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Training Platoon Leader Adaptive Thinking Skills in a Classroom Setting

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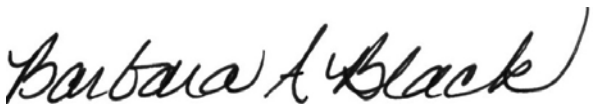

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14. ABSTRACT *(Maximum 200 words)*:

A problem-based learning (PBL) strategy (Schwartz & Bransford, 1998) was used to develop a training protocol to enhance Infantry lieutenants' adaptive thinking/problem solving skills in the context of a mission planning exercise. The training protocol was tested using recent graduates of the Infantry Basic Officer Leader Course (IBOLC). Participants were assigned to either an experimental (PBL training) or a control (partial treatment) group. Both groups were exposed to four planning exercises over an eight-hour instructional period and asked to develop, individually, a platoon offensive operation order (OPORD), and then modify their order based on additional information (two fragmentary orders - FRAGOs). Following the first FRAGO, the instructor presented a lecture to the experimental group describing key conceptual points and their relevance to the mission planning process. After additional practice (FRAGO 2), the groups were then presented with another mission-stability operation, which served as the transfer task. Analysis of the performance-based mission planning ratings showed that the experimental group's performance did not significantly differ from that of the control group (no lecture). With regard to participant self-reports of the training, the control group's attitudes toward various aspects of the instruction were generally more positive than those of the experimental group. A major impediment to the training was the inadequate time allocated to effectively execute the instruction. Specific issues related to employing a PBL strategy in a military classroom environment were identified. These issues included the duration and structure of the training events (i.e., OPORD, FRAGOs, and transfer task), instructor preparation, control group design, classroom size, and development of metrics for measuring deep understanding. Each of these areas is briefly discussed. In summary, the findings indicate that revisions to both the instructional design and content of the training module are needed if PBL instruction is to be used successfully in the development of adaptive thinking skills in an institutional training environment.

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adaptability, mission planning, troop leading procedures, platoon leader decision-making, constructivist learning strategies, problem-based learning, classroom-based training

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TRAINING PLATOON LEADER ADAPTIVE THINKING SKILLS IN A CLASSROOM SETTING

EXECUTIVE SUMMARY

Research Requirement:

The demands facing small unit leaders (platoon, squad, team) in the operational environment (OE) require that they demonstrate a high level of adaptability. Leaders must be able to adjust rapidly across a wide variety of operations. Achieving the necessary level of operational adaptability requires Army forces that are capable of successfully conducting both combined arms maneuver and wide area security within the context of joint, interagency, intergovernmental, and multinational efforts (TRADOC Pam 525-3-1, 2010). High operational tempo, increased uncertainty, cultural differences, a determined and resourceful enemy, and the need to constantly shift tactics and approaches are some of the key factors which have contributed to an environment where adaptability is required for mission success (Mueller-Hanson, White, Dorsey, & Pulakos, 2005).

Institutional courses such as the Infantry Basic Officer Leader Course (IBOLC) are tasked with providing new lieutenants with the fundamental knowledge and skills that will enable them to function effectively as platoon leaders in their first unit of assignment. Not surprisingly, the operational needs of units have impacted IBOLC course content. In addition, the need to rapidly fill platoon leader positions in operational units may shape how topic areas are taught, which will limit how content domains such as adaptability are addressed in these (institutional) settings.

The focus of this research was on designing effective and efficient module-based classroom training to enhance the adaptive/critical thinking process, i.e., to provide the basic knowledge, concepts, and skills that will provide the ground work for future learning in order to enhance the transfer of knowledge to novel situations (a key component of adaptability). More specifically, this research examined adaptability/critical thinking as applied to the mission planning and analysis process by revising relevant sections of an existing course module to enhance these particular skills. A problem-based training module was developed incorporating two instructional design features (contrasting cases and invention) plus a lecture used to enhance deep understanding of subject matter materials (Schwartz & Bransford, 1998; Schwartz & Martin, 2004).

Procedure:

Participants included 42 male second lieutenants who recently graduated from the IBOLC. Participants were assigned to either the experimental (n = 42) or control (n = 10) groups. Participants assigned to the experimental group were first briefed on the purpose of the experiment (i.e., to see how platoon leaders plan) and told they would be provided with multiple opportunities to practice the orders process. They then completed a demographic questionnaire and a set of individual difference measures hypothesized to be related to adaptive performance

(general self-efficacy, goal orientation, metacognitive thinking, individual adaptability, Big Five personality, and intelligence).

The instructor role played the company commander and gave the area of operation (AO) briefing and company operations order (OPORD). The OPORD described an offensive mission. Each participant role played a platoon leader and was asked to write his own individual platoon order.

The participants then began work on their backbriefs, warning order (WARNO) and OPORD. After completing the OPORD, participants then received their first fragmentary order (FRAGO 1). After a predetermined time, the instructor provided a lecture which identified key conceptual points/differences between the OPORD and FRAGO 1 and their relevance to the planning process. Following the lecture, the participants received their second FRAGO which altered overall mission objectives and were given a set, predetermined time to update their order. When the participants completed FRAGO 2, the instructor conducted a brief discussion designed to highlight additional planning considerations implied in the second FRAGO.

After the discussion, the participants received the second mission/scenario (stability operation) which was very different from the first OPORD and served as the transfer task. The objective was to determine how well information provided in the lecture and employed in FRAGO 2 generalized (transferred) to the more nebulous stability operation, which was very different in intent from the first offensive OPORD. Transfer was assessed by having the participants respond to a set of written questions designed to assess how well they applied key planning concepts addressed in the lecture to specific planning considerations present in the transfer task. Finally, the participants completed a post-training questionnaire that assessed such areas as the participants' level of preparedness to discuss various aspects of the mission planning process, perceived utility of the training, and adequacy of time allotted for training.

Participants in the control condition were treated identically to those in the experimental condition with one exception. That is, they were exposed to the OPORD and follow-on missions, FRAGO 1, FRAGO 2, and the transfer task (contrasting cases) and asked to develop (invention) plans for the OPORD and FRAGOs or respond to specific questions about the planning process in the transfer task. The control condition did not, however, receive the tie-in lecture following FRAGO 1 which addressed key conceptual points and their implications in the planning process. The participants then completed the post-training questionnaire.

Findings:

The results showed that the full training intervention did not significantly improve performance as measured by mission planning dimension ratings on the OPORD, FRAGOs, and transfer task in the experimental group relative to the control group. Trend analyses for both groups showed that approximately ninety percent (experimental: 93%; control: 90%) of the dimension scores (mission planning ratings) did not change from FRAGO 1 to FRAGO 2 (i.e., pre- and post- key training intervention). Approximately fifty percent (experimental: 49%; control: 50%) of the scores did not change from FRAGO 2 to the transfer task.

With one exception (weather analysis; control group significantly more prepared), the full training protocol condition did not significantly differ from the control group on level of

preparedness for discussing various aspects of the planning process (i.e., mission analysis, terrain analysis, describing the enemy, and adjusting a plan). Further analyses of students' self-reports of the training received indicated that the control group's attitudes toward various aspects of the instruction (training utility, adequacy of coverage of the mission planning process, instructor's understanding of the content, time allotment, and class engagement) were generally more positive than those of the experimental group.

The pattern of correlations obtained between selected individual difference measures and task performance on this set of dynamic tasks was consistent with earlier empirical research relating these variables to training adaptive thinking skills. Of particular interest were the positive correlations obtained between trainee characteristics such as self-efficacy, metacognition, learning (mastery) goal orientation and the individual adaptability dimensions – creativity and learning with the transfer task which was designed to capture adaptive performance through the generalization of learning to a novel task demand.

One major factor limiting the impact of the training strategy was the brief amount of time allowed to conduct the training (one day). Other factors were identified which trainers/course developers must address if this training strategy is to be successfully employed in a military institutional classroom setting. These factors include: minimizing the time between the start of training and initial feedback, training instructors in the application of instructional design principles for optimizing learning and transfer, reducing class size to effectively leverage the impact of small group activities, and develop appropriate metrics for assessing learning outcomes in a timely and efficient manner. In summary, the findings indicate that revisions to both the instructional design and content of the training module are needed if PBL instruction is to be used successfully in the development of adaptive thinking skills in an institutional training environment.

Utilization and Dissemination of Findings:

The training strategy examined in the present research, while ineffective as executed in the training environment described, holds promise for training cognitive skills essential in the operational environment. However, this particular training strategy, and constructivist approaches in general, will require significant engineering to be successfully implemented in the institutional training environment under current course constraints and projected student throughput patterns. Selected findings from this research were presented at the 26th Annual Society for Industrial and Organizational Psychology Conference in Chicago IL, 14-16 April 2011.

TRAINING PLATOON LEADER ADAPTIVE THINKING SKILLS IN A CLASSROOM SETTING

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TRAINING PLATOON LEADER ADAPTIVE THINKING SKILLS
IN A CLASSROOM SETTING

Introduction

The demands facing small unit leaders (platoon, squad, team) in the operational environment (OE) require that they demonstrate a high level of adaptability. Leaders must be able to adjust rapidly across a wide variety of operations. Achieving the necessary level of operational adaptability requires Army forces that are capable of successfully conducting both combined arms maneuver and wide area security within the context of joint, interagency, intergovernmental, and multinational efforts (TRADOC Pam 525-3-1, 2010). High operational tempo, increased uncertainty, cultural differences, a determined and resourceful enemy, and the need to constantly shift tactics and approaches are some of the key factors which have contributed to an environment where adaptability is required for mission success (Mueller-Hanson, White, Dorsey, & Pulakos, 2005). The Army, more than ever, needs "… agile and adaptive leaders able to handle the challenges of full spectrum operations in an era of persistent conflict" (FM 3-0, 1-83, 2008).

Adaptability has been defined in many ways (e.g., Pulakos, Arad, Donovan, & Plamondon, 2000; Smith, Ford, & Kozlowski, 1997). Within the current research, we adopt the definition provided by Mueller-Hanson et al. (2005). Specifically, adaptability refers to an effective change in response to an altered situation. Underlying this definition is the notion that for a leader to respond in an adaptive fashion, he or she must first recognize the need to change based on some perceived alteration in the environment. The leader must then change his or her behavior in an appropriate manner.

Attributes/Characteristics Related to Adaptability

Research has shown adaptability to be related to specific personality traits such as self-efficacy, resiliency, openness (Big Five Dimension), achievement motivation (part of the Big Five Dimension of Conscientiousness, internal locus of control, tolerance of ambiguity, and willingness to learn; see Mueller-Hanson et al., 2005 and White, Mueller-Hanson, Dorsey, Pulakos, Wisecarver, Deagle, & Mendini, 2005). Other characteristics identified by Mueller-Hanson et al. (2005) and White et al. (2005) include cognitive skills (general mental ability, problem-solving/decision-making, and metacognitive), interpersonal skills (communication, self/other awareness), domain specific knowledge, and experience.

Having extensive domain knowledge is a key component of adaptive responding. For example, to troubleshoot a car engine one would first need a basic understanding of how an engine works. Similarly, to be able to effectively plan and adjust a mission, one needs a basic understanding of troop leading procedures (TLP) and the subcomponents within specific steps of the TLP process.

In addition to possessing adequate baseline knowledge of an area, experience is another key factor impacting adaptive performance (Mueller-Hanson et al., 2005; White et al., 2005). The more situations (particularly those requiring adaptive responding) that people have stored in

memory, the greater the models or blueprints for action they have to draw from in establishing a match to the current situation. When facing novel situations, the experienced Soldier may be capable of synthesizing elements from past situations that most closely match the current one. Experience in a variety of situations within a specific domain increases the likelihood of producing an appropriate response, even when the individual is exposed to time pressure and other stressors (Klein, 1997).

Training Adaptability

Institutional courses such as the Infantry Basic Officer Leader Course (IBOLC) are tasked with providing new lieutenants with the fundamental knowledge and skills that will enable them to function effectively as platoon leaders in their first unit of assignment. Not surprisingly, the operational needs of units have impacted IBOLC course content. In addition, the need to rapidly fill platoon leader positions in operational units may shape how topic areas are taught, which will limit how content domains such as adaptability are addressed in these (institutional training) settings.

Only a few adaptability attributes or characteristics may be amenable to training at the institutional level. Stable attributes such as personality and cognitive ability, while predictive of adaptive performance, would be less amenable to training interventions and have a low payoff with regard to improved adaptive performance relative to the costs of developing training for these areas. On the other hand, attributes such as domain specific knowledge, (varied) experience, and, to a lesser extent, metacognition and problem solving skills are much more amenable to training within an institutional setting (Mueller-Hanson et al., 2005).

Institutional training is typically formal and structured, involving both classroom training and field training in a controlled environment. The focus of this research is on designing effective and efficient module-based classroom training to enhance the adaptive/critical thinking process, i.e., to provide the basic knowledge, concepts, and skills that will provide the ground work for future learning and will enhance the transfer of knowledge to novel situations (a key component of adaptability). More specifically, this research will examine adaptability/critical thinking as applied to the mission planning and analysis process by revising relevant sections of an existing course module to enhance these particular skills (versus creating a separate course on improving small unit leader adaptive/critical thinking skills). This is a very challenging task for junior leaders. The quick paced, rapidly changing nature of operational missions requires that the platoon leader be able to quickly assess situations, identify key aspects of the planning process, and create follow-on orders which reflect an awareness of these factors (i.e., the changing situation and its impact on earlier plans).

Structuring Classroom-based Training

Mueller-Hanson et al. (2005) provide one approach for structuring classroom training for enhancing adaptive performance. Their sequencing would involve providing students with a short lecture on a particular topic incorporating real world examples and vignettes to illustrate specific teaching points. This would be followed by a discussion (feedback) and an exercise designed to promote both mastery orientation and discovery learning (i.e., no clear cut correct

answer, freedom to explore new approaches without fear of negative consequences).[1] Lectures followed by applied practice (and feedback) on realistic problems are typically the training approach of choice, particularly for procedural skills training (see Clark, 2004). However, for reasons cited below, there may exist alternative design structures more amenable to training adaptive performance efficiently.

Overview of Training Strategies

Three general learning strategies were considered to guide the development of the mission planning module and are briefly described below.

Inquiry-based learning (IBL). Inquiry or problem based-learning is founded on research which suggests that by having students learn through problem solving experiences, they can learn both content as well as thinking strategies. In IBL, students learn through facilitated problem solving. More specifically, learning centers on a complex problem that does not have a single correct answer. Students work in collaborative groups to identify what they need to learn to solve a problem. They engage in self-directed learning and then apply their new knowledge to the problem. They then reflect on what they learned and the effectiveness of the strategies employed. In this approach, the instructor's role is to facilitate the learning process rather than provide knowledge. Because students are self-directed, managing their learning goals and strategies to solve ill defined problems, they are able to, presumably, acquire the skills needed for lifelong learning (Hmelo-Silver, 2004; see also Hmelo-Silver, Duncan, & Chinn, 2007).

While the IBL approach is appealing from the standpoint of developing problem-solving skills which may be applied to similar situations outside the initial training environment, there were several drawbacks to this strategy for the current research. For example, issues involving classroom organization (shorter instructional periods in IBOLC with often strict time constraints), skill levels of current instructors to serve as course facilitators for this approach, and the relatively high IBOLC student/instructor ratio (40:1) suggested that IBL would not be an optimal strategy for driving the development of the mission planning module (Hmelo-Silver, 2004).

Guided experiential learning (GEL). The GEL approach to learning is based on a large body of research which indicates that providing information does not equate to training. Furthermore, under the GEL model, providing trainees with a field-based problem or an immersive situation alone is not adequate to achieve individual or team learning (Mayer, 2004). A GEL-based course module is grounded on the premise that strong early guidance for the learning of expert-based strategies for task performance works best.

Guidance consists of clear procedures, accurate demonstrations of authentic field-based problem solving, and practice on increasingly difficult problems where expert feedback helps correct trainee misconceptions concerning the correct performance of the task. Guidance is gradually faded until the trainee is able to continue to learn and perform at or above expectations (Clark, 2004).

[1] Additional practice is provided through field exercises and simulations.

The structure of a GEL lesson or module follows the same format regardless of the problem. Typically, lessons are sequenced in the following order. The lesson starts with a learning objective (to give the trainees an end state), then tells them why (to motivate learning) and then what will happen in the lesson (an overview) to create a mental model of what will be learned. Following the lesson format, the instructor then teaches the conceptual knowledge needed to learn the procedure (if any), demonstrates the procedure and provides practice and feedback (Clark, 2004).

The overall quality of a GEL lesson is a direct function of the cognitive task analysis (CTA) that is performed. A CTA is a knowledge elicitation procedure designed to uncover information about the knowledge, thought processes and goal structures that underlie observable task performance (Clark, Feldon, van Merrienboer, Yates, & Early, 2007). Execution of Clark's CTA approach is highly structured (Expert Knowledge Solutions, 2007) and requires extensive training (and certification) of the interviewer before he/she is permitted to conduct a CTA (Clark's version) without supervision.

Not all courses are candidates for GEL design. Courses for advanced learners and/or experts do not require the learning support provided in a GEL designed course. In general, when the learning goals of a course are vague or the problems addressed in the course are unstructured/ ill-defined, and when only conceptual knowledge is being taught (i.e., without "how to" instruction) GEL design is not useful (Clark, 2004).

Although the GEL approach could possibly enhance the development of the procedural aspects of the mission planning module, the costs involved in implementing this approach far exceed the benefits. Considerations for not using this approach include the extensive time involved in training personnel to conduct and accurately execute a CTA, as well as the time involved to train instructors in the GEL approach, and the inability of GEL to address the key objective of the proposed training module - to develop the conceptual skills (adaptive/critical thinking) needed to produce effective solutions (plans) which have no clearly defined right or wrong answer.

Contrasting Cases/Invention. Contrasting cases/invention are two instructional design features used to enhance deep understanding of subject matter materials. The approach was developed to help people construct new knowledge for themselves and become more adaptive/effective problem solvers (Schwartz & Bransford, 1998; Schwartz & Martin, 2004). A key objective of this problem-based approach is to optimize the use of lectures/reading materials to develop these skills. Schwartz & Bransford (1998) argue that the value of lectures can be enhanced if the trainee is able to map information from the lecture or text into the knowledge of the problem situation that they have already developed as a result of their prior experiences. A key assumption of this strategy is that the trainee can activate the prior knowledge. Schwartz and Bransford propose a way for activating this prior knowledge through the use of contrasting cases/invention. Based on theories of perceptual learning that emphasize differentiation (e.g., Bransford, Franks, Vye, & Sherwood, 1989), providing trainees with opportunities to analyze sets of contrasting cases (e.g., analyzing the results from different experiments, key aspects of different theoretical models) can help them become sensitive to information that they might not otherwise notice. Contrasting cases help attune people to specific features and dimensions that

make the cases distinctive. The refined information provides the foundation for guiding other activities such as creating images, elaborating, and generating questions, which can enhance development of adaptive problem solving skills.

According to Schwartz and Martin (2004), contrasting cases can help people pick up or notice distinctive features; however, it is their actions that are critical for helping them discern the structures that organize those features. To make contrasting cases effective, learners need to undertake productive activities that lead them to notice and account for contrasts in the different cases. Schwartz and Martin use the term invention to describe this process. Invention involves production activities, like inventing solutions that can be particularly beneficial for developing early knowledge and facilitating learning. These solutions could, for example, be in the form of graphs, or general formulas. Invention can help develop and/or clarify interpretations of the problem in question by forcing students to notice inconsistencies in their approach or mental model of their solution and work to reconcile them. This, in turn, provides the knowledge that will prepare them to learn from subsequent instruction (lectures) with deeper understanding (Schwartz, Sears, & Chang, 2008).

