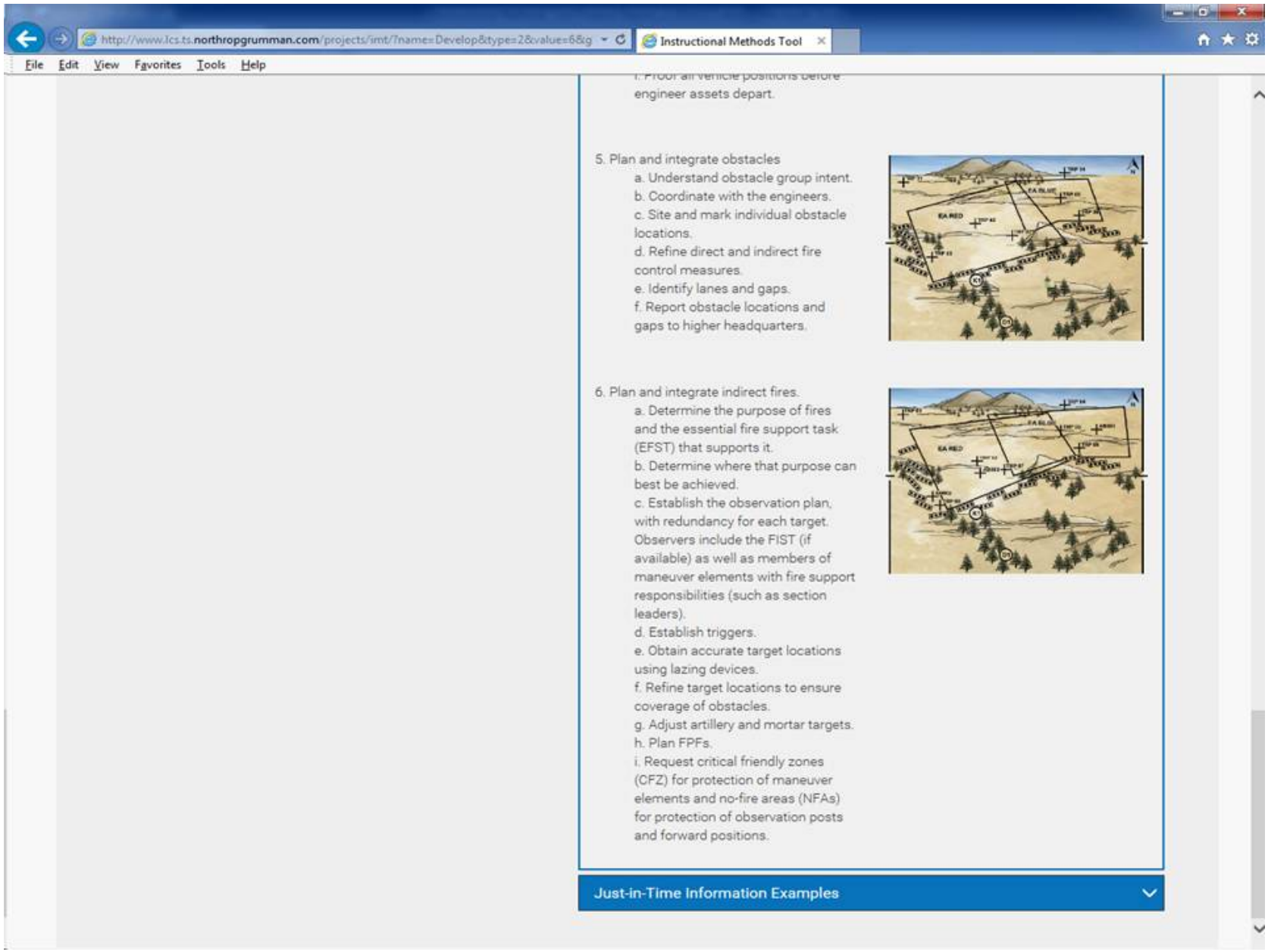
3. Determine where to kill the enemy.
   a. Identify target reference points (TRP) that match the enemy's scheme of maneuver, allowing the company to identify where it will engage enemy forces through the depth of the sector.
   b. Identify and record the exact location of each TRP.
   c. Determine how many weapons systems, by type, must focus fires on each TRP to achieve the desired effects.
   d. Determine which platoons 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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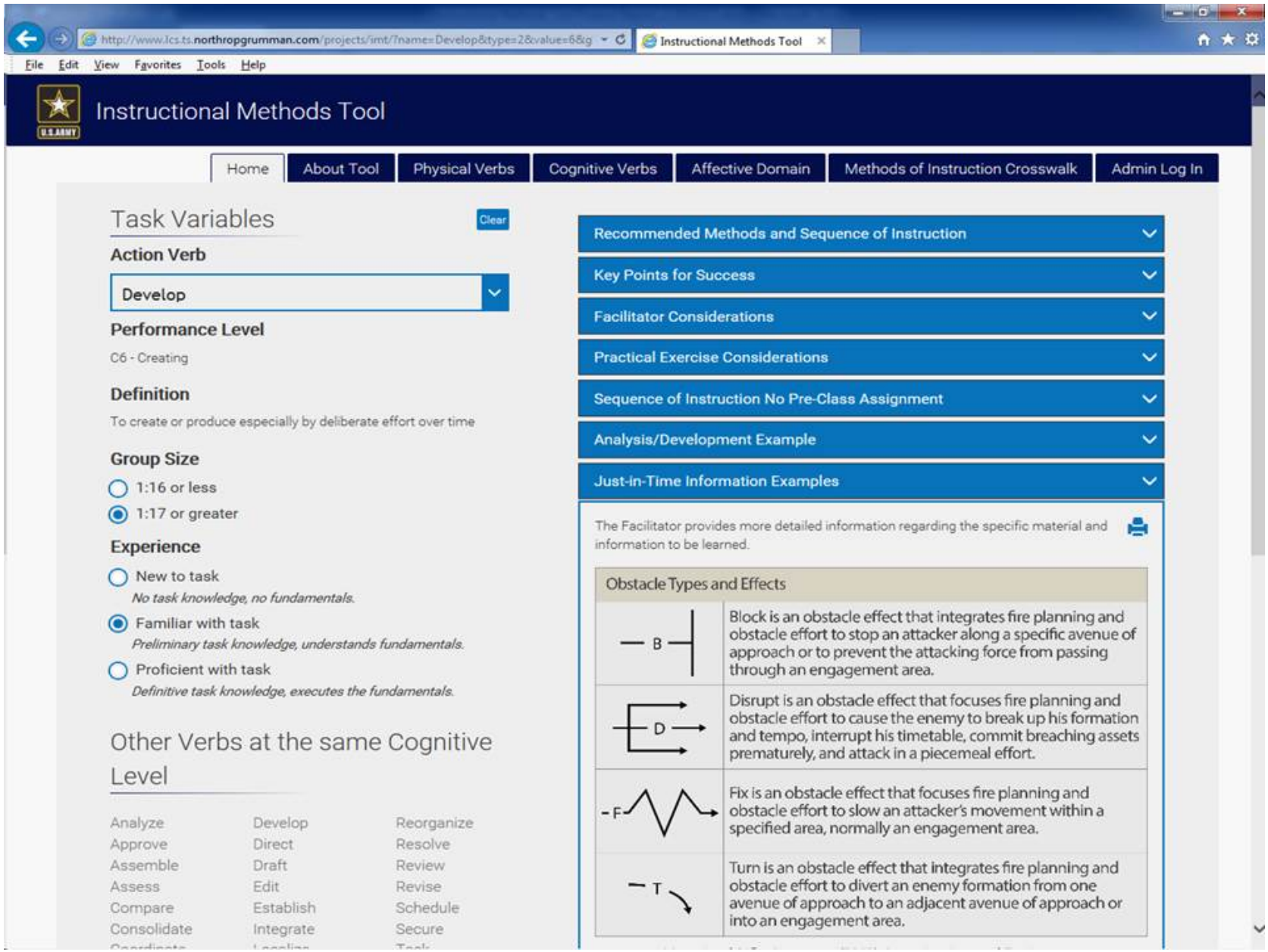
engineer assets depart.
5. Plan and integrate obstacles
a. Understand obstacle group intent.
b. Coordinate with the engineers.
c. Site and mark individual obstacle locations.
d. Refine direct and indirect fire control measures.
e. Identify lanes and gaps.
f. Report obstacle locations and gaps to higher 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 FIST (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 lazing 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.
Just-in-Time Information Examples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Performance Level
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Reorganize
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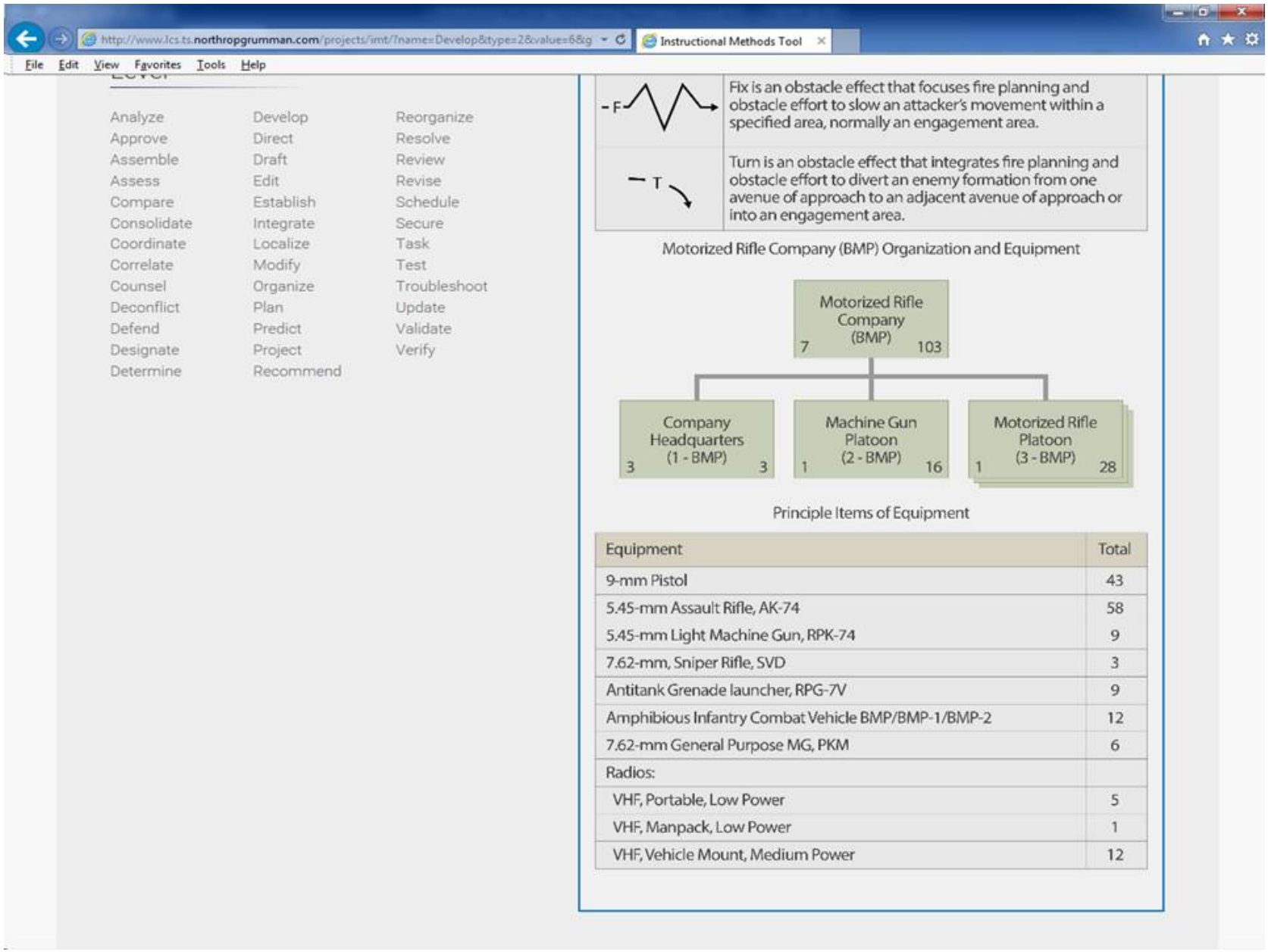
Revise
Schedule
Secure
Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Sequence of Instruction No Pre-Class Assignment
Analysis/Development Example
Just-in-Time Information Examples
The Facilitator provides more detailed information regarding the specific material and information to be learned.
Obstacle Types and Effects
B
Block is 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.
D
Disrupt is 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.
F
Fix 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
Turn 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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Analyze Develop Reorganize
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Compare Establish Schedule
Consolidate Integrate Secure
Coordinate Localize Task
Correlate Modify Test
Counsel Organize Troubleshoot
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Defend Predict Validate
Designate Project Verify
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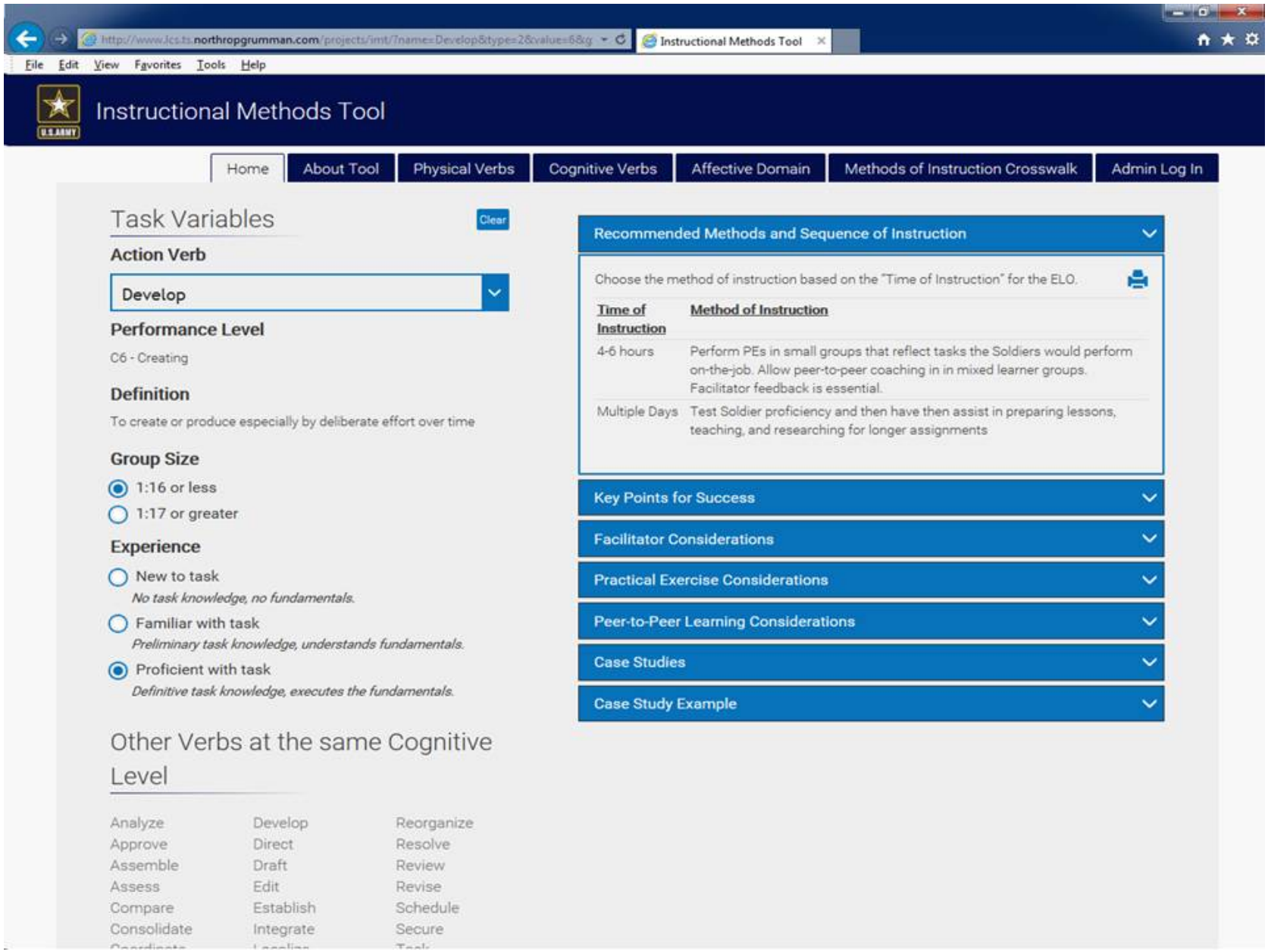
Motorized Rifle Company (BMP) Organization and Equipment
Motorized Rifle Company (BMP)
7
103
Company Headquarters (1 - BMP)
3
3
Machine Gun Platoon (2 - BMP)
1
16
Motorized Rifle Platoon (3 - BMP)
1
28
Principle Items of Equipment
Equipment
Total
9-mm Pistol 43
5.45-mm Assault Rifle, AK-74 58
5.45-mm Light Machine Gun, RPK-74 9
7.62-mm, Sniper Rifle, SVD 3
Antitank Grenade launcher, RPG-7V 9
Amphibious Infantry Combat Vehicle BMP/BMP-1/BMP-2 12
7.62-mm General Purpose MG, PKM 6
Radios:
VHF, Portable, Low Power 5
VHF, Manpack, Low Power 1
VHF, Vehicle Mount, Medium Power 12

Appendix Y

Military Task Examples
C4+C5+C6 – Analyzing, Evaluating, and Creating / Small Group / Proficient with Task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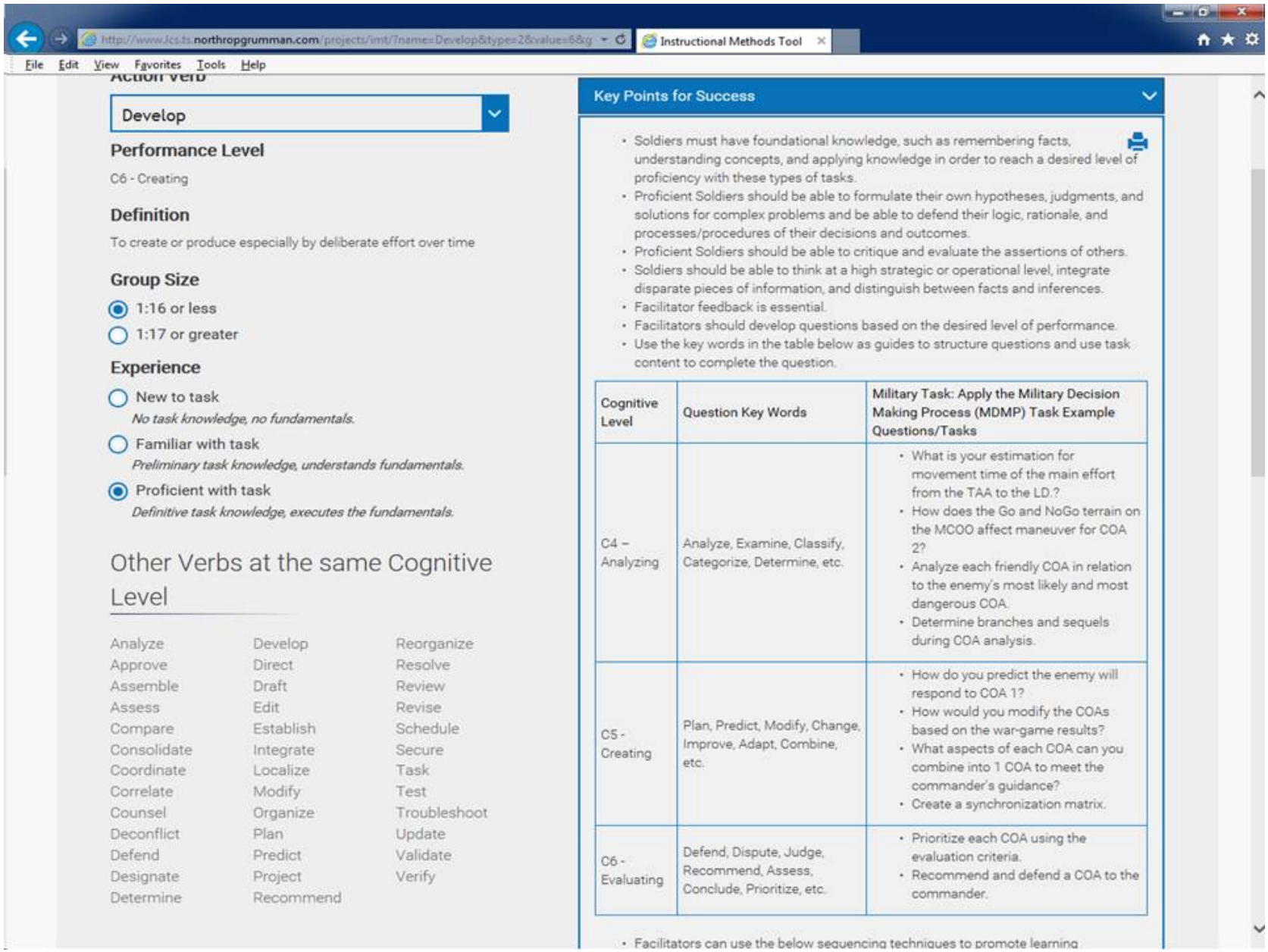
Secure
Recommended Methods and Sequence of Instruction
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-6 hours
Perform PEs in small groups that reflect tasks the Soldiers would perform on-the-job. Allow peer-to-peer coaching in in mixed learner groups. Facilitator feedback is essential.