To optimize deep understanding of the subject matter material, Schwartz and colleagues advocate a particular sequencing of events. Students first try to solve novel problems without guidance/instruction. Then, they receive direct instruction and demonstrations regarding the tasks. Finally, they apply what they have learned to novel situations. For example, students might analyze data sets from classical experiments and attempt to graphically display the general phenomena from the data. Or, they might be asked to invent a model or formula that will accurately describe the concept (e.g., reliability or correlation). This would be followed by a lecture and (sometimes) class discussion. Finally, students would be presented with new problems and asked to make predictions concerning the outcomes of new experiments or applying the formula or model to solve another (novel) problem (Schwartz, Bransford, & Sears, 2005; Schwartz & Martin, 2004).

While contrasting cases/invention is a critical part of Schwartz' approach, the lecture component is equally valuable. It offers a higher level explanation of the concept/phenomena that would be quite difficult and time consuming for the student to discover on his or her own. The higher level explanation is important because it provides a generative framework that can extend one's understanding beyond the specific cases that have been analyzed and experienced (Schwartz & Black, 1996) and thus, enhances adaptive problem solving (transfer). By sequencing the lecture following invention/contrasting cases, a "time for telling" is created that increases the learning value of the lecture as students are now better prepared to grasp the deeper implications of the lecture as a result of their earlier discovery activities (Schwartz & Bransford, 1998). Schwartz, Bransford, and Sears (2005) present evidence that the most effective design combination includes both opportunities for invention and analysis (contrasting cases) followed by opportunities for learning efficient solutions derived by experts (typically) presented in lecture format.

The contrasting cases/invention strategy was selected to guide the development of the mission planning module. There were several reasons for selecting this approach including the time required to conduct instruction (the module design could more readily fit established time

blocks and would not negatively impact course throughput), lecture (while the content of the lecture would change, IBOLC instructors are more comfortable with this approach versus serving as a facilitator; it would also require less preparation), and transfer (the approach is designed to facilitate adaptive problem solving skills/transfer which is a key training objective for IBOLC).

Summary of Training Approach and Research Objectives

Unlike the approach proposed by Mueller-Hanson et al. (2005), the current training strategy requires the participants to work on multiple exercises (missions) prior to receiving any lecture or extensive discussion. Following the lecture, participants are then presented with another mission, related to the earlier ones (for additional practice). Finally, the participants receive a very different mission to assess near transfer (i.e., adaptive task performance). While the design features are the same in both approaches, (i.e., lecture, multiple exercises [or exposure to multiple examples], discussion/feedback), the key difference between the approaches is the sequencing of activities.[2]

The objectives of the current research were to: 1) develop a training module to train adaptive thinking/problem solving skills in the context of a mission planning exercise and document the overall process so trainers would have a template for converting the format of other courses to a structure similar to the experimental module and; 2) compare the prototype module to a comparison group not receiving all elements of the training manipulation (specifically, the comprehensive lecture identifying key conceptual points and their relevance to the planning process).

[2] The Command and General Staff College has adopted a method of instruction similar to the contrasting cases/invention strategy for training critical thinking skills. Like the contrasting cases/invention strategy, the student works on a problem first, followed by a lecture. The student then receives additional practice on similar exercises followed, at the end, by an opportunity to apply his skills to new situations (transfer). The six-step Experiential Learning Model, based on the work of Kolb (1984) and adapted by Fischer, Spiker, and Riedel (2009), includes the following steps: 1) concrete problem, 2) feedback from peers, instructors, and SMEs, 3) academic instruction (lecture), 4) practice on using principles through more exercises, 5) complete practical exercise for a formal grade and 6) application of newly learned skills to new situations (transfer). Unlike the Experiential Learning Model, the contrasting cases/invention strategy entails first presenting the student with multiple situations to solve and contrast in an attempt to identify a general solution to the problems presented by the various situations. This is followed by a lecture from an SME designed to help explain the key concepts under examination and help the student to generalize beyond the cases that had been analyzed. The student is then given the opportunity to apply this knowledge to similar and new situations (transfer).

Method

Participants

Participants were 42 male second lieutenants who recently graduated from the Infantry Basic Officer Leader Course (IBOLC). Complete demographics are presented in Table 1. See Appendix A for questionnaire.

Table 1
Participant Demographics

Age[a] (in years)	Years in Military	Commissioning Source *n* (%)	Prior Enlisted *n* (%)	Deployed to OIF/OEF *n* (%)
M = 23.4	*M* = 4.0	ROTC 12 (28.6%)	7 (16.7%)	4 (9.5%)
SD = 1.8	*SD* = 1.9	USMA 30 (71.4%)		

Note. Total sample = 42. No participants were commissioned through OCS.
[a] Questionnaire responses for two participants' were missing for this item.

Measures

Training scenarios. The first scenario was set in Baghdad, Iraq. Instructor materials developed for the first scenario included an area of operations (AO) backbrief providing general background information related to the (first) scenario. In addition, instructor presentation materials included a company operation order (OPORD), a company warning order (WARNO) and two company fragmentary orders (FRAGOs). All participants were to act as the third platoon leader (PL) and write a backbrief, warning order (WARNO) and platoon OPORD. As they received the additional company FRAGOs, they were instructed to update their OPORD. A second, shorter scenario, unrelated to the previous scenario, was also developed. This scenario consisted of an orientation paragraph and a FRAGO.

In the first scenario, the company OPORD described the plan for an offensive operation. The company mission was to clear Objective (OBJ) Anvil, and the third platoon's mission was to secure a mosque, which would enable the company main effort, second platoon, to clear the rest of OBJ Anvil. Included in the company OPORD were the area of operations/interest, situation (enemy and friendly), terrain and weather, concept of operations, attachments and detachments, company mission, commander's intent, tasks to maneuver units, and coordinating instructions.

The first FRAGO changed the focus of the entire operation from being focused on the terrain (the bomb making facility) to being focused on the enemy (bomb making expertise). The second FRAGO involved capturing or killing a key individual with extensive improvised explosive device (IED) experience suspected of being in the vicinity of OBJ Anvil. The participants' tasks were to complete a platoon OPORD from the company OPORD and update the platoon order based on the follow-on company FRAGOs (see Appendix B for all instructor presentation materials utilized in training). Table 2 summarizes the changes in the OPORD and their intended impact on the participant's (PL's) analysis/development of his OPORD.

Table 2

Intended Impact of the Changing Company OPORD on the Platoon Leader's OPORD

Overall Concept	OPORD	FRAGO 1	FRAGO 2	Intended Impact on Platoon Leader's OPORD
Platoon leader understands the difference between a mission that is focused on terrain versus a mission that is focused on the enemy	**Platoon's primary task is to secure**	**Primary task changes to isolate**	**n/a**	**The order should address how the presence of the mosque psychologically influences the fight by using the loudspeaker**
	Battalion operation is terrain focused	**Battalion operation becomes enemy focused (neutralize, contain, defeat)**		**The platoon leader should change his tasks to be enemy focused.**
Platoon leader develops a better model of how the enemy will react		**High Value Target (HVT) on OBJ Hammer**	**High Value Target on OBJ Anvil**	**The platoon leader should expect the enemy to fight to allow the HVT to escape.**
		Commander's CCIR include "What do captured Anti-Iraqi Forces (AIF) know?"		**The platoon leader has an explicit plan to capture and question AIF.**
		Coordinating Instruction: "Stop all individuals leaving the objective. Detain anyone missing fingers."		**The platoon leader should have a specific plan to direct individuals to a point where they can be searched/inspected. The tactical psychological operations (PSYOP) team is likely the best choice to do this.**
Platoon Leader understands the capability and synchronization of friendly forces		**Synchronization matrix is included**		**If not in the order already, the platoon leader should recognize that the company has two decision points (DP). He should direct rehearsals or contingency tasks based on these DP.**
	2/A is the decisive operation	**3/A becomes the decisive operation**		**Keeping the mosque from influencing the neutralization of OBJ Hammer has now become the main priority.**
	Platoon has organic assets	**Platoon gains a tactical PSYOP team**	**Platoon gains an Iraqi Army (IA) squad**	**Does the platoon leader use these specialized assets in an effective manner, based on the unique capabilities they have to offer?**
	Daylight Mission	**Daylight Mission**	**Nighttime Mission**	**Does the platoon leader address the use of the IA squad at night (they lack night vision goggle - NVG capability).**

The second scenario, also set in Baghdad, was a stability operation in which the platoon was to secure a market place. The scenario contained a set of questions for the participant to answer (e.g., *Based on the terrain, what directions will you give the engineer platoon leader? How do you expect his actions to support your defensive positions in the market? What other information would you desire to complete your plan? What conditions would have the greatest impact on mission success?*). Finally the participants were asked to provide a tentative mission statement and a task and purpose for each squad. The purpose of this second scenario was to serve as a (near) transfer task to assess how well the participants were able to incorporate key points related to mission planning and analysis into a very different mission.

The scenarios and associated presentation materials were developed by a former Infantry officer (a Captain) with recent experience in Operation Enduring Freedom (OEF) to ensure they were both tactically challenging and representative of missions performed in the OE. An IBOLC platoon trainer reviewed the scenarios for realism and completeness (see Appendix B).

Participants also completed seven paper-and-pencil instruments during different phases of the experiment. Prior to the start of the experiment, the participants completed six individual difference measure scales (General Self-Efficacy Scale, Three Dimensional Trait Goal Orientation Scale, Motivated Strategies for Learning Questionnaire, Individual Adaptability Measure [I-ADAPT-M], Big Five Personality Scale, and the Wonderlic Personnel Test). The scales measure abilities, traits, and skills related to adaptive performance. At the conclusion of the experiment, participants completed a Post-Training Evaluation Questionnaire. A behaviorally anchored rating scale (BARS) was developed for raters to assess the performance of the participants for each order they produced. These instruments are described briefly in the following sections.

General Self-Efficacy Scale. The New General Self-Efficacy Scale (NGSE; Chen, Gully, & Eden, 2001) consists of eight items presented in a Likert-type scale format (1 = Strongly Disagree to 5 = Strongly Agree) to assess participants' beliefs in their overall competence to perform effectively across a wide variety of achievement situations (e.g., *I am confident that I can perform effectively on many different tasks*).

Three Dimensional Trait Goal Orientation Scale. The Three Dimensional Trait Goal Orientation Scale (VandeWalle, 1997; Orvis, Horn, & Belanich, 2006) consists of thirteen items in a Likert-type scale format that measure the extent to which participants' goal orientations are directed toward increasing competence through learning and mastery of content (***mastery orientation***; e.g., *I am willing to select a challenging task/assignment that I can learn a lot from*; portraying a favorable impression of competence (***performance prove***; e.g., *I try to figure out what it takes to prove my ability to others*); or avoiding a negative evaluation of competence by others (***performance avoid***; e.g., *I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others*).

Motivated Strategies for Learning Questionnaire. The Motivated Strategies for Learning Questionnaire is a self-report instrument designed to assess college students' motivation orientations and their use of different learning strategies as applied to college course work (Pintrich, Smith, Garcia, & McKeachie, 1993). The learning strategies section consists of three general scales. The most relevant scale for this research was the ***metacognitive*** scale. The

metacognitive scale is composed of 12 items presented in a Likert-type scale format that measures **planning** (setting goals; e.g., *When I study new material, I set goals for myself in order to direct my efforts*) **monitoring** (of one's comprehension; e.g., *I ask myself questions to make sure I understand material that I have been reading*); and **regulating** (adjusting reading speed depending on the task; e.g., *If something I'm reading is difficult to understand, I change the way I read the material*).

Individual Adaptability Measure (I-ADAPT-M). The Individual Adaptability Measure (Ployhart & Bliese, 2006) consists of fifty-five items in a Likert-type scale format that measure eight dimensions. For this research, the measure was modified to include only three dimensions assessed using 23 items. The dimensions most relevant for this context were: ***Learning*** (e.g., *I enjoy learning new approaches for conducting work*); ***Creativity*** (e.g., *I see connections between seemingly unrelated information*); and ***Uncertainty*** (e.g., *I easily respond to changing situations*).

Big Five Personality Scale. We measured personality using Saucier's (1994) Mini Markers. The Mini Markers scale assesses Big Five personality characteristics through participant ratings of 40 adjectives evenly divided among five dimensions (*Extraversion, Openness to Experience, Conscientiousness, Agreeableness, and Emotional Stability*). Participants indicated the extent to which each adjective (e.g., Bold, Creative, Energetic) describes them using a Likert-type scale format. The measure has shown to maintain reasonable levels of reliability while greatly decreasing administration time (Saucier, 1994).

Wonderlic Personnel Test. The Wonderlic Personnel Test (E. F. Wonderlic Associates, Inc., 1983) is a test of general mental ability consisting of 50 multiple-choice and short answer items, which is administered using a 12-minute time limit. The test includes verbal, mathematical, analytic, and pictorial items (e.g., *REAP is the opposite of 1. Obtain, 2. Cheer, 3. Continue, 4. Exist, 5. Sow; Paper sells for 23 cents per pad. What will 4 pads cost?*). Test items are arranged in a spiral-omnibus format (Murphy, 1984). The Wonderlic is commonly used in research because of its short administration time, abundance of reliability and validity data, and ease of assessment (E. F. Wonderlic Associates, Inc., 1983).

Post Training Evaluation Questionnaire. The Post Training Evaluation Questionnaire includes 15 items. The first five items assess the participants' level of preparedness to discuss various aspects of the mission planning process (e.g., *Conduct a thorough mission analysis*) prior to and post training using a five-point Likert-type scale (1 = Not at all Prepared to 5 = Extremely Prepared - Could Teach This to Others). The participant was asked to rate preparedness both prior to and post training. This design utilized a retrospective pretest. Retrospective pretests "ask respondents to recall their pretest status" (Shadish, Cook, & Campbell, 2002). These pretests allow for examination of selection biases (although to a weaker extent than a traditional pretest design). In addition, they allow a more powerful analytical technique by removing error variance that would be present in a typical post-training only design. The items were rated from 1 (not at all prepared) to 5 (extremely prepared – could teach this to others) for both pre-training and post-training condition. Items 6 – 15 from the post-training evaluation measured five dimensions. A four item scale delivered following training assessed perceived utility of the training (Items 11, 12, 13, and 15, e.g., *The topic areas covered in this class will clearly benefit*

me). Coefficient alpha for this scale was .91. A three item scale delivered following training assessed participants' attitudes toward the completeness and effectiveness of coverage in relation to the mission planning process (Items 6, 9, and 10, e.g., *The instruction gave me a much better understanding of the mission planning process*). Coefficient alpha for this scale was .82. The remaining three dimensions included instructor's understanding of content area (Item 7; *The instructor had a thorough understanding of the topic material*), adequacy of time allotment during training (Item 8; *The time devoted to explaining concepts and group discussions was adequate*), and class engagement (Item 14; *I was thoroughly engaged throughout the class*). Items followed a five-point Likert-type scale response (1 = Strongly Agree; 5 = Strongly Disagree). Items 6-15 were reverse coded so that 1 = Strongly Disagree and 5 = Strongly Agree. See Appendix C for the items.

Mission Analysis and Planning Behaviorally Anchored Rating Scale (BARS). The team leveraged an existing and validated BARS instrument that captured the key elements of adaptive thinking in the context of tactical mission planning (Phillips, Ross, & Shadrick, 2006). Some of the original BARS dimensions were not assessed because they relate to behavior observed during the execution of a mission; see Appendix D for items used). Specifically, the following four performance dimensions were assessed: 1) *Know and Use All Available Assets*; 2) *Keep a Focus on the Mission and Higher's Intent*; 3) *Model a Thinking Enemy or Populace*; and 4) *Consider Effects of Terrain*. All four dimensions were scored on a five-point Likert-type scale with specific anchors for each dimension. For example, for the Keep a Focus on the Mission and Higher's Intent dimension 1 = "Focuses on Own Mission" and 5 = "Supports Intent." As can be seen in Appendix D, each anchor consists of descriptions of specific behaviors that would receive that particular score.

The dimensions assessed by the BARS are all indicators of *Modeling a Dynamic Situation* (i.e., the relationship between friendly, enemy, and terrain) which was the general training content area for the selected training approach. Dimensions 1 and 2 represent key features of understanding the friendly forces, Dimension 3 represents understanding the enemy force, and Dimension 4 represents an understanding of the terrain. Training content emphasized key behavioral indicators of each performance dimension.

The BARS was used by two subject matter experts (SMEs) to rate the participants' performance on the platoon-level OPORD, two FRAGOs, and transfer task (new mission). Both SMEs served 20 years or more in both conventional and U.S. Special Operations Forces (SOF) units with multiple deployments to various countries performing offensive, defensive, and stability operations. Moreover, both SMEs have extensive planning experience with one having been a battalion operations officer, and then a brigade operations officer, and then an operations officer for a Joint Special Operations Task Force (JSOTF). These SMEs were trained on how to use the BARS to score performance on the training events. In particular, the training focused on framing the participants' performance as what would be expected from new platoon leaders. That is, it was not the expectation that the participants' performance would reflect that of an experienced platoon leader, and it was important for the SME raters to take the appropriate perspective when scoring the work. Specifically, new platoon leaders were not expected to score at the high end of the scale (i.e., 4s and 5s) because of their limited experience. Scores higher than 1s should be viewed as positive results.

Procedure

Nonrandom assignment into experimental and control conditions was utilized within the design of the current research. Participants were assigned to groups based on convenience sampling (control administered 25 January, 2010; experimental administered 27 January, 2010).

Experimental condition. Participants arrived at one of the IBOLC classrooms as one group (n = 32). Participants in the experimental group were first briefed on the purpose of the experiment (i.e., to see how platoon leaders plan) and told they would be provided with multiple opportunities to practice the orders process. They then completed a demographic questionnaire and the individual difference measures.

Next, the participants were provided with notebooks and pens and instructed to do all their work, except graphics and concept sketches in the notebooks. The instructor role played the company commander and gave the AO briefing and company OPORD (see Appendix B). The AO brief was similar to a briefing a unit might get during a Relief in Place/Transfer of Authority (RIP/TOA), and while not entirely doctrinally correct, provided the appropriate background information to allow participants to familiarize themselves with the situation. For assessment purposes, the participants were asked to record any questions they had for the company commander in their notebooks.

Each participant role played a platoon leader for 3rd platoon, Alpha company, and was asked to write their own individual platoon order. They were allowed to use whatever OPORD format they wanted (e.g., matrix). If they felt constrained by time they were instructed to focus on what was important, just as they would do in a unit.

The participants then began work on their backbriefs and WARNO (see Appendix B). When they finished, they were instructed to start on the OPORD. The participants were allotted a total of two hours (with an hour break for lunch) to complete the backbrief, WARNO, and OPORD before they received the first FRAGO (FRAGO 1). Prior to receiving FRAGO 1, the participants were instructed to make any changes to their base plan using a different color pen.

After receiving FRAGO 1 and working for 30 minutes, the instructor provided a lecture. The focus of the lecture was to emphasize the overall importance of developing a model of the plan and mentally playing out the plan (mental simulation). In addition, the instructor discussed changes in FRAGO 1 and how it differed from the original OPORD (part of the contrasting case strategy). The goal was to highlight distinctive features in the two plans (original OPORD and FRAGO 1). For example, participants' attention was drawn to implications between isolate and secure, the presence of high value target (experienced IED maker), changes in the battalion focus (neutralize, contain, and defeat), and how that impacted FRAGO 1. The instructor closed the lecture by asking the participants what they would add/change to their OPORD based on the changes noted on FRAGO 1, and how these changes would show up on their platoon OPORD.

The instructor then passed out FRAGO 2 along with a different colored pen. The participants were then given time to update their order. When the participants completed FRAGO 2, the instructor conducted a brief discussion designed to highlight second order effects

(e.g., *Did you do the mission at night with night vision goggles or with white light? If you used NVGs, how did you account for the Iraqi squad that probably did not have NVGs?*).

Following the discussion, the participants received the second scenario (transfer task) which was very different from the first OPORD. The transfer task was a stability operation (secure a market place). In contrast, the first OPORD and follow-on FRAGOs were part of an offensive operation. The objective was to determine how well information provided in the lecture and employed in FRAGO 2 generalized (transferred) to the more nebulous stability operation. For example, we intended to see if participants considered the actions of the enemy after they had secured the market—how would they attempt to further disrupt the market given a new security posture? How would they neutralize the terrain features that most affected the marketplace? How would they incorporate other combat multipliers for full advantage, such as the engineers or civil affairs team? After the participants read through the scenario and answered the attached questions, they completed the Post Training Evaluation Questionnaire.