Multiple Days
Test Soldier proficiency and then have then assist in preparing lessons, teaching, and researching for longer assignments
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Case Studies
Case Study Example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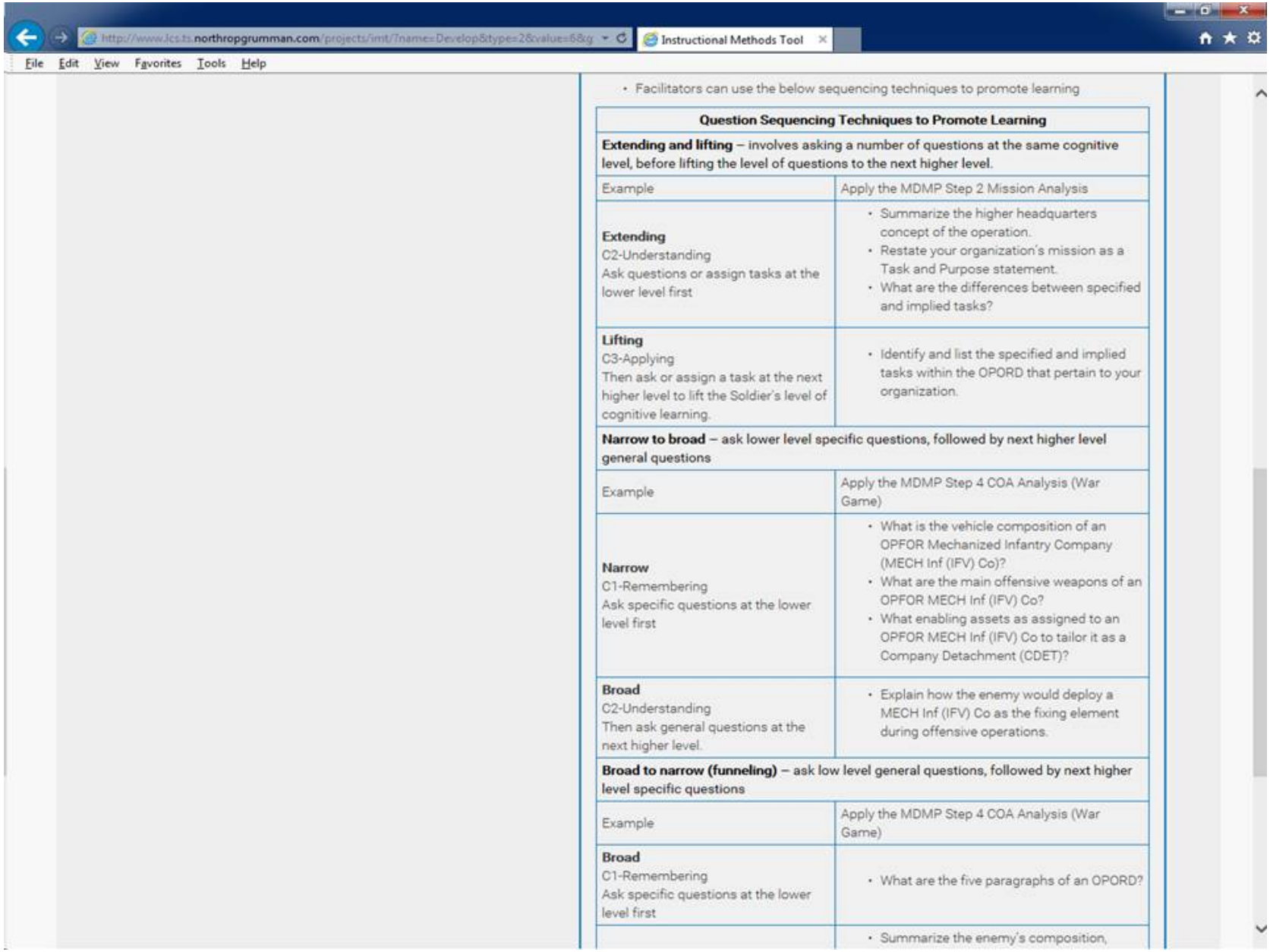
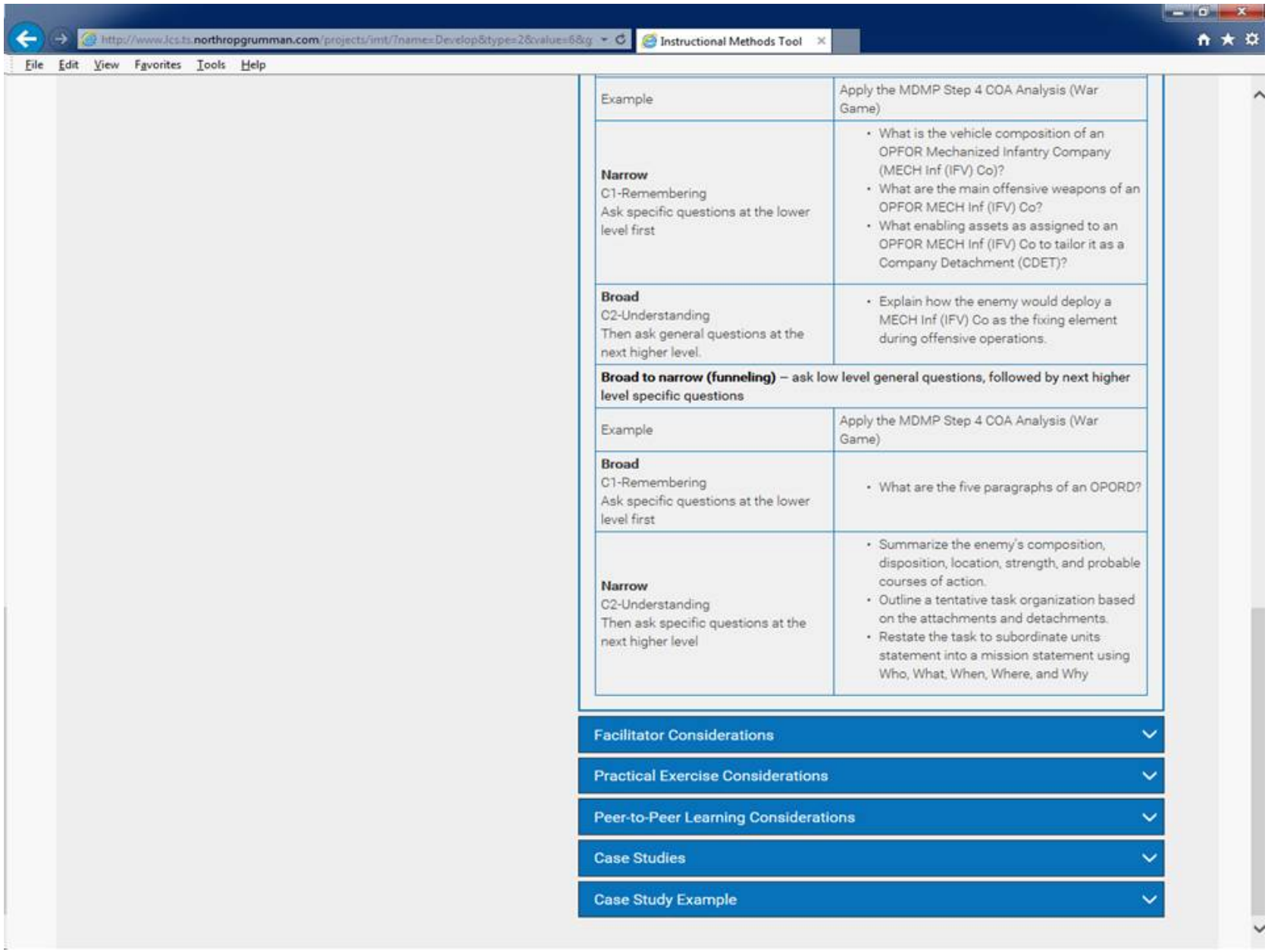
Key Points for Success
Soldiers must have foundational knowledge, such as remembering facts, understanding concepts, and applying knowledge in order to reach a desired level of proficiency with these types of tasks.
Proficient Soldiers should be able to formulate their own hypotheses, judgments, and 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.
Cognitive Level
Question Key Words
Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks
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 MCOO 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



- 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.	
Example	Apply the MDMP Step 2 Mission Analysis
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 C3-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	
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 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	
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?
	• Summarize the enemy's composition,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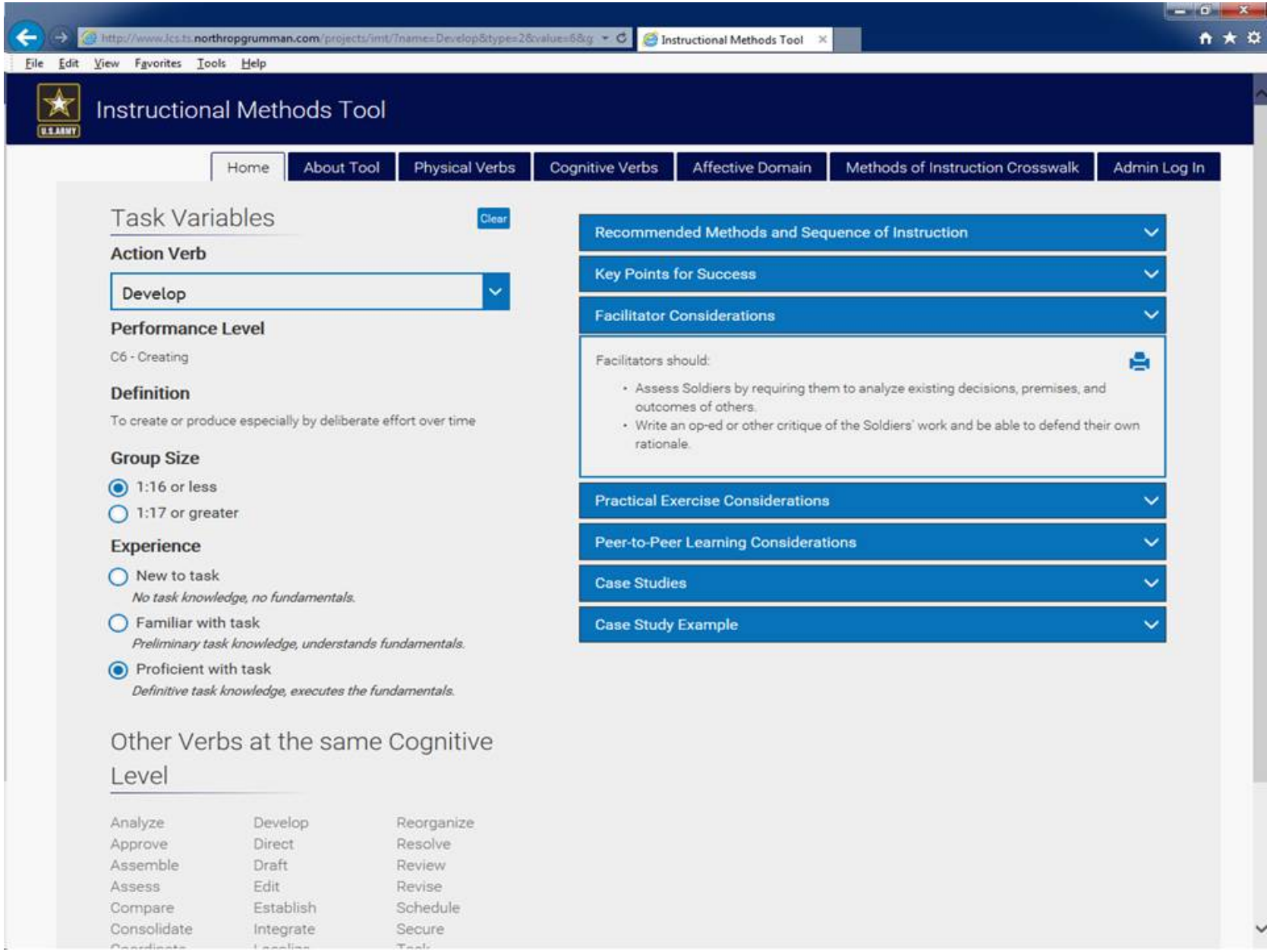
Example
Apply the MDMP Step 4 COA Analysis (War Game)
Narrow
C1-Remembering
Ask specific questions at the lower level first
What is the vehicle composition of an OPFOR Mechanized Infantry Company (MECH Inf (IFV) Co)?
What are the main offensive weapons of an OPFOR MECH Inf (IFV) Co?
What enabling assets 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
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
Peer-to-Peer Learning Considerations
Case Studies
Case Study Example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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
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Approve
Assemble
Assess
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Consolidate
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Direct
Draft
Edit
Establish
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Review
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Recommended Methods and Sequence of Instruction
Key Points for Success
Facilitator Considerations
Facilitators should:
Assess Soldiers by requiring them to analyze existing decisions, premises, and outcomes of others.
Write an op-ed or other critique of the Soldiers' work and be able to defend their own rationale.