Control condition. Participants in the control condition (n = 10) arrived at the Army Research Institute (ARI) field unit conference room and were briefed on the general research objectives. They were treated identically to those in the experimental condition with one exception. The control condition did not receive the lecture following FRAGO 1 identifying key conceptual points and their relevance to the planning process). However, to provide additional training value to the participants, the instructor presented the lecture following the completion of the second scenario in conjunction with a general debriefing. The participants then completed the Post Training Evaluation Questionnaire.

Results

Preliminary Analyses and Screening

Results of a MANOVA including the training design as the independent variable and the individual difference variables as the outcome variables of interest indicated that the two samples did not significantly differ on any of the individual difference variables assessed prior to training (i.e., intelligence, age, Big Five personality dimensions, adaptability dimensions, goal orientation, metacognitive self-regulation, general self-efficacy), $F(15, 26) = 0.93$, $p = .543$. When using quasi-experimental designs, finding nonsignificant differences between the treatment and control groups prior to training on measured variables theorized to impact training outcomes does not ensure that selection bias does not exist (it is possible, for example, that an unmeasured variable related to the selection in to groups is also related to training outcomes; Shadish, Cook, & Campbell, 2002). However, the lack of significant differences by these variables ensures that at least on these theoretically and empirically supported dimensions, the groups were relatively equivalent. Sample means, standard deviations, and 95% confidence intervals for the variables measured prior to training delivery are provided in Table 3. Overall correlations between individual difference measures for all participants are presented in Table 4.

Task Performance

Task performance was assessed using the BARS scores obtained for each participant over the four missions. The four dimensions rated using the BARS measures were aggregated and summated for each mission (OPORD, FRAGOs, and the transfer task) to provide a composite measure of performance for the mission planning process. Although 32 individuals began the experimental treatment condition, attrition, failure to turn in materials, or failure to perform assignments led to only 26 complete data for assessment through FRAGO 2 and 23 participants through the near transfer task. Table 5 summarizes the descriptive statistics for the BARS composite performance measures.

Table 3

Means, Standard Deviations, and 95% Confidence Intervals by Training Condition for Individual Difference Variables

	Control (n = 10)		Treatment (n = 32)	
Variable	*M* (*SD*)	95% C.I.	*M* (*SD*)	95% C.I.
WPT (Intelligence)	25.60 (3.44)	[23.14, 28.06]	27.06 (5.13)	[25.21, 28.91]
Big Five Personality				
Extraversion	3.26 (.74)	[2.74, 3.79]	3.40 (.87)	[3.09, 3.71]
Conscientiousness	3.91 (.43)	[3.60, 4.22]	3.86 (.59)	[3.65, 4.08]
Agreeableness	3.81 (.50)	[3.45, 4.17]	3.52 (.61)	[3.30, 3.74]
Intellect or Openness	3.81 (.59)	[3.39, 4.24]	3.72 (.66)	[3.48, 3.96]
Emotional Stability	3.24 (.46)	[2.91, 3.57]	3.48 (.62)	[3.26, 3.71]
General Self Efficacy	4.60 (.35)	[4.35, 4.85]	4.27 (.75)	[4.00, 4.54]
Goal Orientation				
Learning	4.34 (.54)	[3.95, 4.73]	4.18 (.84)	[3.89, 4.48]
Performance Avoid	2.95 (.87)	[2.33, 3.57]	2.43 (.84)	[2.13, 2.73]
Performance Prove	3.40 (.83)	[2.81, 3.99]	3.12 (.68)	[2.87, 3.36]
Metacognitive Self-Reg.	3.41 (.65)	[2.94, 3.87]	3.27 (.48)	[3.09, 3.44]
Age	23.22 (1.56)	[22.17, 24.28]	23.39 (1.83)	[22.73, 24.05]
Adaptability				
Uncertainty	3.72 (.34)	[3.48, 3.96]	3.80 (.36)	[3.68, 3.93]
Creativity	3.76 (.66)	[3.29, 4.23]	3.71 (.53)	[3.52, 3.90]
Learning	4.04 (.53)	[3.67, 4.42]	3.91 (.46)	[3.74, 4.07]

Note. WPT = Wonderlic Personnel Test.

Table 4

Intercorrelations of Individual Difference Variables across Both Training Conditions

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. WPT	--														
2. B5: Extraversion	-.16	(.89)													
3. B5: Consc.	.11	.41**	(.82)												
4. B5: Agree.	-.23	.03	.30	(.79)											
5. B5: Openness	-.22	.33*	.27	.37*	(.86)										
6. B5: Emot. Stab.	.02	.31*	.32*	. 29	-.00	(.80)									
7. General SE	-.02	.54**	.64**	.50**	.43**	.38*	(.96)								
8. GO: Learning	.05	.60**	.46**	.34*	.47**	.33	.82**	(.95)							
9. GO: Perf. Prove	-.02	.01	-.11	-.05	.27	-.24	-.01	.18	(.74)						
10. GO: Perf. Avoid	-.14	-.45**	-.26	-.08	-.08	-.45**	-.39*	-.42**	.44**	(.86)					
11. Metacog. SR	-.11	.28	.04	.31*	.38*	.21	.16	.33*	.27	-.09	(.73)				
12. ADAPT: Uncert.	-.05	.15	.07	-.20	-.09	.38*	.06	.06	-.05	-.43**	.15	(.62)			
13. ADAPT: Creat.	.04	.23	.02	.01	.38*	.29	.14	.35*	.45**	-.12	.49**	.34*	(.77)		
14. ADAPT: Learn.	.08	.28	.18	-.06	.26	.29	.26	.47**	.31*	-.11	.47**	.40**	.71**	(.86)	
15. Age	-.14	-.30	-.27	.08	.06	-.35*	-.15	-.27	.12	.25	-.04	-.22	-.29	-.31	--

Note. $N = 42$ (for bivariate correlations with age, $N = 40$). Internal consistency reliability estimates are displayed on the diagonal where appropriate. WPT = Wonderlic Personnel Test. Variables 2-6 represent the Big 5 personality dimensions (i.e., extraversion, conscientiousness, agreeableness, openness or intellect, emotional stability). General SE = general self-efficacy. Variables 8-10 represent trait goal orientation (learning, performance-avoid, performance-prove). Metacog. SR = metacognitive self-regulation. Variables 12-14 provide the three subscales selected from the Individual Adaptability measure (uncertainty, creativity, and learning).

* $p < .05$

** $p < .01$

Table 5

Composite Performance Ratings by Instructional Approach

Assessment Measure and Instructional Approach	*N*	Mean	*SD*	Percent Increase or Decrease from Previous Measure
OPORD Composite Scores (α = .46)				
Control	10	1.33	.24	--
Contrasting Cases/Invention	26	1.32	.34	--
FRAGO 1 Composite Scores (α = .64)				
Control	10	1.63	.44	23%
Contrasting Cases/Invention	26	1.52	.44	15%
FRAGO 2 Composite Scores (α = .76)				
Control	10	1.65	.49	2%
Contrasting Cases/Invention	26	1.56	.50	3%
Near Transfer Composite Scores (α = .45)				
Control	10	1.35	.36	-18%
Contrasting Cases/Invention	23	1.32	.38	-15%

Examining Learning and Near Transfer. Performance on FRAGO 2 and the near transfer task provided data to assess Kirkpatrick's level 2 stage of training evaluation, learning. FRAGO 2 and transfer task performance were specifically targeted as these tasks were completed following the experimental manipulation (i.e., presence of guided lecture following FRAGO 1 for the experimental group). Whereas FRAGO 2 measured more immediate and direct application of information gained though the training intervention within the same mission scenario, the transfer task assessed Soldiers' ability to generalize the concepts gained to a new scenario.[3] To investigate the effects of the training intervention on the two performance tasks, two analyses of covariance (ANCOVAs) were conducted. In the first analysis, the Contrasting Cases/Invention full treatment was compared to the abridged (no lecture) control group to examine the effect of training condition on FRAGO 2 composite scores. Because no treatment manipulation was introduced to the two groups prior to FRAGO 2 performance, FRAGO 1 and OPORD performance scores were included in the model as covariates to account for random variation in Soldiers' military planning ability level, thereby increasing statistical power to detect an effect due to the manipulation. The second analysis used the same covariates (OPORD and FRAGO 1 performance) and design factor (training condition), however transfer task performance was the response factor.

[3] Based on Kirkpatrick's model, transfer (specifically, near transfer) refers to changes in job behavior once the trainees leave the classroom and return to their jobs. Thus, the near transfer task described in this research fits more closely with Kirkpatrick's level 2 definition of learning since it was part of the training module.

Prior to conducting the ANCOVAs, conceptual and statistical assumptions were investigated to support the appropriateness of this analytical method. From a conceptual standpoint, although it was not possible to use completely randomized selection and assignment into training conditions, convenience samples were selected and administered two days apart from the same general pool of Soldiers. The selection process was blind from the perspective of the researchers. This process helped prevent selection bias into the training condition. Furthermore, to examine statistical assumptions, independent samples *t*-tests were conducted on the covariates by training condition to test the assumption that Soldiers did not differ on the covariate by group assignment. Results indicated no differences in OPORD or FRAGO 1 composite scores by treatment condition. To examine the assumption of homogeneity of regression slopes, the two interaction terms (treatment*covariate) were first included in the two ANCOVA models. The results of these tests identified nonsignificant interactions suggesting that ANCOVA was acceptable for this quasi-experimental design (Kutner, Nachtsheim, Neter, & Li, 2005; Miller & Chapman, 2001). This design investigated whether Soldiers with the same level of IBOLC mission planning ability prior to the training intervention differed in their performance levels thereafter.

Results of the two ANCOVAs indicated that while controlling for Soldiers' performance on OPORD and FRAGO 1, the training intervention did not demonstrate a statistically significant effect on FRAGO 2 scores, $F(1, 32) = 0.00$, $p = .967$, or the near transfer task scores, $F(1, 29) = 0.12$, $p = .737$. The current results indicate that the full Contrasting Cases/Invention treatment, including a guided lecture directed to illuminate key points of the training design, was no more effective than an abbreviated version of the training. Adjusted means (controlling for the two covariates) and standard errors for the two learning tasks are provided in Table 6.

Table 6

Adjusted Means and Standard Errors of Composite Learning Tasks by Condition

Assessment Measure and Instructional Approach	*N*	Mean[a]	*Std. Error*
FRAGO 2 Composite Scores			
Control	10	1.58	.03
Full Treatment Contrasting Cases/Invention	26	1.58	.02
Near Transfer Composite Scores			
Control	10	1.36	.12
Full Treatment Contrasting Cases/Invention	23	1.31	.08

[a]All means adjusted for the value of the covariates (OPORD and FRAGO1).

Practical considerations should be taken in to account when interpreting the results of these ANCOVA analyses. For example, the analyses were conducted with small, unbalanced groups limiting the power of the design to detect a significant treatment effect. Also, the

composite measures, particularly those for the OPORD and near transfer tasks, demonstrate reliability estimates well below the typically acceptable standards (Cronbach's α = .46 and .45, respectively). For these reasons, more basic general trend analyses of the BARS ratings are also presented to supplement the traditional statistical significance testing.

In the first set of trend analyses, we examined increases, decreases, and unchanged dimension scores between FRAGO 1 and FRAGO 2 for the two training conditions. Table 7 shows performance on the assessment measure presented prior to the training manipulation, FRAGO 1, and changes in performance for the task completed immediately following the manipulation, FRAGO 2. As a reminder, scores above 1 on the BARS should be considered positive results. The initial column of Table 7 shows the proportion of scores within each approach that was above 1 on FRAGO 1 prior to the training manipulation. All tasks were rated with the same 4-dimensional scale, therefore the denominator for each calculation is 4 x the number of participants within that training condition. The numerator for the first column is the total number of dimensions across all participants that were scored above 1 (2, 3, or 4) for FRAGO 1. The numerator in the remaining columns to the right show the number of dimension scores across all participants in that training condition that increased, decreased, or remained the same on FRAGO 2. The same format is used to assess the trends in performance from FRAGO 2 to the near transfer task in Table 8.

The results of these trend analyses corroborate the findings presented in the ANCOVA analyses. Practically no differences are being observed between the two groups across the two conditions in relation to overall change following the training intervention. To examine the changes at the individual dimension level of analysis, see Appendix E.

The trend analyses summarized in Tables 7 and 8 indicate that a large proportion of the scores did not change over time. Table 7 shows that ninety percent of the scores from the experimental group did not change from FRAGO 1 to FRAGO 2 (compared to ninety three percent for the control group). Similarly, Table 8 shows that approximately half of the participants' scores in both the experimental (forty nine percent) and the control (fifty percent) did not change from FRAGO 2 to the near transfer task. As one goal of the present research was to develop skills reflecting *modeling a dynamic situation*, we expected to see increases in performance from FRAGO 1 to FRAGO 2. Furthermore, we expected this increase in performance to be greater for the full treatment condition than for the control condition across these two tasks. The results, however, showed no change in performance from FRAGO 1 to FRAGO 2 across both groups. We also expected to find lower levels of performance declines (i.e., more generalizability) for the near transfer task when moving from the familiar scenario to a novel task under the experimental treatment. That is, we expected transfer task performance to be more stable in the full treatment condition when compared to the control condition. However, we found similar levels of performance decline across both conditions. The large percentages of scores that did not change from the FRAGO 1 to FRAGO 2, and to a lesser extent, from FRAGO 2 to the near transfer task, suggest that the training did not focus enough on developing these particular skills. It seems likely that both the instructional design and content of the training module would need to be revised to increase the acquisition of these skills and achieve more positive performance outcomes for the full treatment condition in response to changing situations.

Table 7

BARS: FRAGO 1 to FRAGO 2 Performance Ratings by Instructional Approach

FRAGO 1 – **Pre-Intervention Performance** (Performance Ratings Above 1 on Any Dimension)		**FRAGO 2 –** **Performance Gains** (Higher Ratings on Any Dimension from FRAGO 1 Scores)		**FRAGO 2 –** **Performance Decrements** (Lower Ratings on Any Dimension from FRAGO 1 Scores)		**FRAGO 2 –** **No Change** (No Change from FRAGO 1 Scores)	
Control (22/40)	55%	**Control** (2/40)	5%	**Control** (1/40)	3%	**Control** (37/40)	93%
Cont. Cases/ Invention (45/104)	43%	**Cont. Cases/ Invention/** (7/104)	7%	**Cont. Cases/ Invention** (3/104)	3%	**Cont. Cases/ Invention** (94/104)	90%

Table 8

BARS: FRAGO 2 to Near Transfer Performance Ratings by Instructional Approach

FRAGO 2 – **Post-Intervention Performance** (Performance Ratings Above 1 on Any Dimension)		**Near Transfer –** **Performance Gains** (Higher Ratings on Any Dimension from FRAGO 2 Scores)		**Near Transfer –** **Performance Decrements** (Lower Ratings on Any Dimension from FRAGO 2 Scores)		**Near Transfer –** **No Change** (No Change from FRAGO 2 Scores)	
Control (23/40)	58%	**Control** (5/40)	13%	**Control** (15/40)	38%	**Control** (20/40)	50%
Cont. Cases/ Invention (43/92)	47%	**Cont. Cases/ Invention** (14/92)	15%	**Cont. Cases/ Invention** (33/92)	36%	**Cont. Cases/ Invention** (45/92)	49%

Level of Preparedness to Discuss Aspects of IBOLC

For each of the five items assessing preparedness, we utilized an ANCOVA design which used post-training measurement as the response, training condition (experimental or control) as the design factor, and retrospective pre-training measurement as the covariate.

The same conceptual and testable statistical assumptions used in the ANCOVA analyses conducted on the performance data were given deference here. Again, these data were deemed appropriate for using this analytical method. Thus, we investigated whether Soldiers with the same level of perceived pre-training IBOLC preparedness differed in their perceived post-training performance preparedness due to training condition (experimental or control). ANCOVA analyses indicated that only perceived preparedness for weather analysis differed by training condition when controlling for perceived preparedness to conduct a weather analysis before training, $F(1, 38) = 4.57$, $p < .05$, $\eta_p = .075$.[4] Contrary to expectations, Soldiers in the *control* training condition reported being significantly more prepared to conduct a weather analysis following training. There was no significant effect of training condition on level of preparedness in the mission planning (analysis) process after controlling for the perceived preparedness in mission planning prior to training, $F(1, 38) = 1.05$, *ns*. Similarly, no significant effect of training condition was found for terrain analysis, $F(1, 38) = .00$, *ns*, describing the enemy, $F(1, 38) = .14$, *ns*, or adjusting a plan, $F(1, 38) = .29$, *ns*. A listing of adjusted means and standard errors, controlling for the pre-training perceived preparedness, is provided in Table 9. The pattern of results suggests that both groups were generally prepared to discuss all aspects of the mission planning process.

Table 9

Adjusted Means and Standard Errors of Post-Training Preparedness by Training Condition

Variable	Mean* (Standard Error)	
	Control (n = 10)	Treatment (n = 31)
Item 1, Mission Analysis	3.43 (.12)	3.28 (.07)
Item 2, Terrain Analysis	3.44 (.09)	3.44 (.05)
Item 3, Weather Analysis	3.42 (.08)	3.22 (.05)
Item 4, Describing the Enemy	3.48 (.14)	3.43 (.08)
Item 5, Adjusting a Plan	3.33 (.18)	3.44 (.10)

*All means adjusted for the value of the covariate (pretraining preparedness)

Contrary to our expectations, the full treatment training did not result in an increase in perceived preparedness for any of the five dimensions. Practical considerations should be taken in to account when interpreting the results of the ANCOVA analyses presented. For example, the analyses were conducted with small, unbalanced groups on single-item measures limiting the power of the design to detect a significant treatment effect. Descriptive statistics (unadjusted means, standard deviations, and mean differences) for items 1-5 are listed in Appendix F.

[4] Only 31 of the 32 individuals participating in the Contrasting Cases/Invention experimental condition completed the end-of-course questionnaire.

Participant Perceptions about Training

Items 6 through 15 of the post-evaluation questionnaire assessed four attitudinal or reaction-based aspects pertaining to the training the participants received. Statistical significance tests for differences between treatment conditions across the four dimensions are detailed below. However, for practical purposes (given the small and uneven sample sizes), Table 10 provides an overview of the general distributions of responses by training condition. Although not always producing statistically significant differences, the results of the present research indicated more positive attitudinal reactions to training in the control condition than the experimental condition.

Perceived utility of the training. An independent samples *t*-test (corrected for violations of equality of error variance) indicated that Soldiers perceived the utility of training differentially between groups, $t(25.702) = 4.02$, $p < .001$. Surprisingly, Soldiers in the control group ($M = 4.20$, $SD = 0.45$) rated the training they received more useful than those in the experimental group ($M = 3.41$, $SD = 0.75$).

Adequacy of coverage of the mission planning process. No significant differences existed between the two training conditions in perceived adequacy of coverage of the mission planning process, $t(39) = 1.24$, *ns*. Soldiers in the experimental ($M = 3.35$, $SD = 0.74$) and control ($M = 3.67$, $SD = 0.57$) training conditions rated the training to have provided an equivalent degree of coverage for the mission planning process.

Instructor's understanding of content. Item 7 assessed the Soldiers' perception of the instructor's understanding of the topic material. Results of an independent samples *t*-test found no significant difference between the experimental group ($M = 4.19$, $SD = 0.75$) and control group ($M = 4.60$, $SD = 0.52$) ratings of instructor's understanding of topic material $t(39) = 1.59$, *ns*.

Time allotment. Item 8 assessed the adequacy of time devoted to explaining concepts and group discussions. Results from an independent samples *t*-test suggested that the control group ($M = 3.40$, $SD = 0.70$) and experimental group ($M = 3.42$, $SD = 0.81$) did not differ significantly in their ratings of adequacy of time allotment, $t(39) = -.07$, *ns*.