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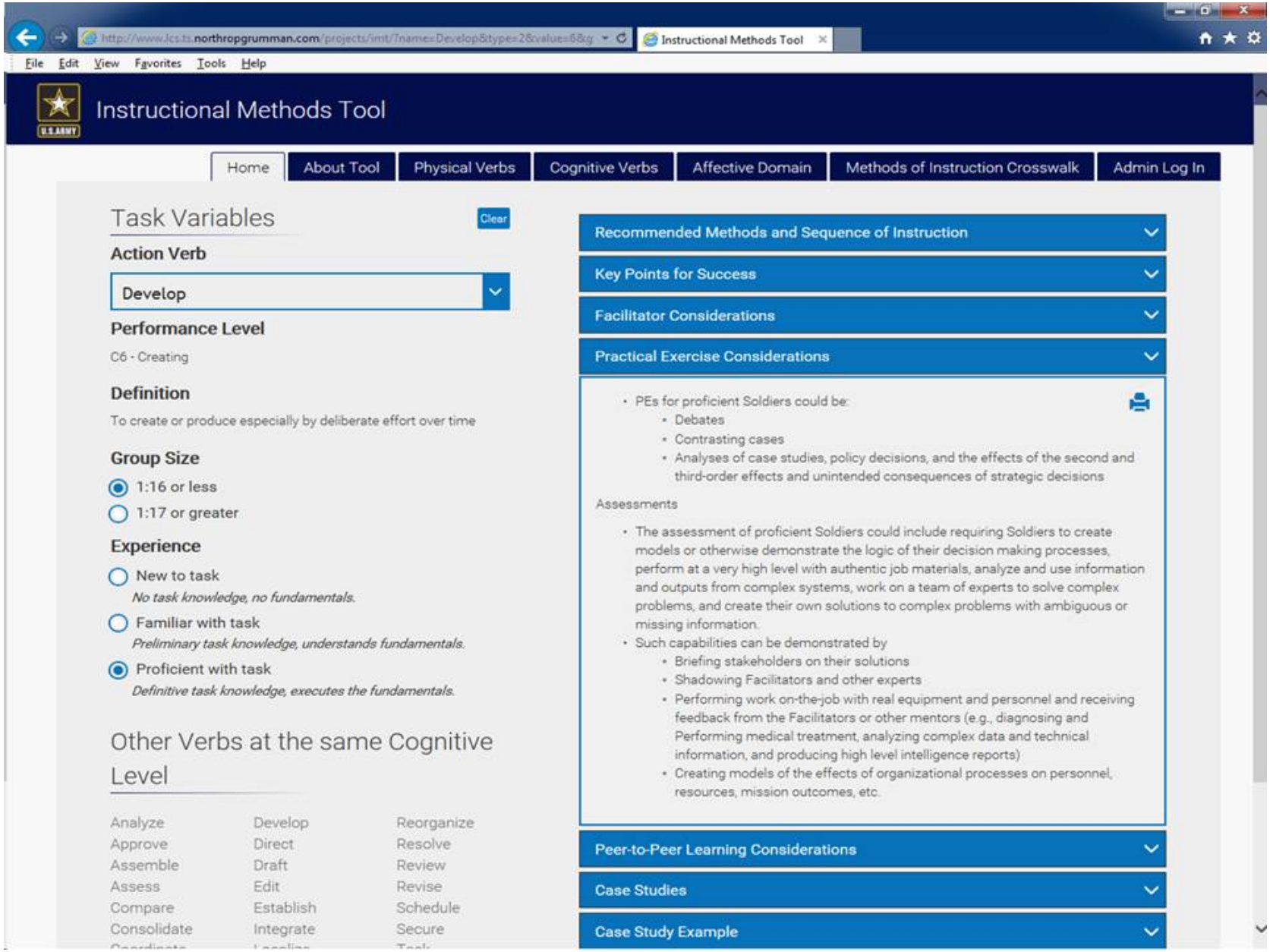
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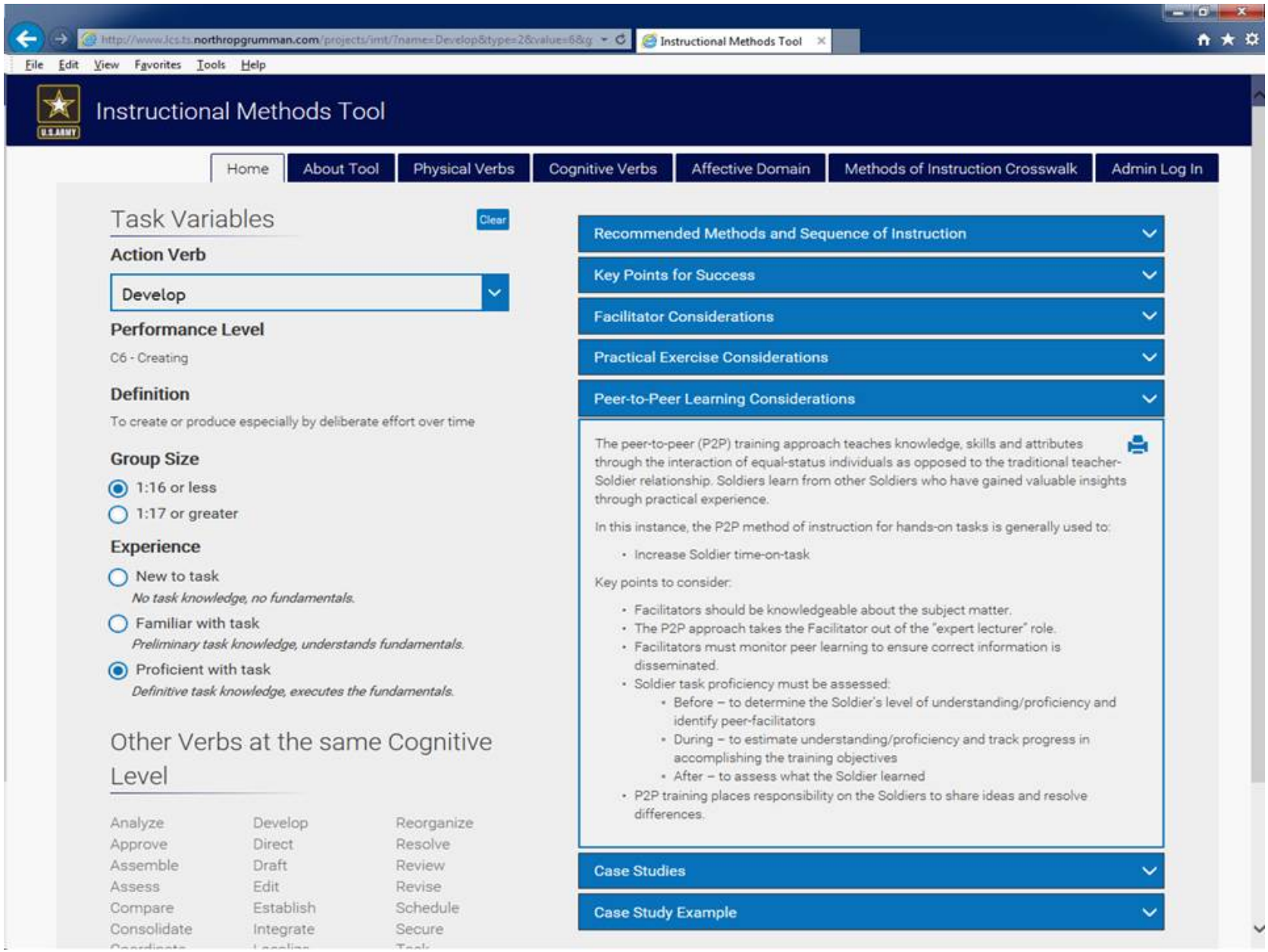
Practical Exercise Considerations
• PEs for proficient Soldiers could be:
• Debates
• Contrasting cases
• Analyses of case studies, policy decisions, and the effects of the second and third-order effects and unintended consequences of strategic decisions
Assessments
• The assessment of proficient Soldiers could include requiring Soldiers 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.
• Such capabilities can be demonstrated by
• 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, and producing high level intelligence reports)
• Creating models of the effects of organizational processes on personnel, resources, mission outcomes, etc.
Peer-to-Peer Learning Considerations
Case Studies
Case Study Example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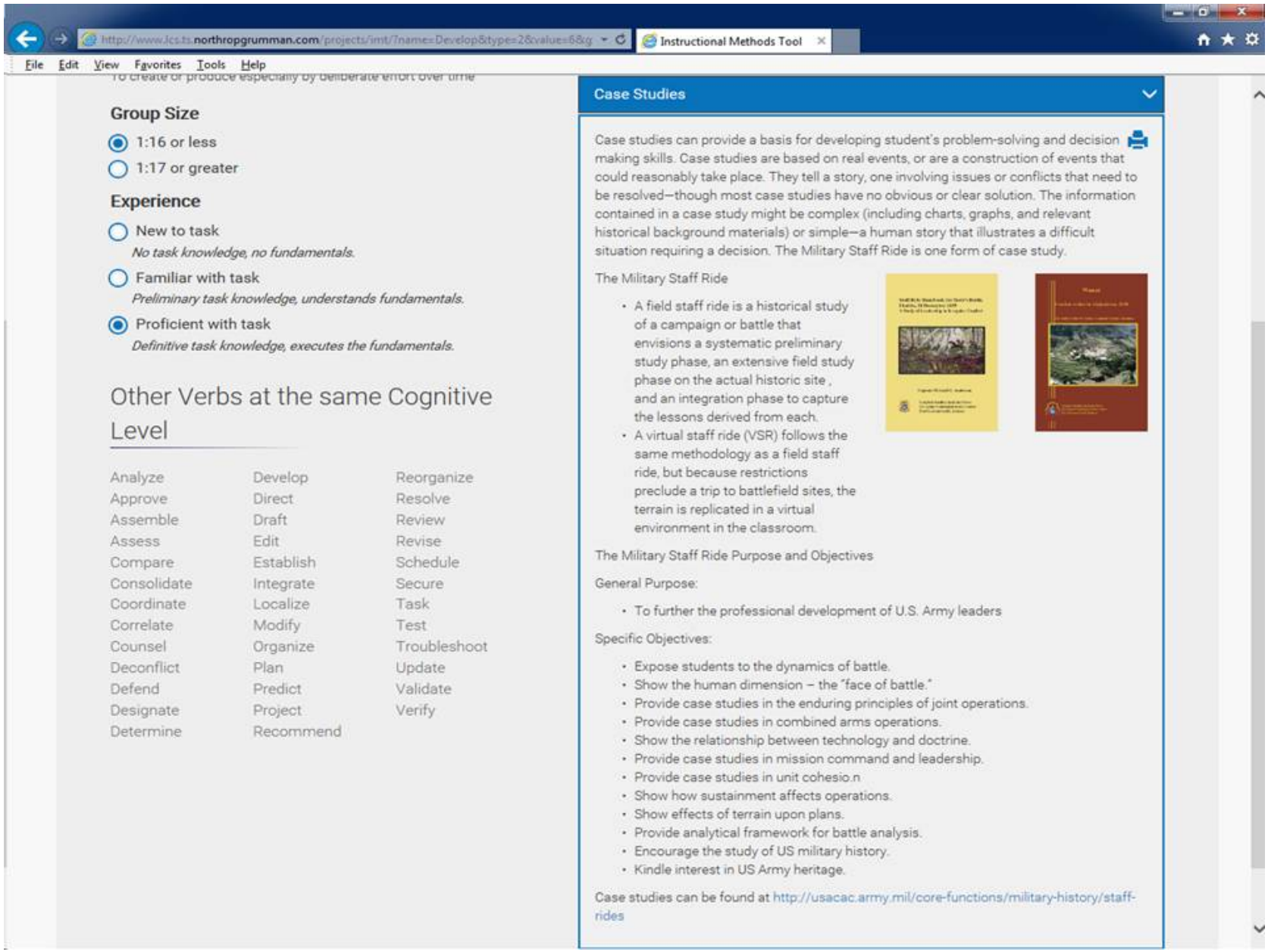
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
The peer-to-peer (P2P) training approach teaches knowledge, skills and attributes through the interaction of equal-status individuals as opposed to the traditional teacher-Soldier relationship. Soldiers learn from other Soldiers who 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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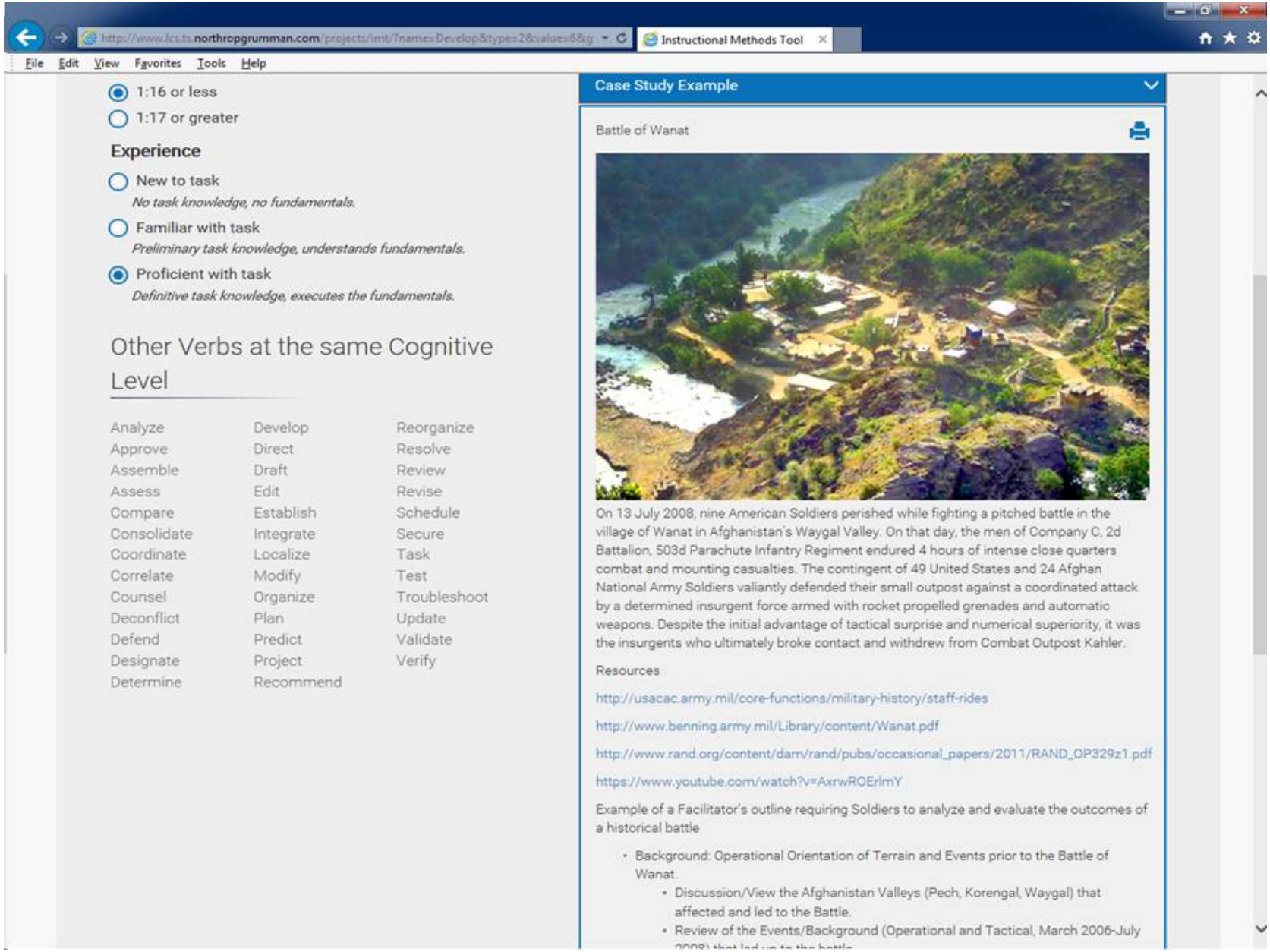
Case Studies
Case studies can provide a basis for developing student's problem-solving and decision making skills. Case studies are based on real events, or are a construction of events that could reasonably take place. They tell a story, one involving issues or conflicts that need to be resolved—though 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.