Class engagement. Item 14 assessed the degree to which the Soldier felt engaged throughout the class. Results from an independent samples *t*-test suggested that differences between the control group ($M = 3.70$, $SD = 0.95$) and experimental group ($M = 3.06$, $SD = 0.89$) approached statistical significance in their level of engagement throughout the class, $t(39) = 1.93$, $p = .061$. These results may in fact be indicative of evidence that the control group was more engaged than the experimental group.

Table 10

Post-Training Questionnaire Ratings by Instructional Approach

Dimension and Instructional Approach	*N*	Mean	*SD*	Percent of Participants			
				Disagree / Strongly Disagree	Neutral	Agree	Strongly Agree
Perceived Utility[a] (α = .90)							
Control	10	4.20	.45	0%	10%	70%	20%
Full Invention/Contrasting Cases	31	3.41	.75	16%	29%	55%	0%
Adequacy of Coverage[b] (α = .80)							
Control	10	3.67	.57	0%	50%	50%	0%
Full Invention/Contrasting Cases	31	3.35	.74	19%	26%	55%	0%
Instructor's Understanding of Content							
Control	10	4.60	.52	0%	0%	40%	60%
Full Invention/Contrasting Cases	31	4.19	.75	0%	19%	42%	39%
Adequate Time Allotment							
Control	10	3.40	.70	10%	40%	50%	0%
Full Invention/Contrasting Cases	31	3.42	.81	16%	29%	52%	3%
Class Engagement							
Control	10	3.70	.95	10%	30%	40%	20%
Full Invention/Contrasting Cases	31	3.06	.89	26%	42%	29%	3%

Notes. [a]Four items in scale; [b]Three items in scale; anchors are approximate for the composite items.

Correlations between Individual Difference Variables and Task Performance

Correlations were computed between scores on each individual difference measure and task performance (OPORD, FRAGO 1, FRAGO 2, near transfer task) for participants in the experimental group (see Table 11).[5] Because of the very small number of participants in the control training condition, these correlations were not examined. Although the small sample size is problematic from a statistical power perspective, there were some interesting patterns in the findings that may be noteworthy. Of the Big Five variables, only Conscientiousness was consistently and moderately (.20 - .39) related to all measures of task performance. General self-efficacy and learning goal orientation also showed the same general pattern as Conscientiousness (consistently low to moderate correlations with task performance). These findings are consistent with metaanalytic evidence examining trainee characteristics in relation to training and transfer outcomes (e.g., Blume, Ford, Baldwin, & Huang, 2010).

The trainee characteristic-performance relationships across the other dimensions assessed were somewhat variable. This finding was particularly evident for some variables between the three scenarios completed under the original training scenario and the novel transfer task (e.g., see performance prove goal orientation relationships). While recognizing that more power and replication is necessary to avoid exceeding the level of inference warranted, these exploratory relationships do provide an interesting initial examination of some of the variables that have not yet been examined in the training literature. Specifically, subdimensions of the I-ADAPT scale were found to have moderate effect sizes for the relationships with performance on the near transfer task. While the learning and creativity subdimensions of overall individual adaptability trended in the expected direction of the predictor-performance relationships, the uncertainty subdimension was aberrant in the present research. The direction of the relationship for the uncertainty-adaptability subdimension was indicative of a negative relationship with near transfer performance (r = -.35). Other, more well-established predictors of training transfer also demonstrated small to moderate effects on the near transfer task indicative of empirical links to adaptive performance including intelligence, conscientiousness, general self-efficacy, metacognitive self-regulation, and learning and performance prove goal orientations.

[5] For the interested reader, correlations are also provided between the experimental group trainee characteristics and the dimensions assessed in the post-training questionnaire in Appendix G.

Table 11

Predictor-Performance Bivariate Correlations for the Experimental Training Condition

Variable	OPORD	FRAGO1	FRAGO2	Transfer
1. WPT	-.09	.04	.10	.34
2. B5: Extraversion	.22	.37^{+}	.27	.04
3. B5: Consc.	.33	.39*	.33^{+}	.20
4. B5: Agree.	.19	.10	.10	-.02
5. B5: Openness	.22	.15	.20	-.10
6. B5: Emot. Stab.	.21	.23	.13	. 06
7. General SE	.21	.25	.19	.16
8. GO: Learning	.37^{+}	.37^{+}	.33^{+}	.29
9. GO: Perf. Prove	-.16	-.18	-.22	.34
10. GO: Perf. Avoid	-.24	-.22	-.18	.08
11. Metacog. SR	.01	.04	-.05	.18
12. ADAPT: Uncert.	.02	.14	-.00	-.35
13. ADAPT: Creat.	-.18	-.32	-.35^{+}	.34
14. ADAPT: Learn.	.09	.09	.04	.30
15. Age	-.37^{+}	-.35^{+}	-.34^{+}	-.23

Note. N = 26 for OPORD, FRAGO1, and FRAGO2 task (for bivariate correlations with age, N = 25). N = 23 for Transfer task (for bivariate correlation with age, N = 22). Because of the small sample size of the experimental group, marginally significant correlations (i.e., $p < .10$) were also flagged. WPT = Wonderlic Personnel Test. Variables 2-6 represent the Big 5 personality dimensions (i.e., extraversion, conscientiousness, agreeableness, openness or intellect, emotional stability). General SE = general self-efficacy. Variables 8-10 represent trait goal orientation (learning, performance-avoid, performance-prove). Metacog. SR = metacognitive self-regulation. Variables 12-14 provide the three subscales selected from the Individual Adaptability measure (uncertainty, creativity, and learning).

$^{+}$ $p < .10$

* $p < .05$

Discussion

The results from this research indicated that the experimental training module did not significantly improve the adaptive mission planning skills of participants relative to that of the control group. The contrasting cases/invention design strategy that guided the development of the training module has been used successfully to effectively improve performance and transfer in other domains (cognitive psychology - concept development and understanding, e.g., Schwartz & Bransford, 1998; statistics, e.g., Schwartz & Martin, 2004; and ethical awareness, e.g., Pleban et al., 2011). It should be noted however, that this was the first time this approach had been applied in a military institutional training (classroom) setting. The military setting placed severe constraints on the availability of participants and the time allotted for training. Key issues and lessons learned are discussed briefly in the following sections.

Time Allocated to Training

Due to time constraints associated with the participants' military training schedule, we were limited to one full day (eight hours) of training. As indicated earlier by Mueller-Hanson et al. (2005) and White et al. (2005), developing adaptive expertise requires both knowledge and repetitive experiences in a variety of situations requiring the trainee to respond in an adaptive manner. For the current training format, eight hours was insufficient time to do more than familiarize the participants with basic strategies to enhance the adaptive mission planning process. Compounding this was the fact that the participants were inexperienced second lieutenants who had never been platoon leaders. For this type of training to be successful, the training module would have to be expanded by several days for familiarization and applied practical exercises. IBOLC time and event scheduling, however, will constrain the duration of instruction.

Duration and Structure of Training Events

It became immediately clear during the execution of the training that an inordinate amount of time had elapsed between the AO brief and when participants received any feedback (following FRAGO 1). We intentionally designed the training to allow participants to get deep enough into the problem to develop a strong commitment in response to the OPORD. Being immersed within the context of the OPORD scenario would help ensure that the introduction of a change (FRAGO 1) would significantly impact them. However, the theory behind the sequencing was diminished by the practice of the sequencing; participants appeared fatigued after working all morning on their OPORD. Despite being given less time to work on FRAGO 1, in some sense the damage to their motivation had been done. The participants seemed much less able to commit their full attention to FRAGO 2 and even less to the transfer task.

To optimize available training time, it may be more valuable to provide partially completed OPORD/FRAGOs, and have the students focus their attention on specific sections of the OPORD/FRAGO that the instructor wants to target in his instruction. For example, if one of the key teaching points was to stress the importance of the terrain on the mission, the instructor could provide multiple FRAGOs of the same mission but executed under changing terrain conditions. The instructor then would have the students identify a general rule/principle for how

to alter the execution of a mission in response to different terrain conditions. While the students would not get the full experience of developing a complete OPORD/FRAGO, this would be balanced by presenting multiple situations (contrasting cases) and forcing the student to extract key principles, rules, generalities, etc., regarding terrain analysis and mission execution that could be applied in future situations. The instructor then would provide a comprehensive lecture that would identify the key principles of terrain analysis and its impact on the mission. This would be followed by an additional problem(s) that would require the students to apply these principles to another situation that had not been encountered in earlier examples. See Appendix H for two sets of slides which provide a model for how to redesign a course using the contrasting cases/invention design approach. The first set of slides provides a more general treatment of the approach and the second set is more specific to training troop leading procedures.

Instructor Selection and Training

While the pedagogy used in this research are familiar to military instructors/trainers, (e.g., lecture, scenario based exercises, group discussion) not all instructors are familiar with basic instructional design principles and how to best incorporate them in a manner that will optimize learning. Current training often relies too much on large Power Point presentations with little time for active student participation. Time must be allotted to train instructors how to optimize instructional design principles in developing course modules. In addition, for course modules such as the one used in the present research, the instructors themselves would need to be adaptive thinkers, capable of and comfortable with deviating from the course plan in order to facilitate classroom discussion. Regardless of the training domain, (leadership, mission planning, marksmanship), time must be allotted to prepare instructors to succeed in these training environments.

Assessment of Training Outcomes

Control group design. The experimental design used in this research consisted of a control group that differed in only one respect, the absence of the lecture following FRAGO 1 performance. Thus, participants received multiple opportunities (FRAGOs, transfer task) to create orders (invention) and could compare/contrast their responses to different missions, identical to the experimental group. Receiving two-thirds of the manipulation may have impacted the participants' performance in the control group and minimized any differences with the experimental group. A more appropriate control group for this research might have been one that minimized participants' exposure to developing multiple missions and opportunities to compare changes in mission plans over time.

Classroom size. Due to scheduling and participant availability, training was conducted at two different locations. The small size of the control group (n = 10) made it possible to conduct this session in a small (conference) room which could comfortably accommodate the 10 participants plus the instructor and three researchers. The structure of the conference room afforded face-to-face contact with the participants and seemed to foster increased interaction among the instructor and the students. However, the relatively large size of the experimental group (n = 32), required that a different training site be used. The new site was a large classroom that could accommodate up to 50 students. The classroom seating arrangements minimized face-

to-face contact among students, and, in general, may have impacted the interaction patterns during instruction. Student discussions with the instructor were less frequent and not always as in-depth in the experimental condition as opposed to the interactions occurring in the control group. The difference in classroom configurations may have impacted the performance of the participants in both groups to some degree. Given the nature of course content (adaptive decision-making), it may be advisable to consider, if possible, small classes with lower student-teacher ratios and more favorable room organization to facilitate instructor-student discussions.

Assessment metrics. The use of constructivist (problem-based learning) strategies, such as contrasting/cases invention, require a different approach to measure deep learning and understanding of subject material. The use of knowledge tests to assess facts and general information, while useful, is insufficient to fully gauge the training value of this technique. For this experiment, a previously developed and validated set of BARS were used to provide more in-depth information on the effectiveness of the experimental training strategy. To provide this information, BARS assessments of participant adaptive thinking skills were provided for OPORD, FRAGO 1, FRAGO 2, and the transfer task. The logic was that students would demonstrate greater adaptive thinking following OPORD and FRAGO 1 than preceding it (by virtue of having experienced the contrasting cases and the lecture.) It was also expected that adaptive thinking would further improve from FRAGO 2 to the transfer task due to additional exposure of another mission to compare and contrast with the earlier FRAGOs. However, this proved a troublesome method. Assessment of students' performance on the OPORD, FRAGO 1, FRAGO 2, and the transfer task ideally, would have the instructor read each order/task and provide individual feedback soon after task completion. In this research, the amount of time required to rate and provide individual feedback was greatly underestimated. In this instance, the SMEs who provided the ratings would have had to read and score approximately120 orders in a span of eight hours to provide timely feedback.[6] This proved to be an impossible task. Participants received only minimal feedback. Indeed, the BARS assessments took several months to complete. (The lag time was due, in part, to multiple work demands placed on the SMEs from additional projects.) To optimize the training value of this approach would require more of a formative assessment (i.e., feedback as part of the exercise) to help students develop a clearer perspective of their evolving response to different versions of the OPORD and the new mission (transfer task).

This limitations found in the present research highlight a key challenge for course developers who wish to convert more traditional instructional approaches which have been geared more to memorizing facts and testing declarative knowledge. Instructors employing contrasting cases/invention design methods will need to be capable of providing more in-depth assessments of adaptive performance in a timely fashion, preferably during the execution of the course.

[6] Within the current research, 106 orders were scored since some students did not complete all missions.

Individual Difference Variables and Task Performance: Implications for Training Execution

The pattern of correlations obtained between the individual difference measures collected and task performance is consistent with earlier empirical research related to training adaptive thinking/decision-making skills (e.g., Bell & Kozlowski, 2008) For example, the positive correlations between trainee characteristics such as self-efficacy, metacognition, learning (mastery) goal orientation and the individual adaptability subdimensions-creativity and learning, with the transfer task (an indicator of adaptive performance), is noteworthy.

Training implications from these findings and from earlier research provides trainers/course developers with several options to consider in designing courses. For example, one means of structuring the training environment to enhance the development of adaptive thinking skills is to encourage students to make errors. Errors can provide useful feedback where individuals are engaged in learning complex ill-defined tasks (e.g., developing mission plans to new FRAGOs) and how they interpret their errors can significantly impact the motivational orientation they take to solve these types of problems. When, for example, errors are framed as a natural, instructive part of the learning process and performance evaluation is deemphasized, individuals are more likely to adopt a mastery orientation which has a positive impact on self-efficacy, effort expended (during training), persistence, and training performance (e.g., Kozlowski et al., 2001; Payne, Youngcourt, & Beaubein, 2007).

Similarly, the training environment can be further shaped by minimizing students' level of anxiety and worry in these situations. Imposing an active learning approach (e.g., contrasting cases/invention) in a training environment can be quite stressful for some individuals, particularly for the task domain addressed in this research. If uncontrolled, poor performance can increase anxiety and worry, lower individual motivation and feelings of self-efficacy as well as divert attentional resources from on-task activities. Strategies adopted to specifically address emotion control in active learning environments have been shown to be effective at curbing negative emotions which in turn resulted in greater adaptive transfer (Keith & Frese, 2005).

Finally, providing individuals with greater control over their own learning while incorporating formal design elements (e.g., invention, contrasting cases, lecture) can shape the learning process and support self-regulated learning. This active approach also promotes an inductive learning process, in which individuals must explore and experiment with a task to infer the rules, principles, and strategies for effective performance. These last points are critical, since research has shown that a tightly structured learning environment, while effective in developing routine expertise for a current job often makes it more difficult for trainees to adapt their knowledge and skills when the problem domain changes (Bell & Kozlowski, 2008).

Conclusions

Constructivist theorists provide compelling reasons to employ their methods for training adaptive thinking. Consequently, there seems to be a willingness and an openness to adopting new methods of instruction to train such skills (e.g., soon to be released Army training manuals will explain that different training approaches are appropriate for training different types of skills). However, the institutional barriers to incorporating new approaches are formidable. As described earlier, class sizes and schedules alone make the adoption of constructivist approaches challenging. Furthermore, changing the way instructors are trained to do training (to be facilitators rather than conveyors) would involve a substantial undertaking as well.

Constructivist approaches explored in this research were not successful due, in part, to some of the institutional training constraints identified earlier (not unique to only the military). This presents a challenge to constructivist theorists: how can approaches be implemented in this training environment given these constraints?

The present research, we believe, helped identify potential parts of the solution, as well as additional constraints. For example, while the use of working through contrasting cases in the context of an actual operations order exercise is appealing and, we continue to believe, pedagogically valuable, a more targeted task, or sub-task, could address some of the time and fatigue pressures experienced during our exercise. Perhaps focusing simply on developing concept sketches, for example, would have required the same kind of thinking but with less of the cognitively tangential tasks. Or perhaps eliminating the backbrief and WARNO and focusing more on the OPORD would have saved time and effort. However, part of the reason why we did not do this ahead of time is that we were unable to find any specific guidance on how to develop constructivist approaches best suited for military-like settings with their inherent constraints.

Finally, training cognitive skills takes more than one day. It will almost certainly require repeated exercises over several classroom sessions with follow-on lectures and discussion to highlight key learning points and ensure deeper understanding of the concepts presented. We were constrained logistically to one day, but instructors too would have to plan for several such exercises rather than a single one.

In conclusion, constructivist approaches hold considerable promise for training the cognitive skills essential in the OE; however, they require significant engineering to be implemented in the institutional training environment under current course constraints and projected student throughput patterns.

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ACRONYMS

ANCOVA – Analysis of Covariance
AO – Area of Operation
ARI – Army Research Institute

BARS – Behaviorally Anchored Rating Scale

CCIR – Commander's Critical Information Requirements
CTA – Cognitive Task Analysis

DP – Decision Points

FRAGO – Fragmentary Order

GEL – Guided Experiential Learning

HVT – High Valued Target

IA – Iraqi Army
I-ADAPT-M – Individual Adaptability Measure
IBL – Inquiry-based Learning
IBOLC – Infantry Basic Officer Leader Course
IED – Improvised Explosive Device

JSOTF – Joint Special Operations Task Force

MANOVA – Multivariate Analysis of Variance

NGSE – New General Self-Efficacy Scale
NVG – Night Vision Goggles

OBJ - Objective
OE – Operational Environment
OEF – Operation Enduring Freedom
OPORD – Operation Order

PL – Platoon Leader
PSYOP – Psychological Operations

RIP – Relief in Place

SME – Subject Matter Expert
SOF – Special Operations Forces

TOA – Transfer of Authority
TLP – Troop Leading Procedures

WARNO – Warning Order
WPT – Wonderlic Personnel Test

APPENDIX A

Demographic Questionnaire

Please fill in the blank [print] or fill in the bubble completely to indicate your response for each question.

Source of Commissioning	Are you Prior Enlisted?	Your Status
OCS ○ ROTC ○ USMA ○ OTHER (*specify*): ○ _____	No ○ Yes ○ **IF YES:** **Specify your MOS:** **Your highest enlisted rank?** **Time in service?** (*years*)	Active Duty ○ National Guard on Active Duty ○ Army Reserve on Active Duty ○ **Do You Have Combat Experience?** Yes ○ No ○ **IF YES:**

Where were you deployed?	**When** were you in combat?	**What** was your duty position?

Indicate the Army training courses you have already completed: *Indicate all that apply and write in the names of any others.*	**Age:**_____
Basic Training ○ PLDC / WLC ○ BNCOC ○ Airborne ○ Ranger ○ Combat Life Saver ○ Others: ○ _____ _____	

From your experience, what aspects of the mission planning process should receive greater emphasis during formal classroom instruction?

After completing this page, please stop and wait for further instruction from one of the researchers. Thank you!

APPENDIX B

Training Materials

Area of Operations

Company OPORD

WARNO

FRAGO 1

FRAGO 2

Transfer Task

Company Operations Order
Practical Exercise
Background Information
Area of Operations Orientation

Copy ____ of ____ Copies

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Background Information

- For the purposes of the exercise, today is 21 SEP 2007.
- A/1-504 PIR has been operating in Baghdad for the past nine months and has spent the last six months patrolling the same sector
- Standing missions:
  - Conduct security patrols from COP/JSS in A/1-504 sector to restore the stability to the sector
  - Provide BN QRF with the following planning priorities:
    - Follow and support unit in contact
    - Downed aircraft security
    - Traffic Control Point

A/1-504 PIR Current Task Organization

	HQ	1/A/1-504	2/A/1-504	3/A/1-504
Personnel	10	30	32	34
Organization				
Equipment	2x HMMV 1x .50cal	7x HMMV 2x .50cal 2x M240B 3x MK19	7x HMMV 2x .50cal 2x M240B 3x MK19	7x HMMV 2x .50cal 2x M240B 3x MK19

	2/D/1-504	SCTS/1-504		
Personnel	18	6		
Organization		4 Scouts 1x Sniper Team		
Equipment	5x HMMV 2x .50cal 2x M240B 1x MK19	1x M24		

Situation


Area of Operations/Interest
AO Jackson
AO Grant
AO Longstreet
FOB Loyalty
Image © 2008 DigitalGlobe

General Situation

- There have been measurable but uneven improvements in Iraq's security situation since January 2007. The steep escalation of rates of violence has been checked for now, and overall attack levels across Iraq have fallen during seven of the weeks in July and August. Coalition forces, working with Iraqi forces, tribal elements, and some Sunni insurgents, have reduced al-Qa'ida in Iraq's (AQI) capabilities, restricted its freedom of movement, and denied it grassroots support in some areas.
- However, the level of overall violence, including attacks on and casualties among civilians, remains high; Iraq's sectarian groups remain unreconciled; AQI retains the ability to conduct high-profile attacks; and to date, Iraqi political leaders remain unable to govern effectively. There have been modest improvements in economic output, budget execution, and government finances but fundamental structural problems continue to prevent sustained progress in economic growth and living conditions.

Enemy Situation

- **Political and security trajectories in Iraq continue to be driven primarily by Shia insecurity about retaining political dominance, widespread Sunni unwillingness to accept a diminished political status, factional rivalries within the sectarian communities resulting in armed conflict, and the actions of extremists such as AQI and elements of the Sadrist Jaysh al-Mahdi (JAM) militia that try to fuel sectarian violence. Two new** drivers have emerged: expanded Sunni opposition to AQI and Iraqi expectation of a Coalition drawdown. Perceptions that the Coalition is withdrawing probably will encourage factions anticipating a power vacuum to seek local security solutions that could intensify sectarian violence and intra-sectarian competition. At the same time, fearing a Coalition withdrawal, some tribal elements and Sunni groups probably will continue to seek accommodation with the Coalition to strengthen themselves for a post-Coalition security environment.
- Sunni Arab resistance to AQI has expanded in the last six to nine months but has not yet translated into broad Sunni Arab support for the Iraqi Government or widespread willingness to work with the Shia. The Iraqi Government's Shia leaders fear these groups will ultimately side with armed opponents of the government, but the Iraqi Government has supported some initiatives to incorporate those rejecting AQI into Interior Ministry and Defense Ministry elements.
- Intra-Shia conflict involving factions competing for power and resources probably will intensify as Iraqis assume control of provincial security. In Basrah, violence has escalated with the drawdown of Coalition forces there. Local militias show few signs of reducing their competition for control of valuable oil resources and territory.
- The Sunni Arab community remains politically fragmented, and we see no prospective leaders that might engage in meaningful dialogue and deliver on national agreements.
- Kurdish leaders remain focused on protecting the autonomy of the Kurdish region and reluctant to compromise on key issues.

Enemy Situation

- **The IC assesses that Iraq's neighbors will continue to focus on improving their leverage in Iraq in anticipation of a Coalition drawdown. Assistance to armed groups, especially** from Iran, exacerbates the violence inside Iraq, and the reluctance of the Sunni states that are generally supportive of US regional goals to offer support to the Iraqi Government probably bolsters Iraqi Sunni Arabs' rejection of the government's legitimacy.
- Over the next year Tehran, concerned about a Sunni reemergence in Iraq and US efforts to limit Iranian influence, will continue to provide funding, weaponry, and training to Iraqi Shia militants. Iran has been intensifying aspects of its lethal support for select groups of Iraqi Shia militants, particularly the JAM, since at least the beginning of 2006. Explosively formed penetrator (EFP) attacks have risen dramatically.
- Syria has cracked down on some Sunni extremist groups attempting to infiltrate fighters into Iraq through Syria because of threats they pose to Syrian stability, but the IC now assesses that Damascus is providing support to non-AQI groups inside Iraq in a bid to increase Syrian influence.
- Turkey probably would use a range of measures to protect what it perceives as its interests in Iraq. The risk of cross-border operations against the People's Congress of Kurdistan (KG) terrorist group based in northern Iraq remains.

Friendly Situation

- The emergence of "bottom-up" security initiatives, principally among Sunni Arabs and focused on combating AQI, represent the best prospect for improved security over the next six to 12 months, but these initiatives will only translate into widespread political accommodation and enduring stability if the Iraqi Government accepts and supports them. A multi-stage process involving the Iraqi Government providing support and legitimacy for such initiatives could foster over the longer term political reconciliation between the participating Sunni Arabs and the national government. However, under some conditions "bottom-up initiatives" could pose risks to the Iraqi Government.
- We judge **such initiatives are most likely to succeed in predominantly Sunni Arab areas**, where the presence of AQI elements has been significant, tribal networks and identities are strong, the local government is weak, sectarian conflict is low, and the ISF tolerate Sunni initiatives, as illustrated by Al Anbar Province.
- Sunni Arab resistance to AQI has expanded, and neighborhood security groups, occasionally consisting of mixed Shia-Sunni units, have proliferated in the past several months. These trends, combined with increased Coalition operations, have eroded AQI's operational presence and capabilities in some areas.
- Such initiatives, if not fully exploited by the Iraqi Government, could over time also shift greater power to the regions, undermine efforts to impose central authority, and reinvigorate armed opposition to the Baghdad government.
- Coalition military operations focused on improving population security, both in and outside of Baghdad, will remain critical to the success of local and regional efforts until sectarian fears are diminished enough to enable the Shia-led Iraqi Government to fully support the efforts of local Sunni groups.

Friendly Situation

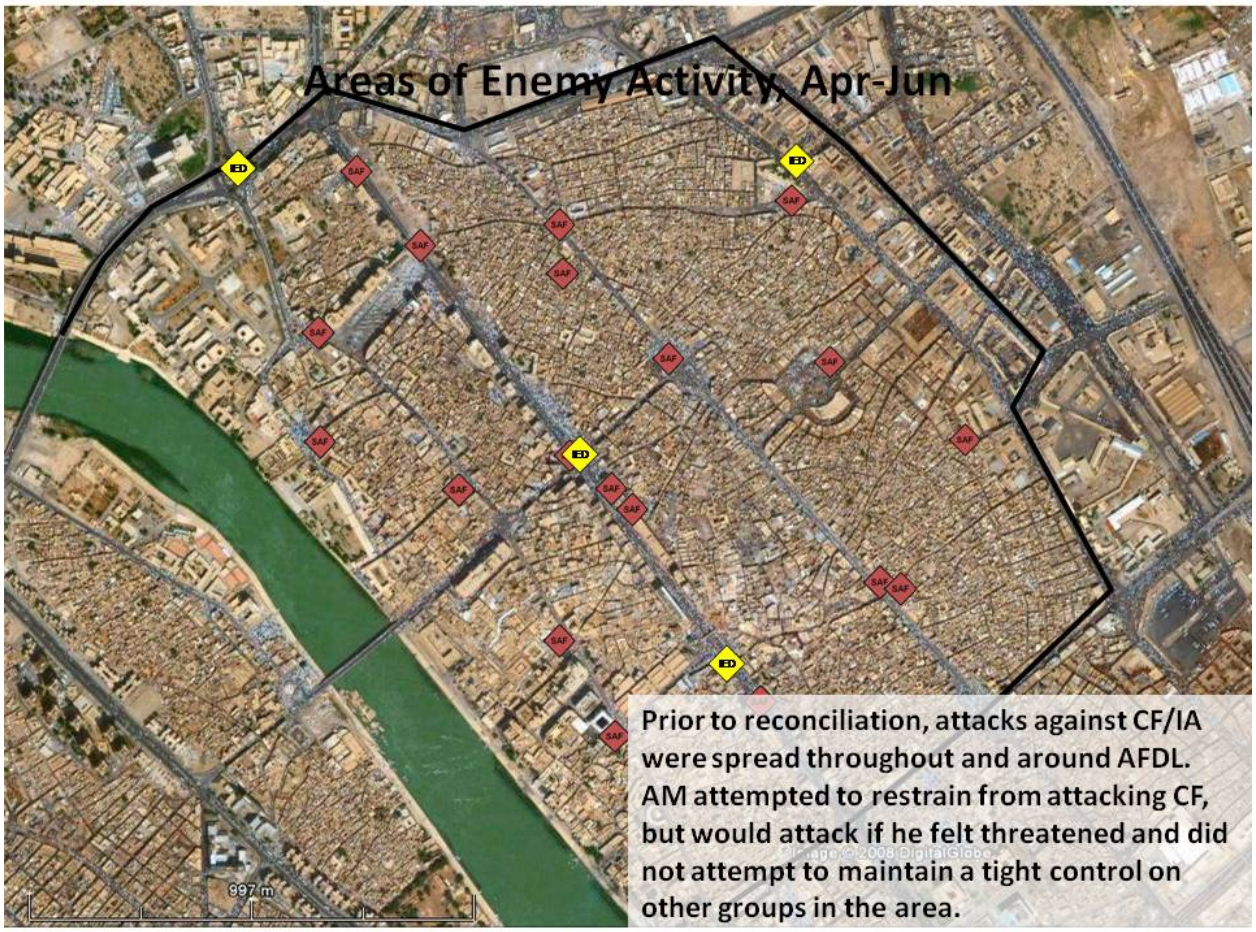
- Iraqi Security Forces involved in combined operations with Coalition forces have performed adequately, and some units have demonstrated increasing professional competence. However, we judge that the ISF have not improved enough to conduct major operations independent of the Coalition on a sustained basis in multiple locations and that the ISF remain reliant on the Coalition for important aspects of logistics and combat support.
- The deployment of ISF units from throughout Iraq to Baghdad in support of security operations known as Operation *Fardh al-Qanun marks significant progress since last* year when large groups of soldiers deserted rather than depart their home areas, but Coalition and Iraqi Government support remains critical.
- Recently, the Iraqi military planned and conducted two joint Army and police large-scale security operations in Baghdad, demonstrating an improving capacity for operational command and control.
- Militia and insurgent influences continue to undermine the reliability of some ISF units, and political interference in security operations continues to undermine Coalition and ISF efforts.
- The Maliki government is implementing plans to expand the Iraqi Army and to increase its overall personnel strength to address critical gaps, but significant security gains from those programs will take at least six to 12 months, and probably longer, to materialize.

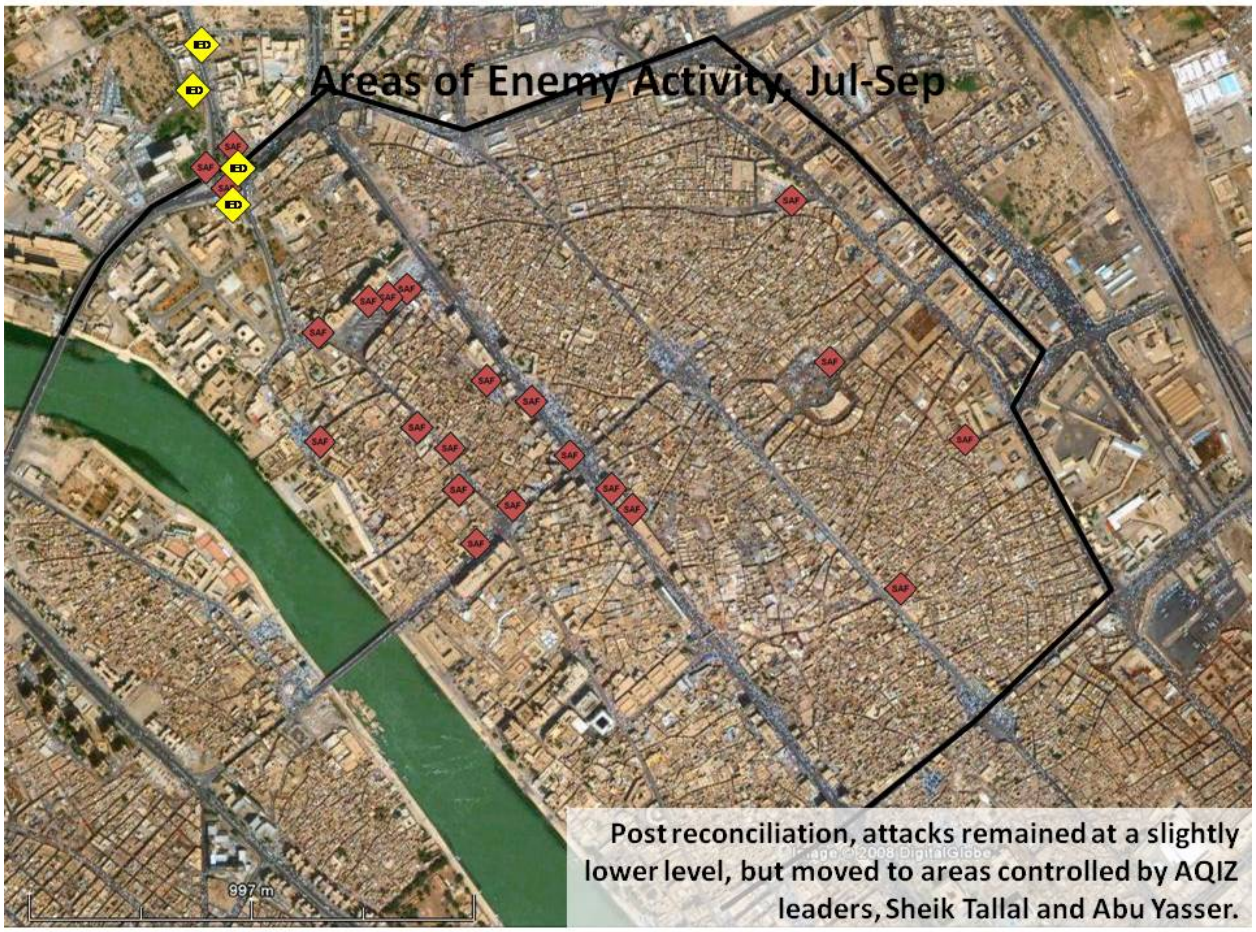
Friendly Situation

- The IC assesses that the Iraqi Government will become more precarious over the next six to 12 months because of criticism by other members of the major Shia coalition (the Unified Iraqi Alliance, UIA), Grand Ayatollah Sistani, and other Sunni and Kurdish parties. Divisions between Maliki and the Sadrists have increased, and Shia factions have explored alternative coalitions aimed at constraining Maliki. The strains of the security situation and absence of key leaders have stalled internal political debates, slowed national decisionmaking, and increased Maliki's vulnerability to alternative coalitions. We judge that Maliki will continue to benefit from recognition among Shia leaders that searching for a replacement could paralyze the government.
- We assess that changing the mission of Coalition forces from a primarily counterinsurgency and stabilization role to a primary combat support role for Iraqi forces and counterterrorist operations to prevent AQI from establishing a safehaven would erode security gains achieved thus far. The impact of a change in mission on Iraq's political and security environment and throughout the region probably would vary in intensity and suddenness of onset in relation to the rate and scale of a Coalition redeployment. Developments within the Iraqi communities themselves will be decisive in determining political and security trajectories.
- • Recent security improvements in Iraq, including success against AQI, have depended significantly on the close synchronization of conventional counterinsurgency and counterterrorism operations. A change of mission that interrupts that synchronization would place security improvements at risk.


A/1-504 Area of Operations
997 m
Image © 2008 DigitalGlobe


A/1-504 Area of Operations
Al Fadel
(Sunni)
997 m
2008 DigitalGlobe


Areas of Enemy Activity, Apr-Jun
IED
SAF
997 m
Prior to reconciliation, attacks against CF/IA were spread throughout and around AFDL. AM attempted to restrain from attacking CF, but would attack if he felt threatened and did not attempt to maintain a tight control on other groups in the area.


Areas of Enemy Activity, Jul-Sep
IED
SAF
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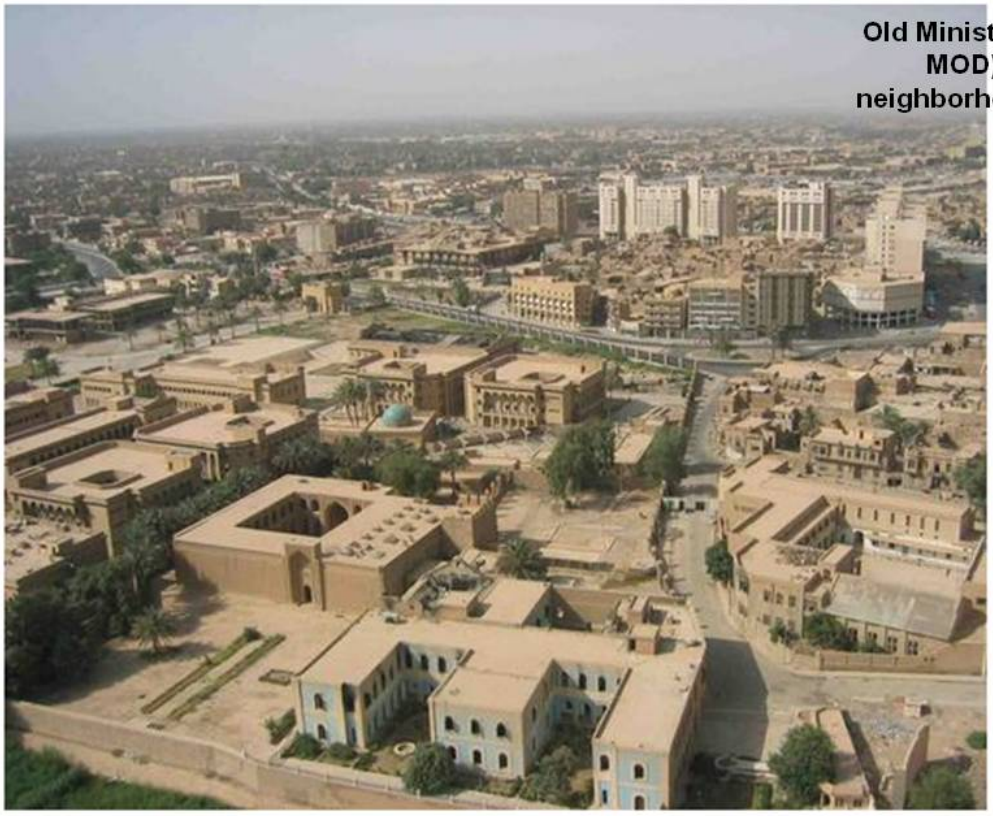
Post reconciliation, attacks remained at a slightly lower level, but moved to areas controlled by AQIZ leaders, Sheik Tallal and Abu Yasser.