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.
Provide case studies in unit cohesio.n
Show how sustainment affects operations.
Show effects of terrain upon plans.
Provide analytical framework for battle analysis.
Encourage the study of US military history.
Kindle interest in US Army heritage.
Case studies can be found at http://usacac.army.mil/core-functions/military-history/staff-rides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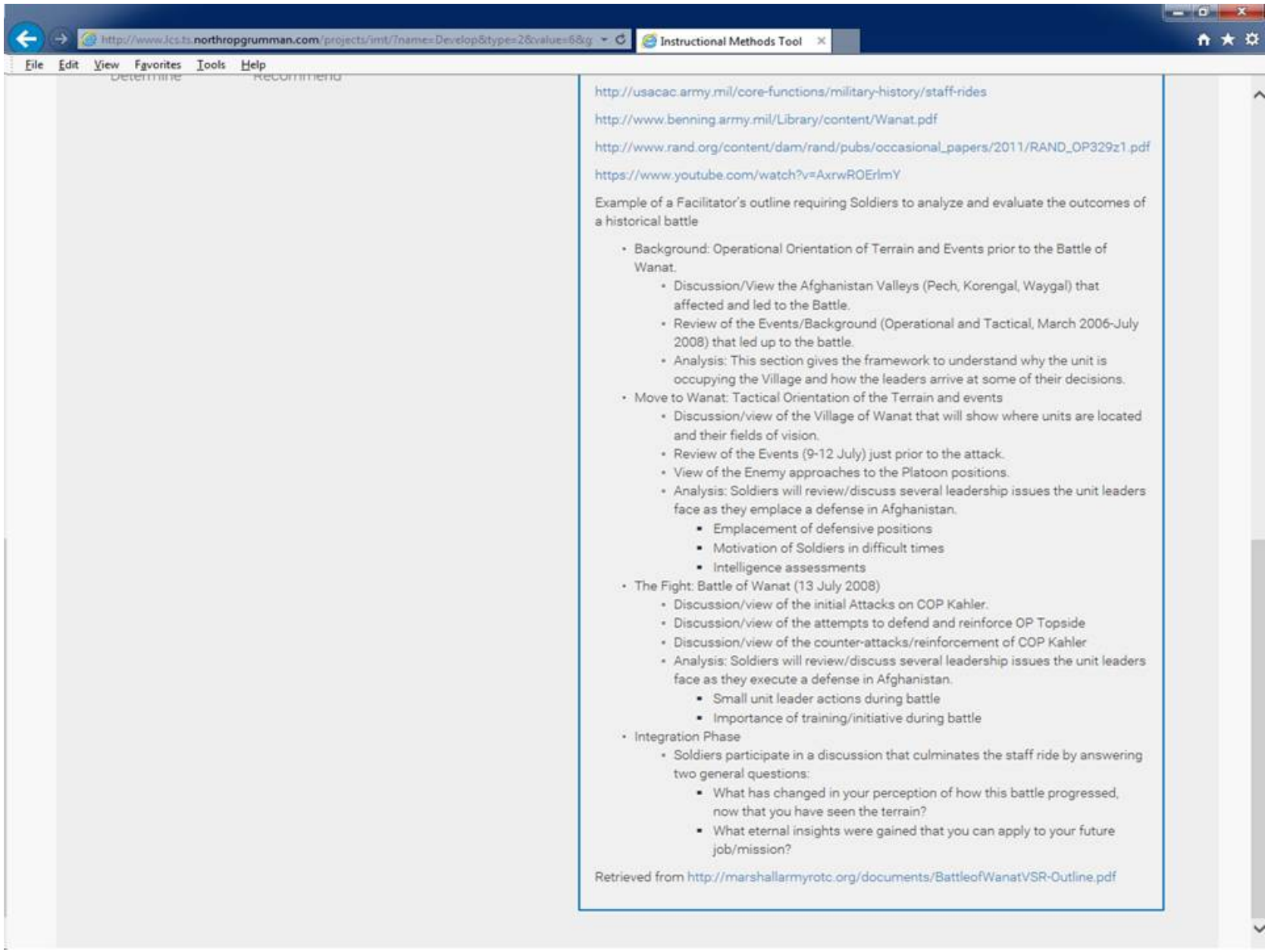
Case Study Example
Battle of Wanat
On 13 July 2008, nine American Soldiers perished while fighting a pitched battle in the village of Wanat in Afghanistan's Waygal Valley. On that day, the men of Company C, 2d Battalion, 503d Parachute Infantry Regiment endured 4 hours of intense close quarters combat 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://usacac.army.mil/core-functions/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_OP329z1.pdf
https://www.youtube.com/watch?v=AxrwROErlmY
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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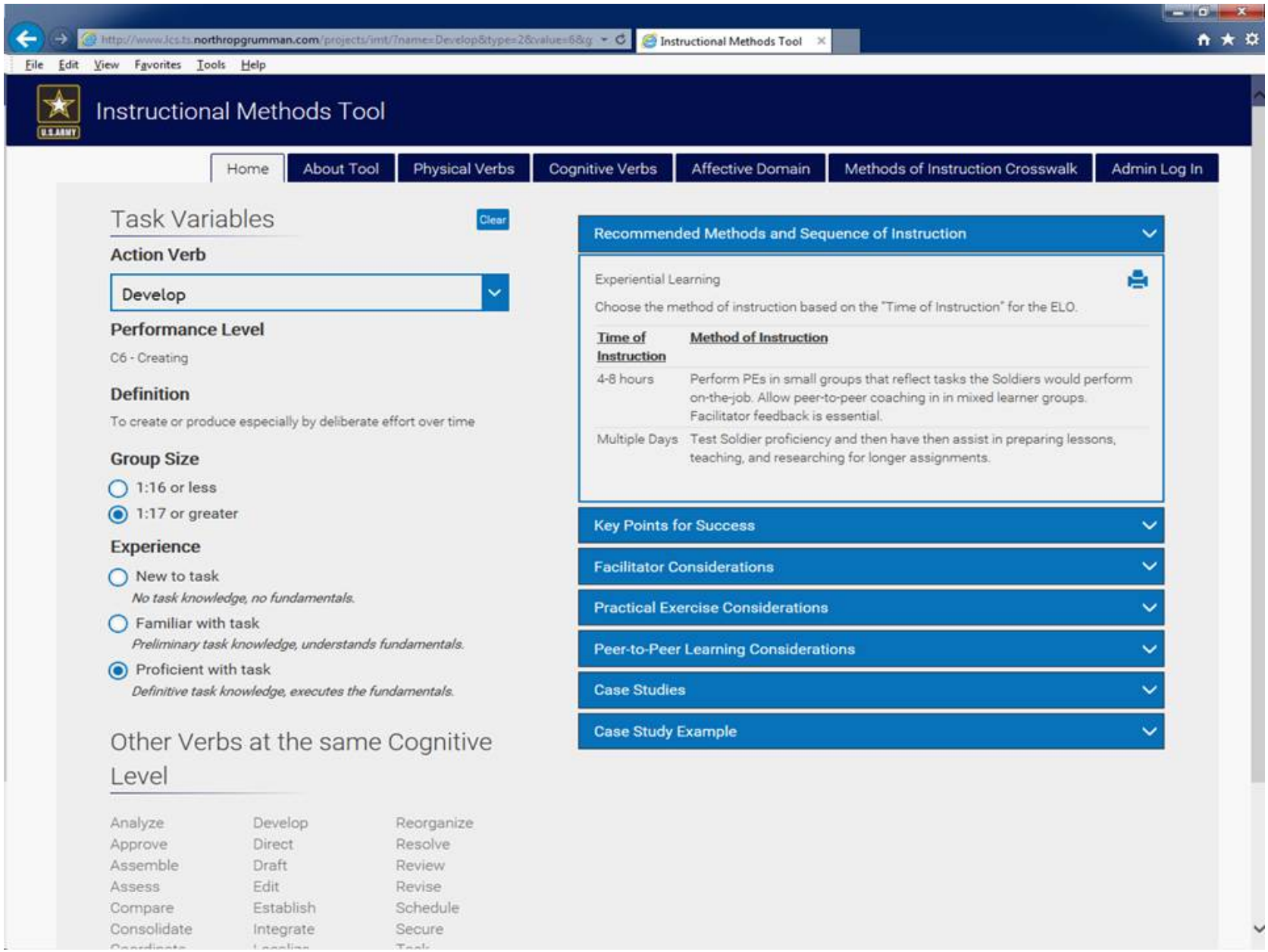
http://www.benning.army.mil/Library/content/Wanat.pdf
http://www.rand.org/content/dam/rand/pubs/occasional_papers/2011/RAND_OP329z1.pdf
https://www.youtube.com/watch?v=AxrwROErlmY
Example of a Facilitator's outline requiring Soldiers to analyze and evaluate the outcomes of a historical battle
• Background: 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 OP 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 eternal insights were gained that you can apply to your future job/mission?