Avenues of Approach



Old Ministry of Defense (Old MOD), and surrounding neighborhoods, looking east

Avenues of Approach

Typical street/intersection, Al Fadel

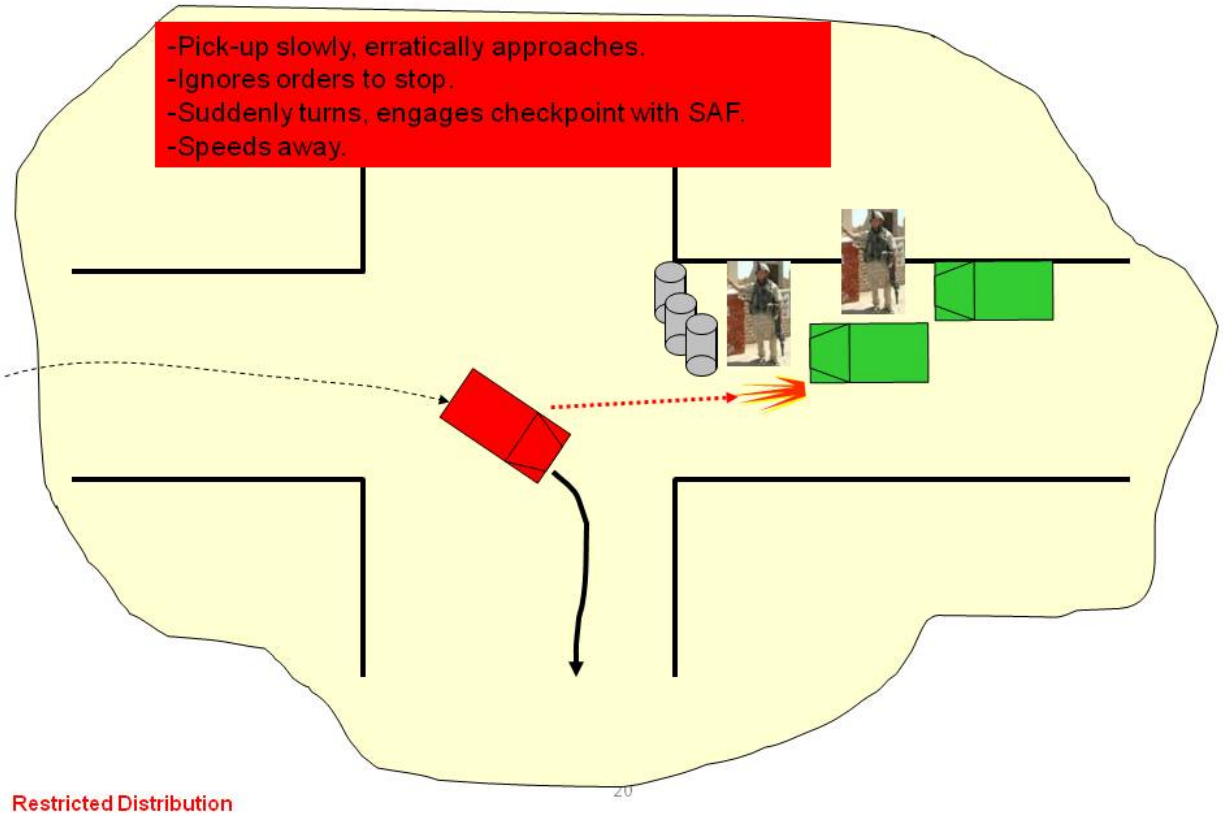
Book market, Al Fadel

Civilian Considerations

- Population displacement resulting from sectarian violence continues, imposing burdens on provincial governments and some neighboring states and increasing the danger of destabilizing influences spreading across Iraq's borders over the next six to 12 months.
- The polarization of communities is most evident in Baghdad, where the Shia are a clear majority in more than half of all neighborhoods and Sunni areas have become surrounded by predominately Shia districts. Where population displacements have led to significant sectarian separation, conflict levels have diminished to some extent because warring communities find it more difficult to penetrate communal enclaves.

Insurgent Techniques Used in the AO

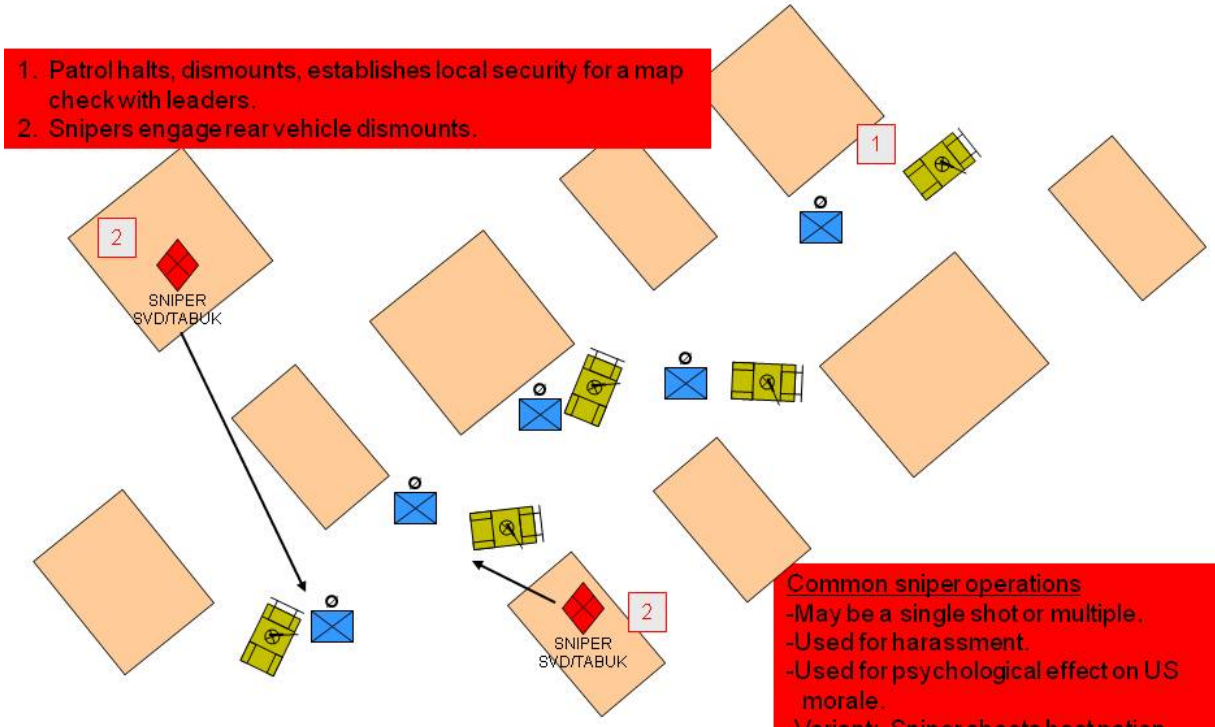
SAF Attack on Checkpoint



Restricted Distribution

Sniper Attack on Patrol – Urban Area

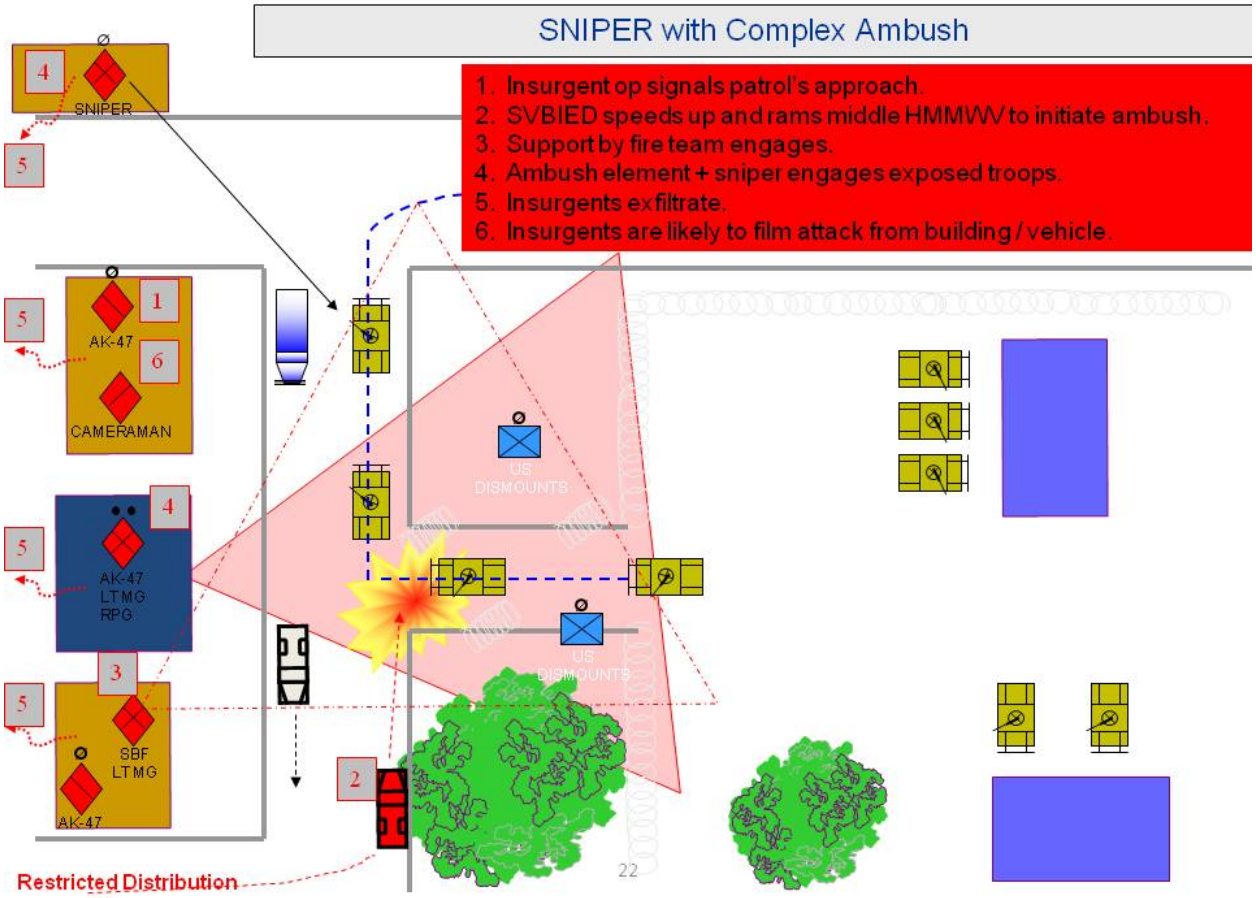
1. Patrol halts, dismounts, establishes local security for a map check with leaders.
2. Snipers engage rear vehicle dismounts.



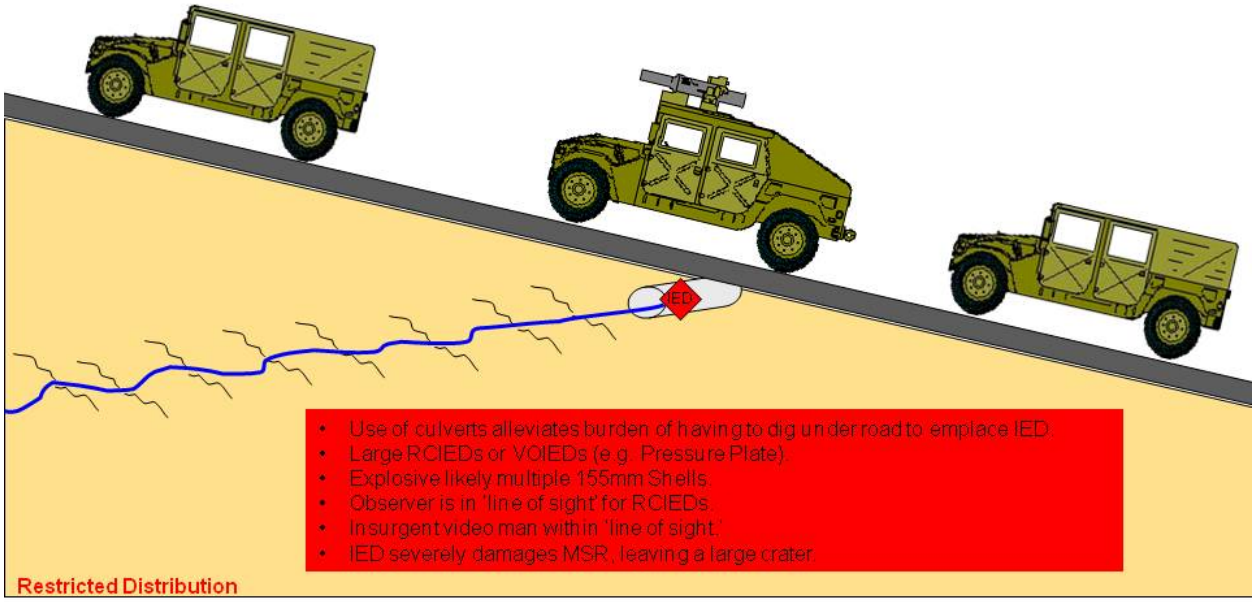
Common sniper operations
-May be a single shot or multiple.
-Used for harassment.
-Used for psychological effect on US morale.
-Variant: Sniper shoots host nation female or child to blame US forces.

21

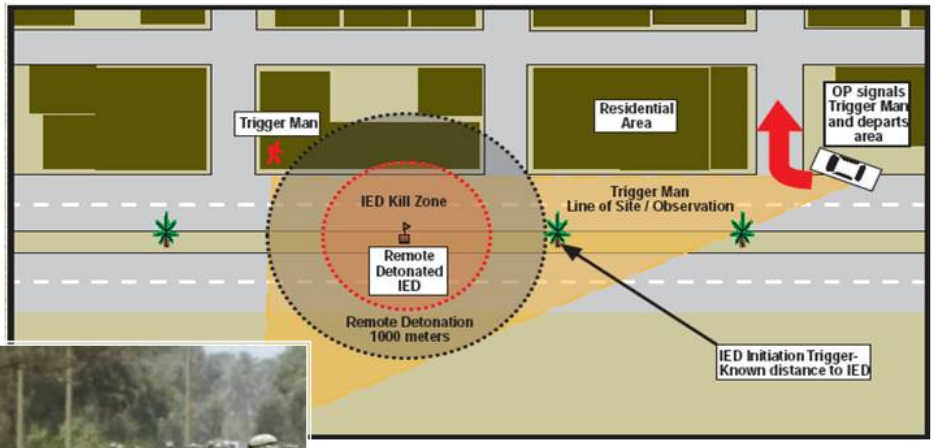
Restricted Distribution


SNIPER with Complex Ambush
1. Insurgent op signals patrol's approach.
2. SVBIED speeds up and rams middle HMMWV to initiate ambush.
3. Support by fire team engages.
4. Ambush element + sniper engages exposed troops.
5. Insurgents exfiltrate.
6. Insurgents are likely to film attack from building / vehicle.
SNIPER
AK-47
CAMERAMAN
AK-47
LTMG
RPG
SBF
LTMG
AK-47
US DISMOUNTS
US DISMOUNTS
Restricted Distribution

IED in Culvert under Road



IED Attack Linear Route



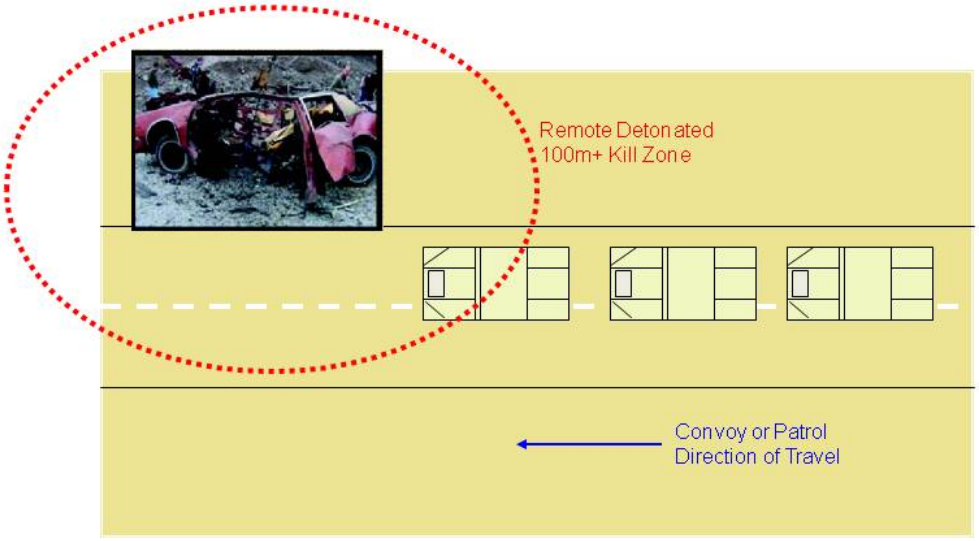
-US convoy moving towards kill zone.
-Trigger man in observation post inside building.
-OP signals trigger man as convoy approaches kill zone and departs.
-Trigger man remotely detonates IED as target Bradley is in center of kill zone, using a known visual trigger point.

http://www.abolkhaseb.net/images

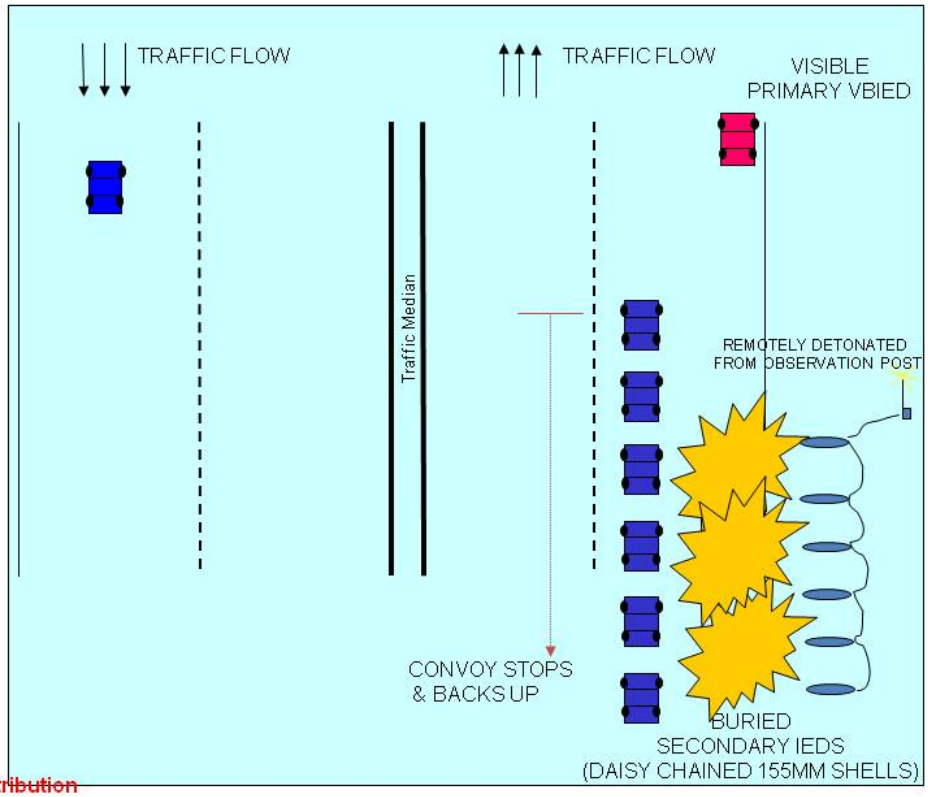
24

Abandoned Wreck as VBIED

- Abandoned wrecked vehicle left on road side.
- Explosive device is placed in wreckage to create the VBIED.



Primary VBIED + Secondary IED Devices – Daisy Chain



Restricted Distribution

A/1-504 Company Operations Order
OPORD 07-12 OPERATION TURGIDSON

References:
Mapsheet—
Area of Operations Orientation Briefing
Time Zone Used Throughout Order: Local

Copy __ of __ Copies
A/1-504
FOB Loyalty, Baghdad, Iraq
23 0900 SEP 07


Area of Operations/Interest
AO Jackson
AO Grant
AO Longstreet
FOB Loyalty
Image © 2008 DigitalGlobe

Situation

1a. Enemy Forces.

Shia elements of the Sadrist Jaysh al-Mahdi (JAM) militia are continuing to try to fuel sectarian violence in Baghdad.

Specifically, IED materiel has been tracked from Iran to several locations near Sadr City in AO Jackson. It is believed that vehicle-borne IED's are to be assembled at several locations, including OBJ Hammer. JAM militia intends to infiltrate AO Longstreet and detonate the IEDs in order to undermine coalition and Sunni efforts to stabilize the Al Fadel neighborhood.

For this operation, the enemy's most probable course of action is to avoid decisive engagement and attempt to flee the area. The most dangerous course of action is to reinforce engaged forces from Sadr city and attempt a series of baited ambushes as coalition forces attempt to pursue militants.

A mosque is located on OBJ Anvil. The Mullah in that mosque supports Anti-Coalition Forces (ACF) sentiment. Friday prayers advocate support for insurgencies, and this attitude further enables and legitimizes ACF activities within the neighborhood populace, including construction of IED's.

Situation

- **1b. Friendly Forces.**

  3rd BDE, 3rd ID conducts counter terrorism and counter insurgency operations against JAM militia in AO Jackson.

  3rd BDE will use RSTA elements to identify key routes that are bringing materiel into AO Jackson. We will then develop specific missions to target distribution points and IED fabrication facilities to disrupt the insurgent ability to destabilize the region.