Retrieved from http://marshallarmyrotc.org/documents/BattleofWanatVSR-Outline.pdf

Appendix Z

Military Task Examples
C4+C5+C6 – Analyzing, Evaluating, and Creating / Large Group / Proficient with Task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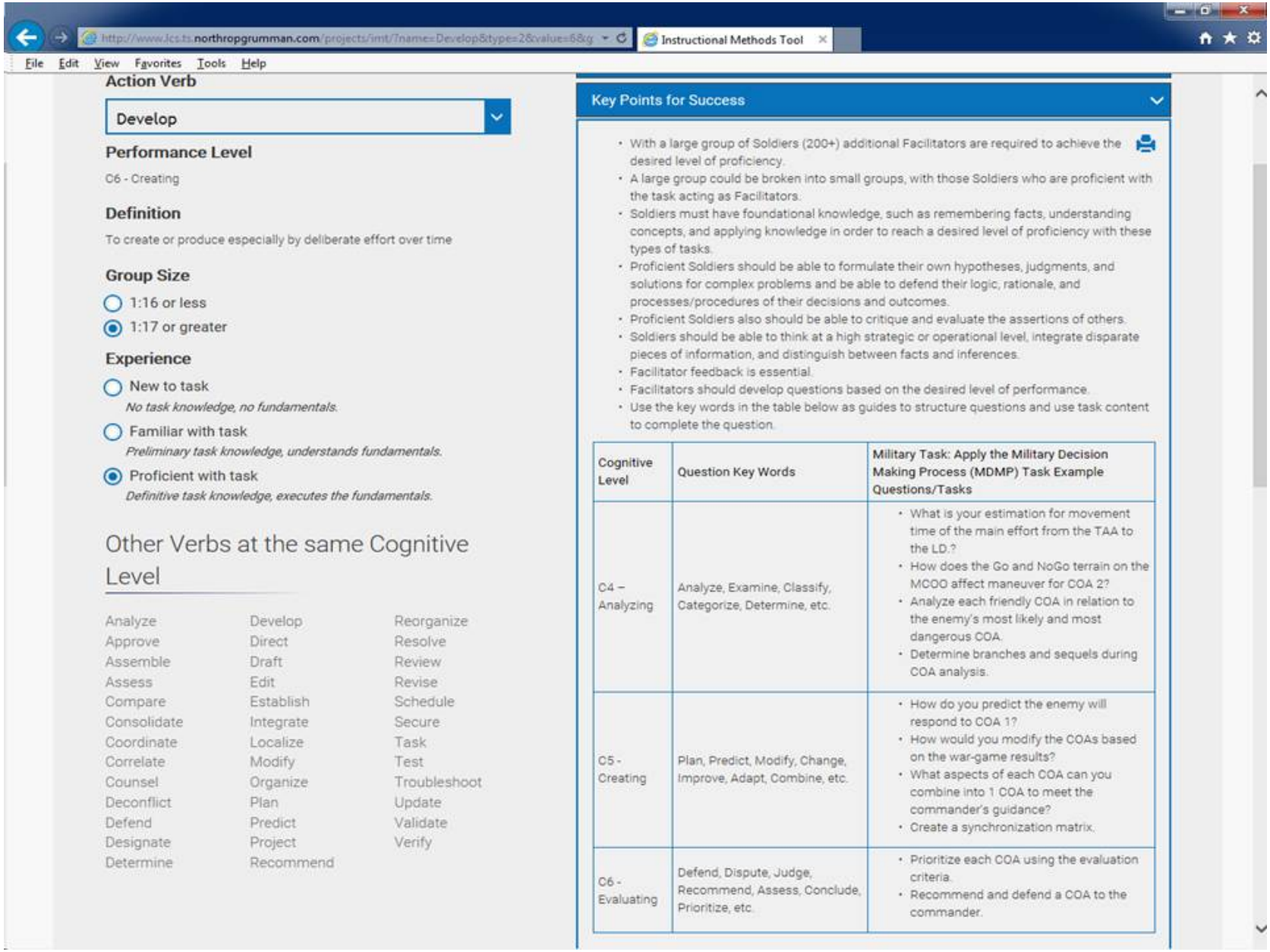
Edit
Establish
Integrate
Reorganize
Resolve
Review
Revise
Schedule
Secure
Recommended Methods and Sequence of Instruction
Experiential Learning
Choose the method of instruction based on the "Time of Instruction" for the ELO.
Time of Instruction
Method of Instruction
4-8 hours
Perform PEs in small groups that reflect tasks the Soldiers would perform on-the-job. Allow peer-to-peer coaching in in mixed learner groups. Facilitator feedback is essential.
Multiple Days
Test Soldier proficiency and then have then assist in preparing lessons, teaching, and researching for longer assignments.
Key Points for Success
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Case Studies
Case Study Example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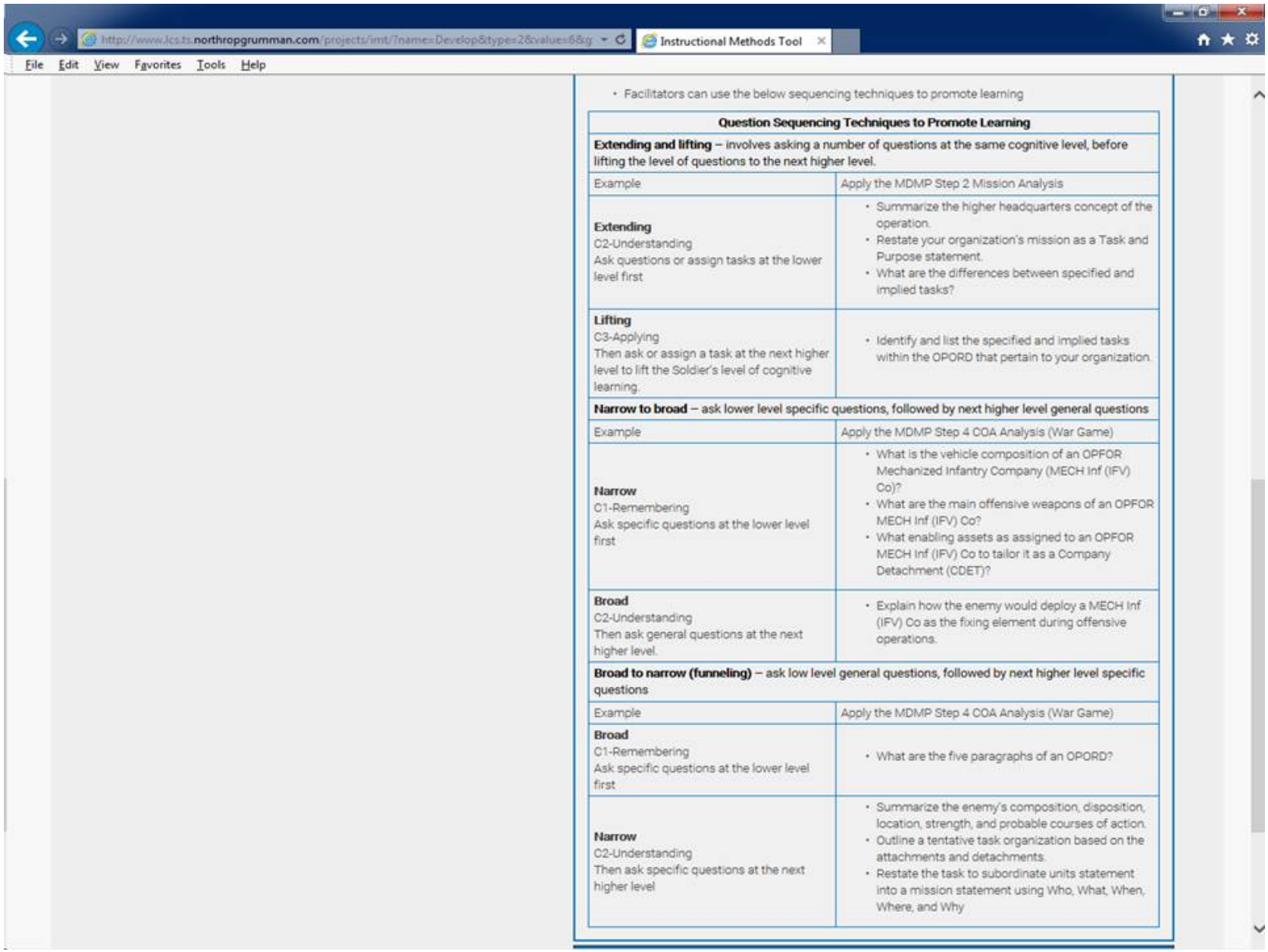
Key Points for Success
With a large group of Soldiers (200+) additional Facilitators are required to achieve the desired level of proficiency.
A large group could be broken into small groups, with those Soldiers who are proficient with the task acting as Facilitators.
Soldiers must have foundational 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 also 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.
Cognitive Level
Question Key Words
Military Task: Apply the Military Decision Making Process (MDMP) Task Example Questions/Tasks
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 MCOO 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.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• 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.
Example
Apply the MDMP Step 2 Mission Analysis
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
C3-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
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 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
Example
Apply the MDMP Step 4 COA Analysis (War Game)
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Ask specific questions at the lower level first
• What are the five paragraphs of an OPORD?
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Then ask specific questions at the next higher level
• Summarize the enemy's composition, disposition, location, strength, and probable courses of action.