Terrain & Weather

- Terrain: Refer to AO Brief
- Weather:
  - The weather has started to cool. For the next three days:
    - Highs are expected to be in the mid 90's
    - Lows are expected to be in the mid 60's
    - Humidity should be around 27%
    - Visibility has been good, and is expected to stay about 10km
    - The maximum wind speed recorded yesterday was 25.2 km/h, and the mean wind speed was 15.4 km/h
  - Light Data

Date	BMNT	Sunrise	Sunset	EENT	Moonrise	Moonset	% Illum
23 SEP	0557	0651	1859	1952	1700	0243	88
24 SEP	0558	0652	1857	1951	1734	0351	94
25 SEP	0559	0652	1856	1949	1805	0500	98

TF 1-15 seizes OBJ Hammer (MB 43526 91747) NLT 24 1900 SEP07 IOT prevent the enemy from manufacturing IEDs..

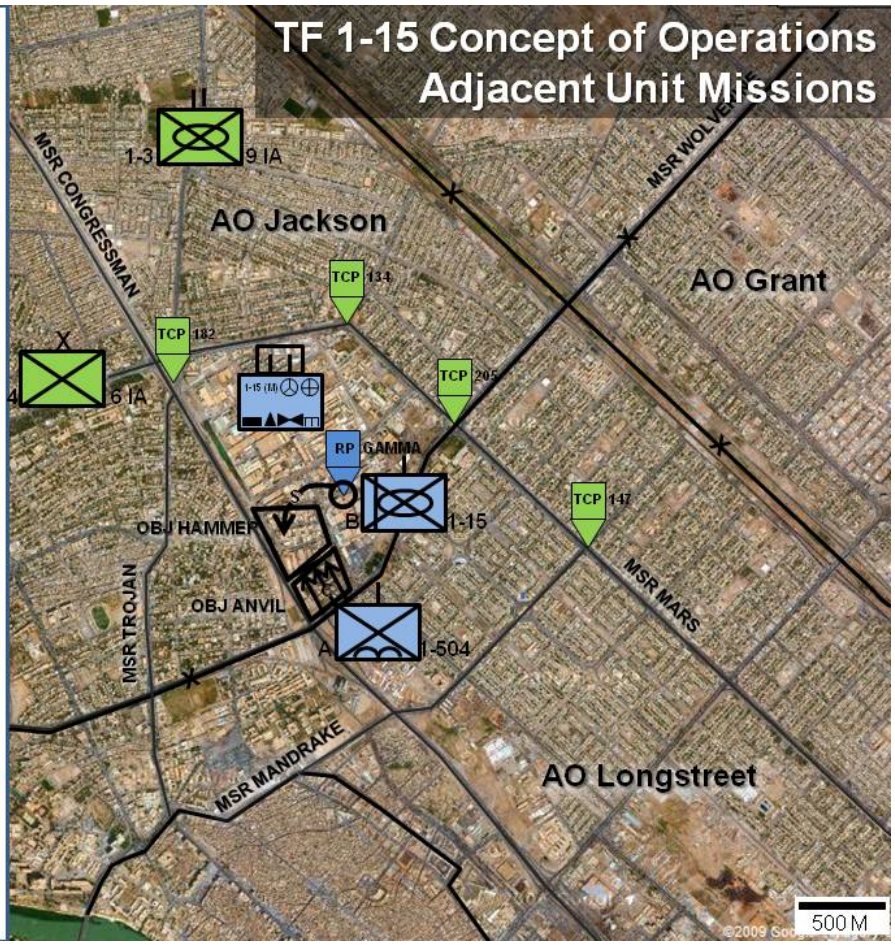
Intent: The purpose of this operation is to increase security along sectarian "fault lines" to enable transfer of authority to the Iraqi Police.

Key tasks:
--Clearing OBJ Hammer
--Seizing JAM bomb making equipment and weapons

At end state, bomb making material is seized or destroyed, and the facility is rendered non-operational.

Decisive Operation: B/1-15 seizes OBJ Hammer IOT prevent the exfiltration of ACM from OBJ Hammer.

Shaping Operations:
A/1-504 clears OBJ Anvil IOT prevent the reinforcement of JAM forces on OBJ Hammer.
4-6 IA conducts circulation control security at TCPs 182, 134, and 205
1/3-9 IA conducts circulation control security at TCP 147



UNCLASSIFIED

1.d. Attachments and Detachments

A/1-504 PIR Current Task Organization

OPCON C/1-504

	HQ	1/A/1-504	2/A/1-504	3/A/1-504
Personnel	10	30	32	34
Organization	CO C2 element able to dismount 1x TERP	3x TM able to dismount, w/ PLT C2 element	3x TM able to dismount, w/ PLT C2 element 1x TERP	1x TERP 3x TM able to dismount, w/ PLT C2 element
Equipment	2x M1151 2x .50cal 1x LMTV 1x	7x M1151 2x .50cal 3x M240B 2x MK19	7x M1151 2x .50cal 3x M240B 2x MK19	7x M1151 2x .50cal 2x M240B 3x MK19

Released from QRF Attached 1/A/1-504

	2/D/1-504	1/SCTS/1-504		
Personnel	18	6		
Organization	No dismount capability	4 Scouts 1x Sniper Team 1x TERP		
Equipment	5x M1151 2x .50cal 2x M240B & MK19	1x M24		

Company Mission

A/1-504 attacks to clear OBJ Anvil (MB43656 91494) NLT 24 1700 SEP 07, in order to prevent the reinforcement of JAM forces on OBJ Hammer.

Commander's Intent

The purpose of OPERATION TURGIDSON is prevent the enemy from manufacturing IEDs. Their capability consists of both materiel and facilities. At end state, the enemy forces will not be able to effect OBJ Hammer, A/1-504 is postured to conduct follow on operations based on any intelligence gained while on OBJ Anvil.

A/1-504 attacks to clear OBJ Anvil (MB 43656 91494) NLT 241700SEP07, in order to prevent the reinforcement of JAM forces on OBJ Hammer.

Intent: The purpose of this operation is to destroy the enemy's capability to manufacture IEDs vic OBJ Hammer. Their capability consists of both materiel and facilities.

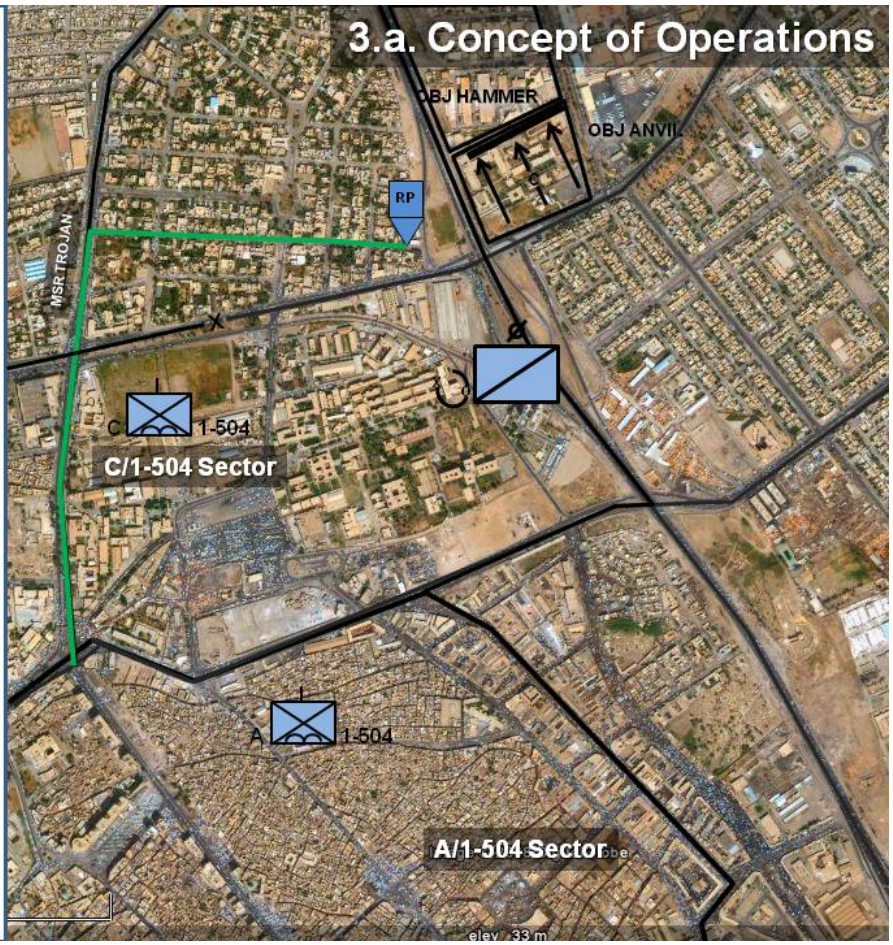
Scheme of Maneuver:

1/A/1-504 (with Scouts) are OPCON to C/1-504 to insert scouts and to saturate patrols along potential avenues of approach to the OBJ. This will ID the best avenues of approach and disguise the rest of the company movement. Scouts establish LP/OP vic MB 4359 9091 to observe and listen to broadcasts from Mosque and confirm presence of JAM on OBJ Anvil. At 24 1700, A/1-504 (-) crosses LD, order of movement 2/D, 3/A, 2/A. (Actions on OBJ detailed on next slide.)

Concept of Fires:

CCA severely restricted within AO Jackson; any assets would :

Task: disrupt JAM elements attempting to reinforce OBJ Hammer
Purpose: to allow ground forces to reposition appropriately.



A/1-504 attacks to clear OBJ Anvil (MB43656 91494) NLT 241700SEP07, in order to prevent the reinforcement of JAM forces on OBJ Hammer.

Intent: The purpose of this operation is to destroy the enemy's capability to manufacture IEDs vic OBJ Hammer. Their capability consists of both materiel and facilities.

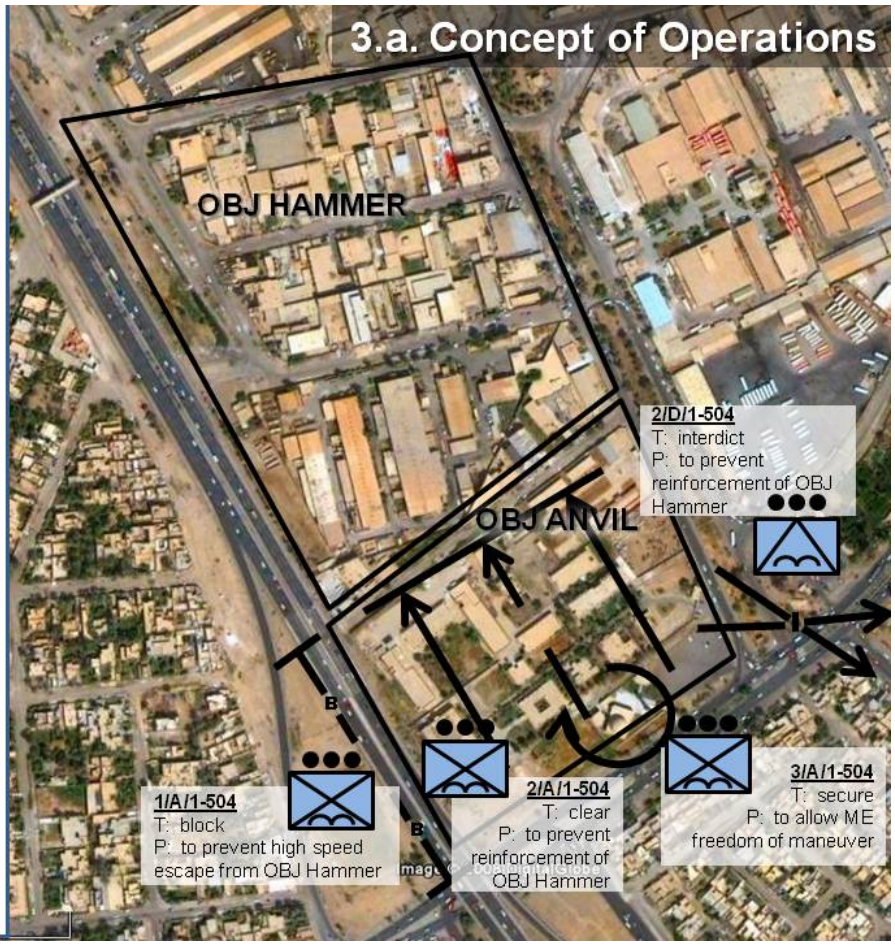
Key tasks:
--Observation of Mosque to confirm presence of JAM vic MB 437 914
--Saturate C/1-504 in order to disguise movement to OJB Anvil
--Secure mosque to allow ME freedom of maneuver

End state: the enemy forces will not be able to effect OBJ Hammer, A/1-504 is postured to conduct follow on operations based on any intelligence gained while on OBJ Anvil.

.

Decisive Operation: 2/A/1-504 clears OBJ Anvil IOT prevent the exfiltration of ACM from OBJ Hammer.

Shaping Operations:
2/D/1-504 interdicts vic MB43874 91457 IOT prevent counterattack from Sadr City.
1/A/1-504 blocks vic MB43483 91471 IOT prevent vehicular exfiltration along high speed avenue of approach.
3/A/1-504 secures vic MB43735 91404 OBJ Anvil IOT to allow 2/A/1-504 freedom of maneuver.

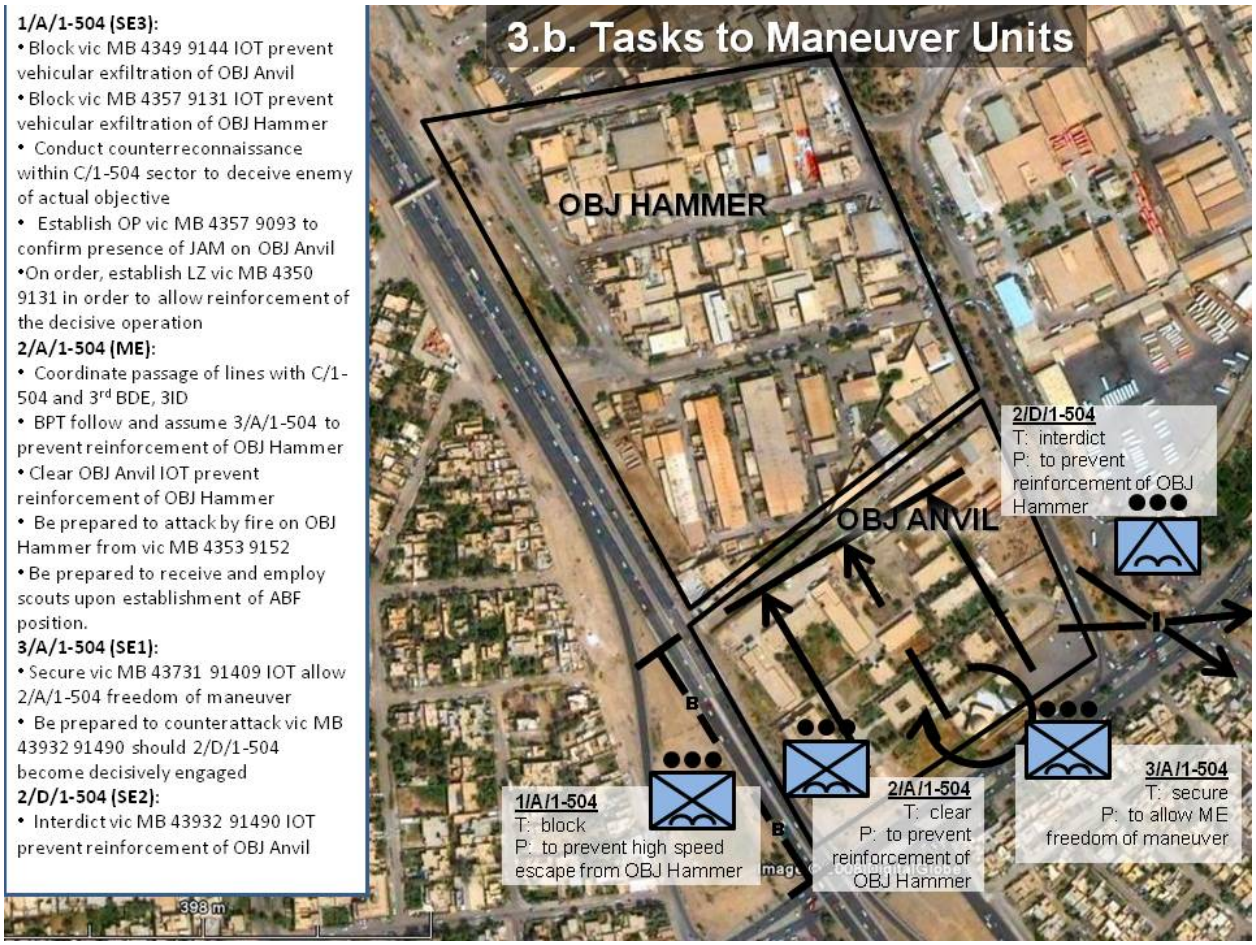


1/A/1-504 (SE3):
• Block vic MB 4349 9144 IOT prevent vehicular exfiltration of OBJ Anvil
• Block vic MB 4357 9131 IOT prevent vehicular exfiltration of OBJ Hammer
• Conduct counterreconnaissance within C/1-504 sector to deceive enemy of actual objective
• Establish OP vic MB 4357 9093 to confirm presence of JAM on OBJ Anvil
•On order, establish LZ vic MB 4350 9131 in order to allow reinforcement of the decisive operation

2/A/1-504 (ME):
• Coordinate passage of lines with C/1-504 and 3rd BDE, 3ID
• BPT follow and assume 3/A/1-504 to prevent reinforcement of OBJ Hammer
• Clear OBJ Anvil IOT prevent reinforcement of OBJ Hammer
• Be prepared to attack by fire on OBJ Hammer from vic MB 4353 9152
• Be prepared to receive and employ scouts upon establishment of ABF position.

3/A/1-504 (SE1):
• Secure vic MB 43731 91409 IOT allow 2/A/1-504 freedom of maneuver
• Be prepared to counterattack vic MB 43932 91490 should 2/D/1-504 become decisively engaged

2/D/1-504 (SE2):
• Interdict vic MB 43932 91490 IOT prevent reinforcement of OBJ Anvil



Execution - Additional Imagery

Vic MB 43830 91517, looking northeast. Avenue of approach to OBJ Anvil; near 2/D/1-504 area to interdict

Vic MB 43251 91878, looking South. West of OBJ Hammer; near 1/A/1-504 area to block

Execution—Coordinating Instructions

1) Order goes into effect immediately.
2) Commander's Critical Information Requirements:

- PIR:
  1. What does the activity vic Mosque on OBJ Anvil indicate about the enemy?
  2. Will the enemy employ IEDs or obstacles on our approach routes?
  3. Will and where will the enemy commit his counter attack (Sadr City)?
  4. Will the enemy re-positioning forces from adjacent defensive positions to support an adjacent unit?
- EEFI:
  1. Location of Scouts
  2. Location of Company Assault Position and release points
  3. Best avenues of approach out of our sector leading to the release point
- FFIR:
  1. Loss of crew served weapons
  2. Loss of mobility of any truck
  3. Frontline trace of B/1-15 as they clear OBJ Hammer

Execution - Coordinating Instructions

3) Risk Reduction Control Measures:
   - Mounted patrols must have min of 4 trucks
   - Every truck must have a crew served weapon
   - Every patrol must have at least 1 BFT
   - Lead vehicle must have current lead vehicle IED defeat technology (e.g. Rhino)
   - Dismounted patrols must have min 8 individuals, SINGARS radio, and squad automatic weapon
4) ROE and SPINS are in effect as of 20 0000Z SEP07
5) Additional:
   - All routes vic. OBJ Hammer and OBJ Anvil black for units not involved with OPERATION TURGIDSON upon crossing of MSR Wolverines

Coordinating Instructions (cont'd.)