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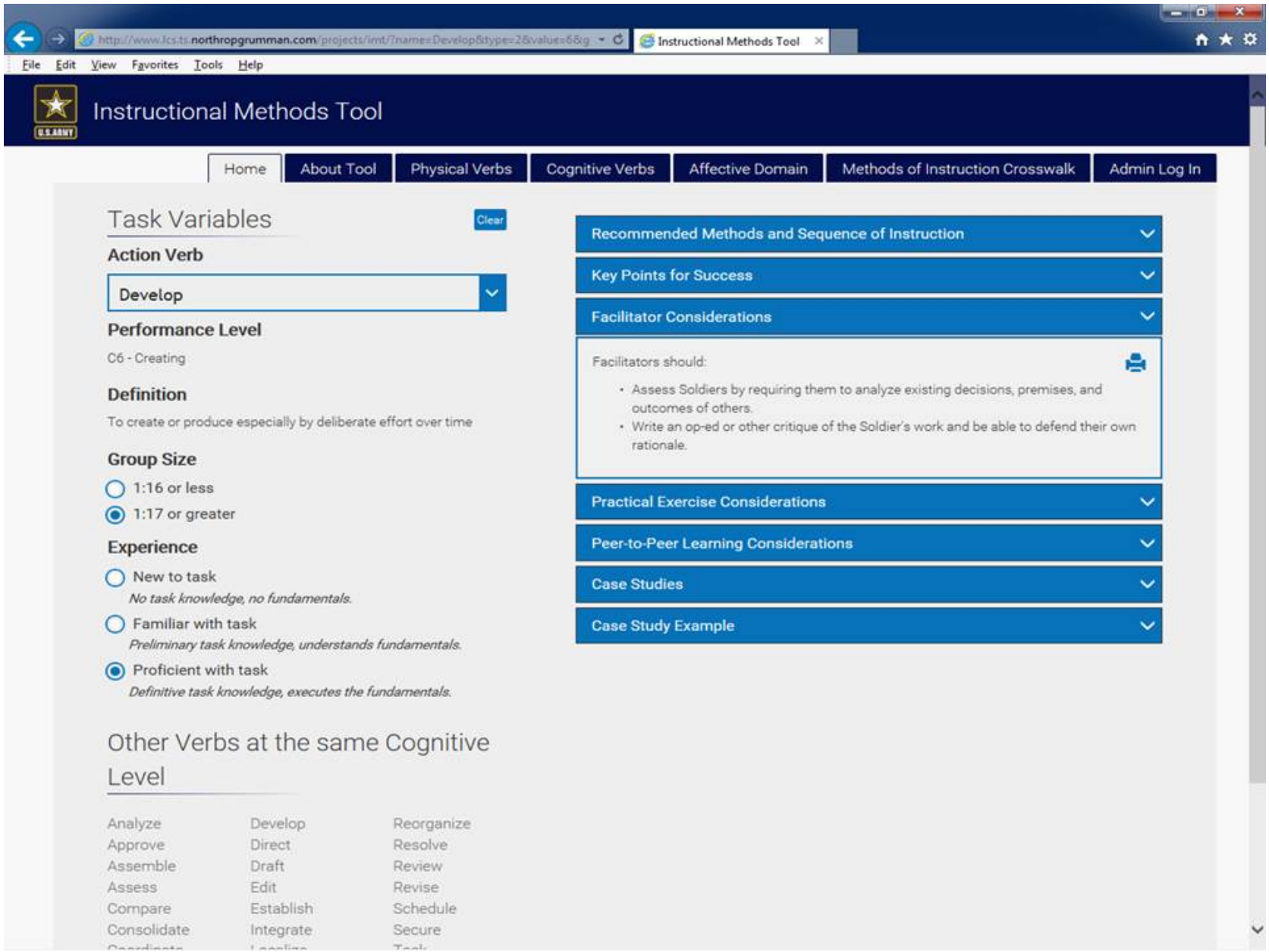
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Case Studies
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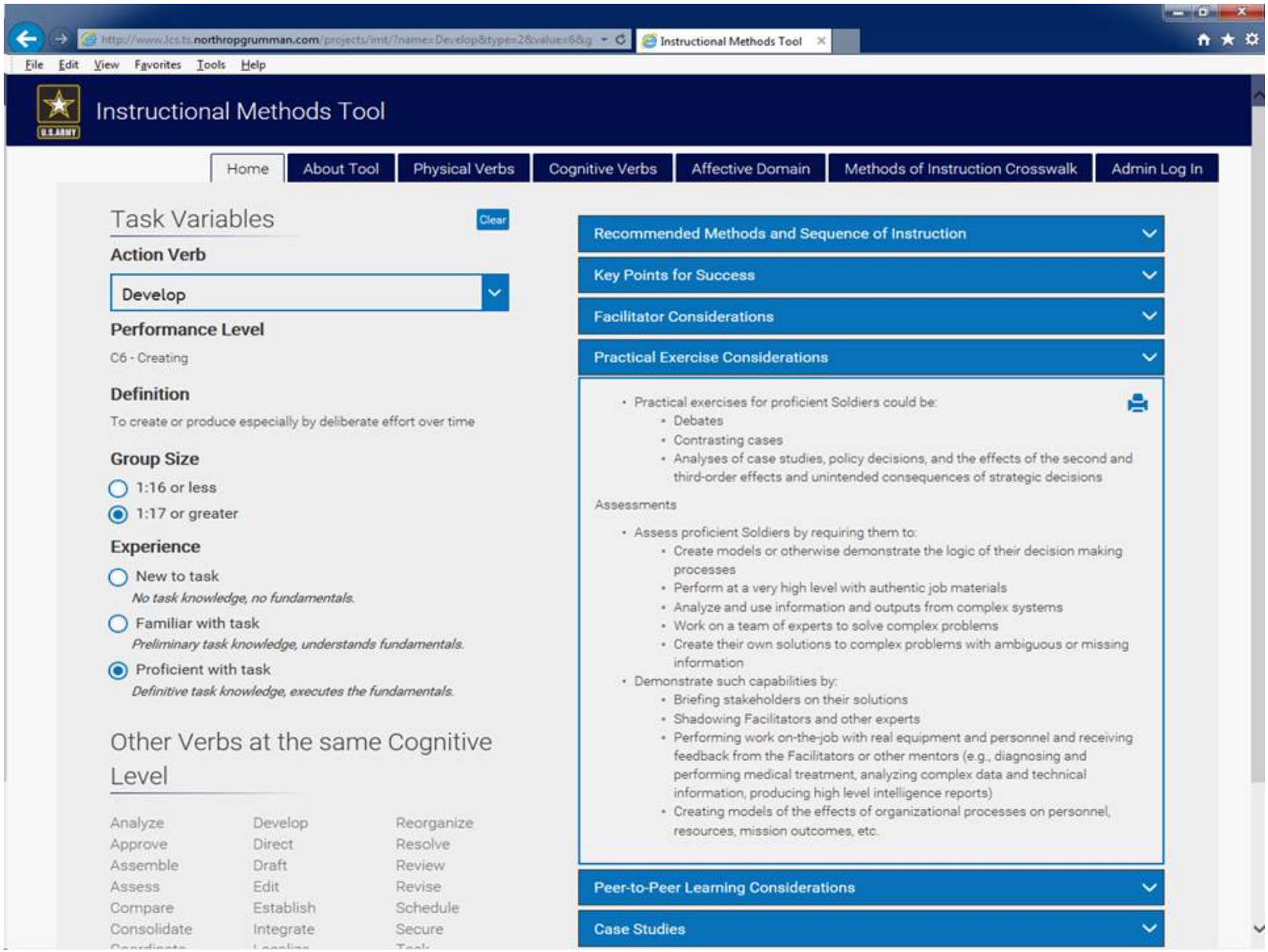
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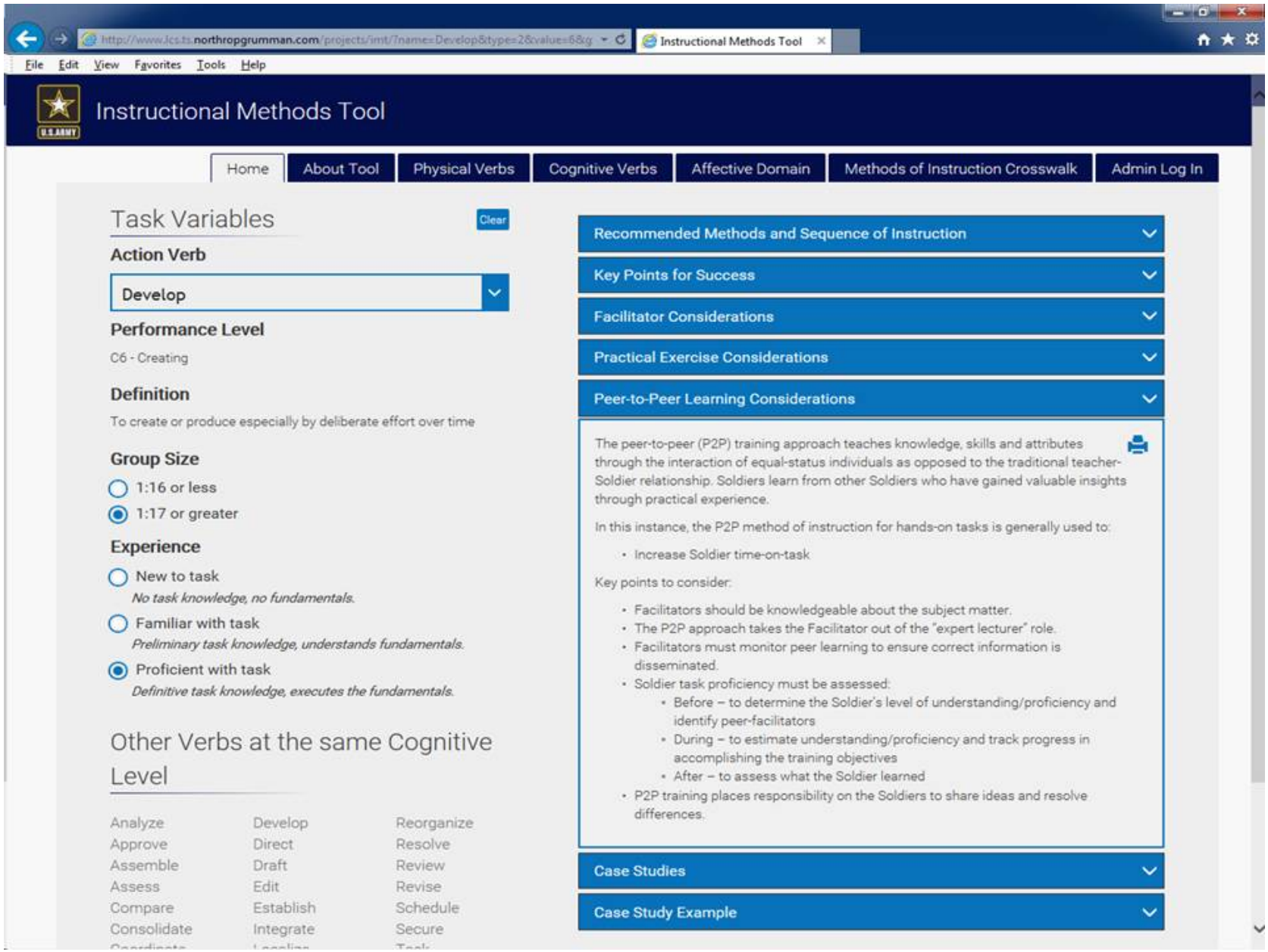
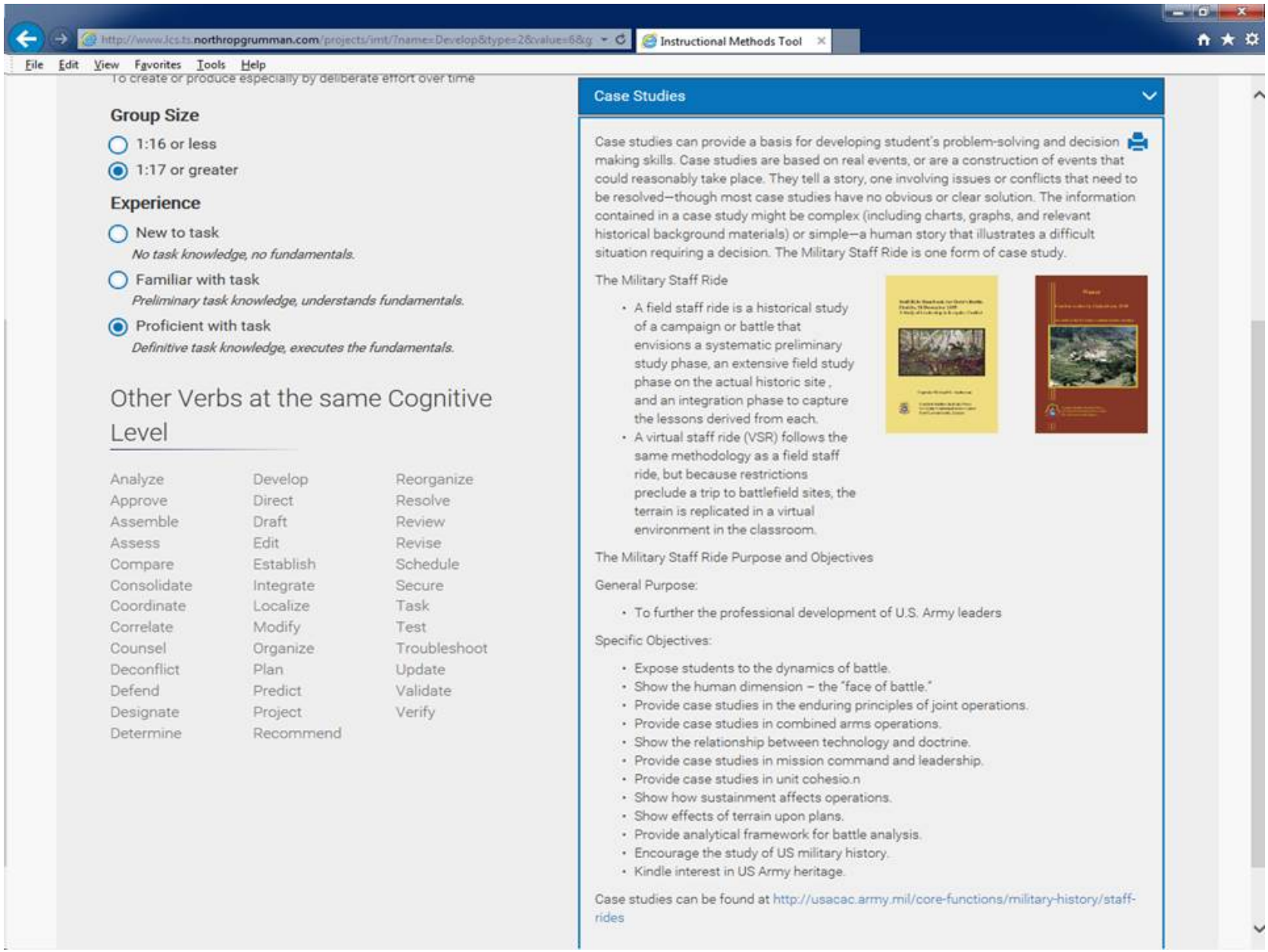
• Perform at a very high level with authentic job materials
• Analyze and use information and outputs from complex systems
• Work on a team of experts to solve complex problems
• Create their own solutions to complex problems with ambiguous or missing information
• Demonstrate such capabilities by:
• 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)
• Creating models of the effects of organizational processes on personnel, resources, mission outcomes, etc.
Peer-to-Peer Learning Considerations
Case Studies


Instructional Methods Tool
File Edit View Favorites Tools Help
Instructional Methods Tool
Home
About Tool
Physical Verbs
Cognitive Verbs
Affective Domain
Methods of Instruction Crosswalk
Admin Log In
Task Variables
Clear
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
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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Determine
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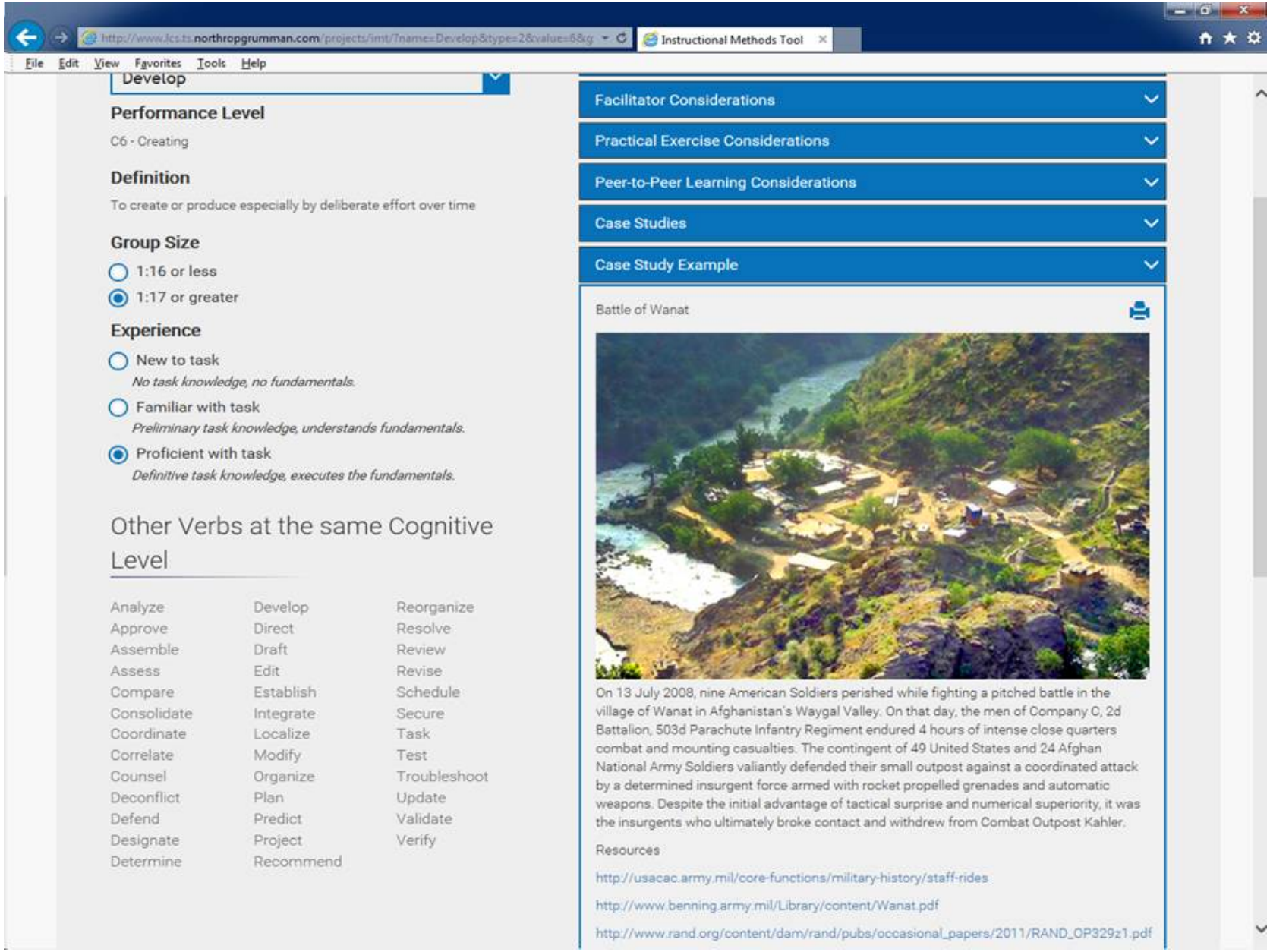
Direct
Draft
Edit
Establish
Integrate
Localize
Modify
Organize
Plan
Predict
Project
Recommend
Reorganize
Resolve
Review
Revise
Schedule
Secure
Task
Test
Troubleshoot
Update
Validate
Verify
Case Studies
Case studies can provide a basis for developing student's problem-solving and decision making skills. 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.
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.
Provide case studies in unit cohesio.n
Show how sustainment affects operations.
Show effects of terrain upon plans.
Provide analytical framework for battle analysis.
Encourage the study of US military history.
Kindle interest in US Army heritage.
Case studies can be found at http://usacac.army.mil/core-functions/military-history/staff-rides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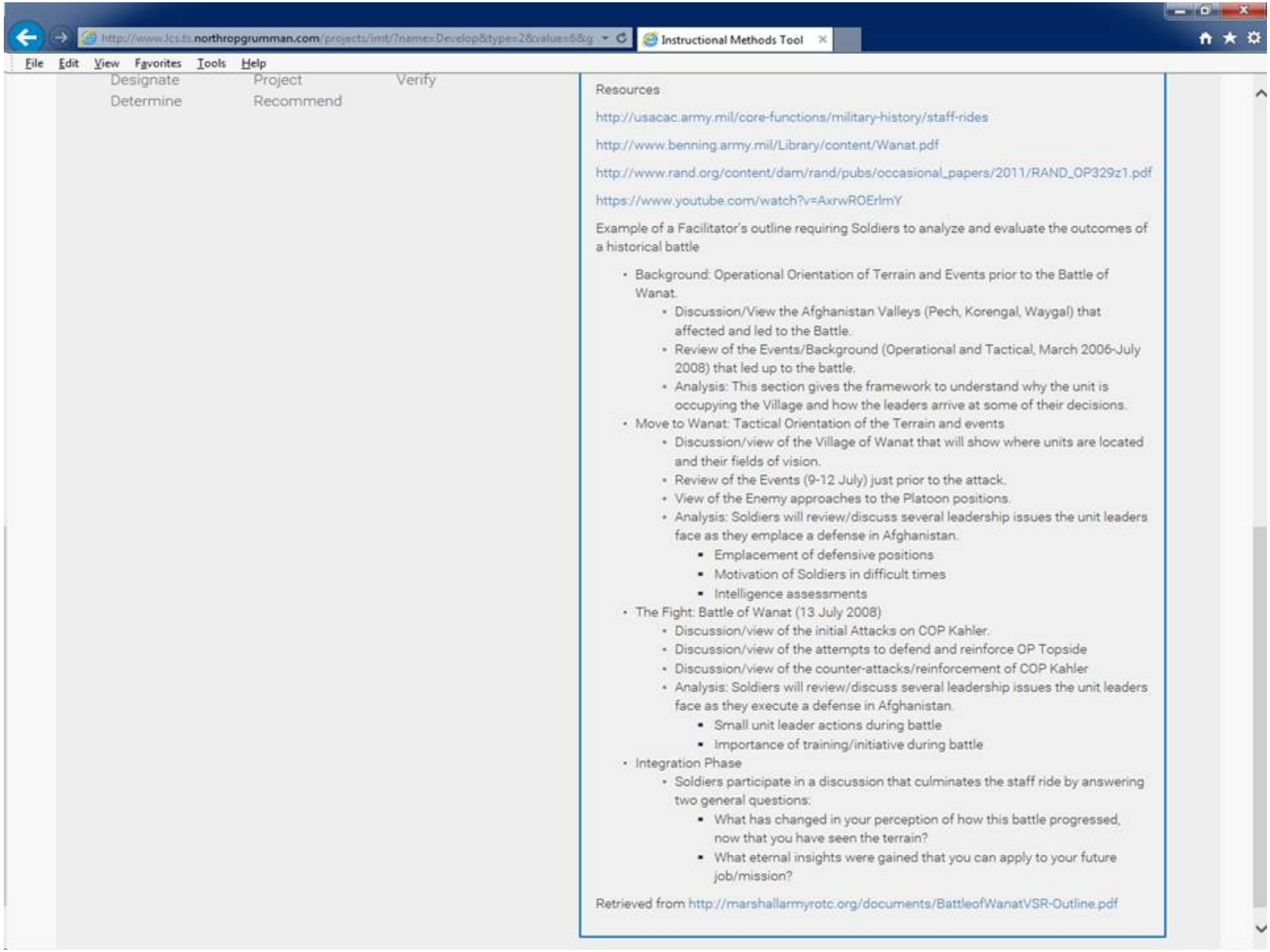
Facilitator Considerations
Practical Exercise Considerations
Peer-to-Peer Learning Considerations
Case Studies
Case Study Example
Battle of Wanat
On 13 July 2008, nine American Soldiers perished while fighting a pitched battle in the village of Wanat in Afghanistan's Waygal Valley. On that day, the men 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://usacac.army.mil/core-functions/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_OP329z1.pdf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http://www.benning.army.mil/Library/content/Wanat.pdf
http://www.rand.org/content/dam/rand/pubs/occasional_papers/2011/RAND_OP329z1.pdf
https://www.youtube.com/watch?v=AxrwROErlmY
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 OP 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 eternal insights were gained that you can apply to your future job/mission?
Retrieved from http://marshallarmyrotc.org/documents/BattleofWanatVSR-Outline.pdf