- Timeline
  - 23 0800 SEP 07 Recon Element PCI/PCC complete
  - 23 0900 SEP 07 CO OPORD
  - 23 1100 SEP 07 Backbrief
  - 23 1200 SEP 07 NLT—Reconnaissance Elements SP
  - 23 2100 SEP 07 PMCS Complete on Vehicles, Crew Served Weapons
  - 24 0900 SEP 07 Company Rehearsals; PCI's complete
  - 24 1100 SEP 07 Platoon/Squad/Crew Rehearsals
  - 24 1300 SEP 07 Mandatory Rest
  - 24 1600 SEP 07 Convoy Briefs, PCC's complete
  - 24 1630 SEP 07 SP JSS
  - 24 1700 SEP 07 Cross LD

Service Support

- Concept:
  - As necessary, A/1-504 will receive tailgate resupply via the QRF. Ammunition will be prepped by the platoons and coordinated with the QRF. Other classes of supply will be coordinated through BN TOC.
- Class I: 1 case of bottled water in each vehicle, MRE's as desired
- Class V: 1 AT-4 in each vehicle, Basic Load for all WPN Systems, CSR is 1/3 Basic Load
- Maintenance
  - PLs will report to Company CP with vehicle inspection status NLT 23 1900. Provide status of identified deficiencies NLT 24 0900 SEP.
  - All crew served weapons and radios must be inspected NLT 23 1600 SEP
- Medical Evacuation
    - CCP and AXP will be located at RP.
    - 1/A will secure HLZ as needed.

Command and Signal

- Command
  - Commander will move behind 3rd PLT, XO will move behind 1st PLT, 1SG will move behind 2/D. CP will be located vic the Mosque after actions on the objective have commenced.
  - Succession of CMD: XO, 3/A PL, 2/A PL, 2/D PL, 1/A PL.

- Signal
  - All BN and CO Nets per current SOP
  - MEDVAC Freq. 32.000
  - Air Support Freq. 340.000 (Sabre)
  - SOI index 1-9 in effect
  - 2 successive star clusters signal enemy counter attack
  - PL's, nominate additional signals to CO RTO NLT 24 1200 SEP

A/1-504 Company Warning Order
WARNO 07-12 OPERATION TURGIDSON

References:
Mapsheet—
Area of Operations Orientation Briefing
Time Zone Used Throughout Order: Zulu

Copy __ of __ Copies
A/1-504
FOB Loyalty, Baghdad, Iraq
23 0900 SEP 07

Situation

- Refer to AO Orientation Briefing
- JAM militia have been moving IED materiel into AO Jackson
- 3rd BDE, 3rd ID is planning to conduct several simultaneous raids in their sector. The intent of these raids is to deny the enemy's ability to create IED's in sector. Additionally, they hope to capture key weapons making experts, which will further prevent IED construction.
- Due to the size and scope of this mission, A/1-504 will be OPCON to 1-15IN for this mission as they raid OBJ Hammer.

TF 1-15 seizes OBJ Hammer (MB43526 91747) NLT 241700SEP07 IOT destroy the enemy's capability to manufacture IEDs vic OBJ Hammer. Their capability consists of both materiel and facilities, and bomb making expertise.

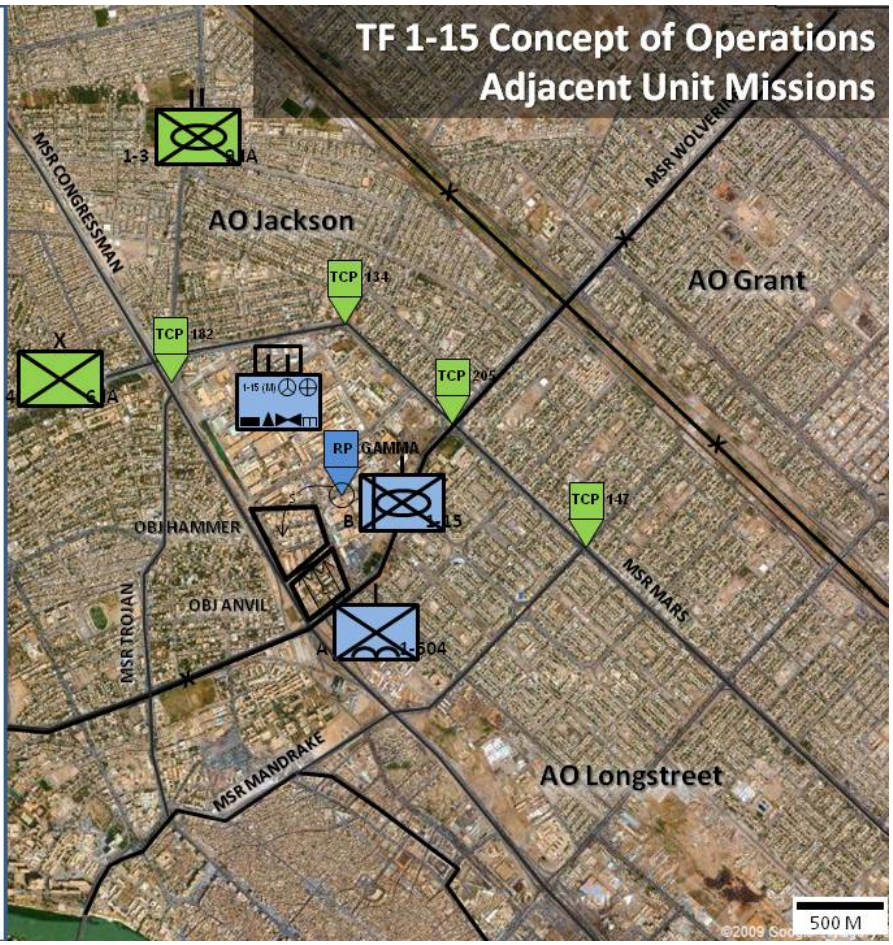
Intent: The purpose of this operation is to increase security along sectarian "fault lines" to enable transfer of authority to the Iraqi Police

Key tasks:
- --Clearing and then retaining OBJ Hammer
- --Destroying or seizing JAM bomb making equipment and weapons

At end state, bomb making material is seized or destroyed, the facility is rendered non-operational, and ACF personnel are killed or captured.

Decisive Operation: B/1-15 seizes OBJ Hammer IOT prevent the exfiltration of ACM from OBJ Hammer.

Shaping Operations:
A/1-504 clears OBJ Anvil IOT prevent the reinforcement of JAM forces on OBJ Hammer.
4-6 IA conducts circulation control security at TCPs 182, 134, and 205
1/3-9 IA conducts circulation control security at TCP 147



Warning Order

- Mission: A/1-504 blocks vic OBJ Anvil (MB xxxx xxxxx) on or about 24 2100 SEP IOT prevent JAM militia from exfiltrating OBJ Hammer
- Execution:

  Intent. Our purpose is to prevent JAM from reinforcing OBJ Hammer. This will enable the battalion to destroy the IED manufacturing capability on OBJ Hammer.

  - Concept of Operations. TBD
  - Tasks to Maneuver Units
    - 2/D/1-504: BPT block all routes toward OBJ Hammer and/or conduct a traffic control point
    - 1/A/1-504: BPT construct a hasty obstacles to deter road traffic
    - 3/A/1-504: Coordinate with C/1-504 to determine their patrol plan for the next 72 hours
    - 3/A/1-504: Conduct rehearsals for support by fire

Coordinating Instructions

- Commander's Critical Information Requirements
  - PIR:
    - 1. What does the enemy look like on TF OBJs?
    - 2. Will the enemy employ IEDs or obstacles on approach our routes?
    - 3. Will and where will the enemy commit his counter attack?
    - 4. Will the enemy re-positioning forces from adjacent defensive positions to support an adjacent unit?
  - EEFI:
    - 1. Location of Company Assault Position and release points
  - FFIR:
    - 1. Loss of crew served weapons
    - 2. Loss of mobility of any truck

Coordinating Instructions

- Risk Guidance—no change from current SOPs
- Deception Guidance
  - We will attempt to conceal our movement toward the objective as part of normal patrols. As such, we will keep our current patrol schedule in effect for as long as possible
- Priorities
  - Current Operations
  - Crew Rehearsals
  - Route Reconnaissance
  - PCI/PCC All Crew served wpns, vehicles
  - Rehearse SOSRA, night linkup
  - Reconnaissance
    - As part of normal security operations, all units will recon routes that lead to Route Wolverine.

Coordinating Instructions (cont'd.)

- Timeline
  - 23 0800 SEP 07 Recon Element PCI/PCC complete
  - 23 0900 SEP 07 CO OPORD
  - 23 1100 SEP 07 Backbrief
  - 23 1200 SEP 07 NLT—Reconnaissance Elements SP
  - 23 2100 SEP 07 PMCS Complete on Vehicles, Crew Served Weapons
  - 24 0900 SEP 07 Company Rehearsals; PCI's complete
  - 24 1100 SEP 07 Platoon/Squad/Crew Rehearsals
  - 24 1300 SEP 07 Mandatory Rest
  - 24 1600 SEP 07 Convoy Briefs, PCC's complete
  - 24 1630 SEP 07 SP JSS
  - 24 1700 SEP 07 Cross LD

Warning Order

- Service Support
  - Special Equipment. Check availability of:
    - Female search teams
    - Tactical Psyop Teams
  - Transportation: XO, check with S3 Air for availability of helicopter lift for QRF. Depending on guidance, we may be able to provide more support if the QRF is on the helicopters
  - CL I: Ration cycle for 24 SEP: A-A-M
  - CL III(B): All TF elements will top off prior to leaving FOB Loyalty
  - CL V: All units will SP with ABL, having confirmed speedball ammo resupply of additional ABL staged.
  - CL VIII: All Medic / CLS bags will be complete prior to SP
- Command and Signal
  - No change to what's currently in effect
  - Succession of CMD: TBD, based on locations on battlefield
  - SOI index 1-9 in effect

A/1-504 Company Fragmentary Order #1
FRAGO 07-12-1 OPERATION TURGIDSON

References:
Mapsheet—
Area of Operations Orientation Briefing
Time Zone Used Throughout Order: Zulu

Copy __ of __ Copies
A/1-504
FOB Loyalty, Baghdad, Iraq
24 0900 SEP 07

Instructions

- Scenario: The commander has received new information that is in this FRAGO. He wrote the FRAGO prior to going to the BN rehearsal. He didn't have time to wait for everyone to get in, so he left this hard copy.
- You have not issued your platoon order yet, so digest the changes in this FRAGO and update your order. The changes to the original order are highlighted in red.

- Use a different color of pen to indicate your changes. You should have been provided one when you were given this FRAGO.

1.d. Attachments and Detachments

A/1-504 PIR Current Task Organization

OPCON C/1-504

	HQ	1/A/1-504	2/A/1-504	3/A/1-504
Personnel	10	30	32	34
Organization	CO C2 element able to dismount 1x TERP	3x TM able to dismount, w/ PLT C2 element	3x TM able to dismount, w/ PLT C2 element 1x TERP	1x TERP 3x TM able to dismount, w/ PLT C2 element
Equipment	2x M1151 2x .50cal 1x LMTV 1x	7x M1151 2x .50cal 3x M240B 2x MK19	7x M1151 2x .50cal 3x M240B 2x MK19	7x M1151 2x .50cal 2x M240B 3x MK19

Attached 1/A/1-504 Attached 3/A/1-504

	2/D/1-504	1/SCTS/1-504	TAC. PSYOPS	
Personnel	18	6	4	
Organization	No dismount capability	4 Scouts 1x Sniper Team 1x TERP		
Equipment	5x M1151 2x .50cal 2x M240B & MK19	1x M24	1x M1151 1x M240B Leaflets,	

Fragmentary Order

- Situation: Recent intelligence indicates that several of the more knowledgeable bomb-makers will be on OBJ Hammer to supervise the construction of the IEDs.
- Mission: A/1-504 attacks to isolate OBJ Anvil (MB 43656 91494) NLT 241700SEP07, in order to prevent the reinforcement of JAM forces on OBJ Hammer.
- Commander's Intent:
  - The purpose of OPERATION TURGIDSON is to destroy the enemy's capability to manufacture VBIEDs vic OBJ Hammer. Their capability consists of both materiel and facilities, and bomb making expertise. At end state, the enemy forces will not be able to affect OBJ Hammer, AIF and bomb-makers are killed or captured, and A/1-504 is postured to conduct follow on operations based on any intelligence gained while on OBJ Anvil.

TF 1-15 neutralizes OBJ Hammer (MB 43526 91747) NLT 24 1900 SEP07 IOT prevent the enemy from manufacturing IEDs.

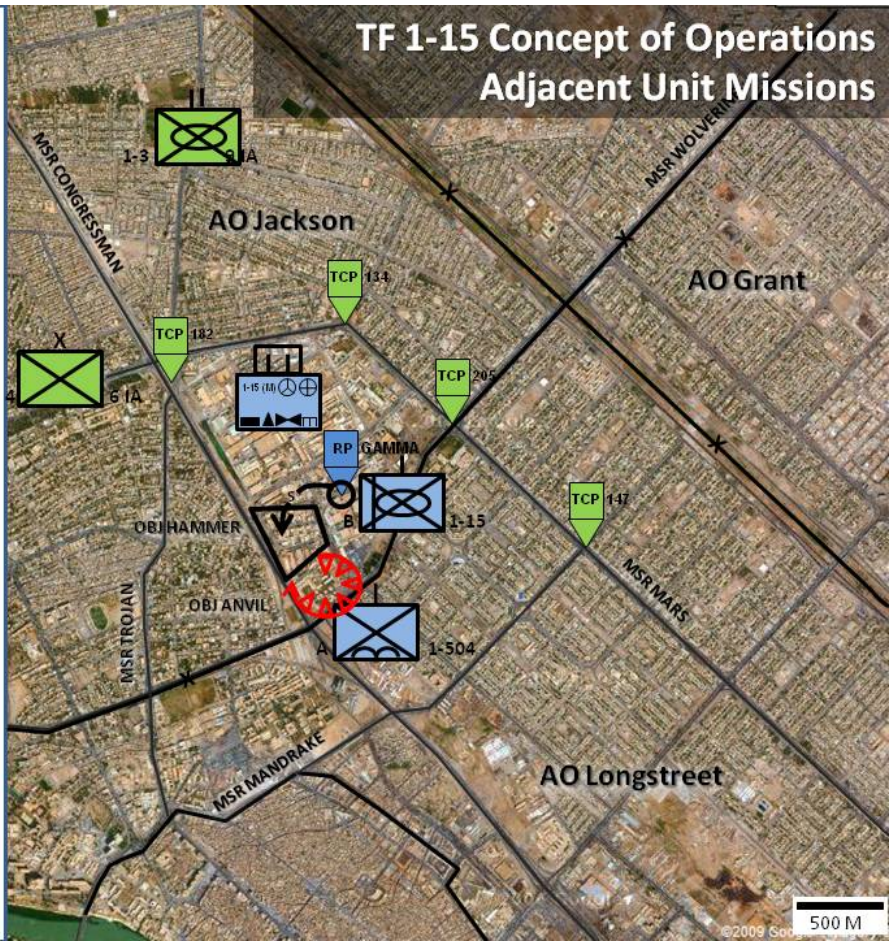
Intent: The purpose of this operation is to increase security along sectarian "fault lines" to enable transfer of authority to the Iraqi Police.

Key tasks:
--Contain OBJ Hammer
--Defeat JAM/ACF on/around OBJ Hammer
--Destroy JAM equipment and weapons

At end state, bomb making material is seized or destroyed, the facility is rendered non-operational, and ACF personnel are killed or captured.

Decisive Operation: B/1-15 seizes OBJ Hammer IOT prevent the exfiltration of ACM from OBJ Hammer.

Shaping Operations:
A/1-504 isolates OBJ Anvil IOT prevent the reinforcement of JAM forces on OBJ Hammer.
4-6 IA conducts circulation control security at TCPs 182, 134, and 205
1/3-9 IA conducts circulation control security at TCP 147



A/1-504 attacks to isolate OBJ Anvil (MB 43656 91494) NLT 241700SEP07, in order to prevent the reinforcement of JAM forces on OBJ Hammer.

Intent: The purpose of this operation is to destroy the enemy's capability to manufacture IEDs vic OBJ Hammer. Their capability consists of both materiel and facilities, and bomb making expertise.

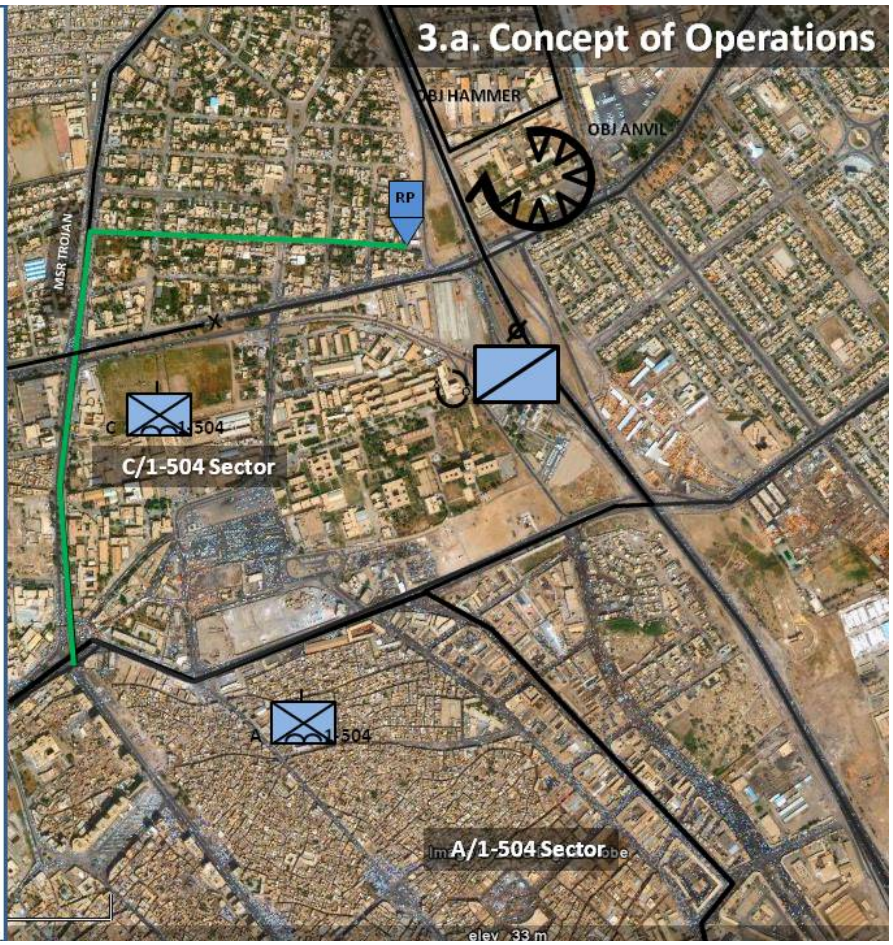
Scheme of Maneuver:

1/A/1-504 (with Scouts) are OPCON to C/1-504 to insert scouts and to saturate patrols along potential avenues of approach to the OBJ. This will ID the best avenues of approach and disguise the rest of the company movement. Scouts establish LP/OP vic MB 4359 9091 to observe and listen to broadcasts from Mosque and confirm presence of JAM on OBJ Anvil. At 24 1700, A/1-504 (-) crosses LD, order of movement 2/D, 3/A, 2/A. (Actions on OBJ detailed on next slide.)

Concept of Fires:

CCA severely restricted within AO Jackson; any assets would :

Task: disrupt JAM elements attempting to reinforce OBJ Hammer
Purpose: to allow ground forces to reposition appropriately.



A/1-504 attacks to clear OBJ Anvil (MB43656 91494) NLT 241700SEP07, in order to prevent the reinforcement of JAM forces on OBJ Hammer.

Intent: The purpose of this operation is to destroy the enemy's capability to manufacture IEDs vic OBJ Hammer. Their capability consists of both materiel and facilities, and bomb making expertise.

Key tasks:

--Observation of Mosque to confirm presence of JAM vic MB 437 914

--Saturate C/1-504 in order to disguise movement to OJB Anvil

--Kill or capture ACF

--Isolate mosque to prevent repositioning of forces on OBJ Anvil

End state: the enemy forces will not be able to affect OBJ Hammer, A/1-504 is postured to conduct follow on operations based on any intelligence gained while on OBJ Anvil.

.

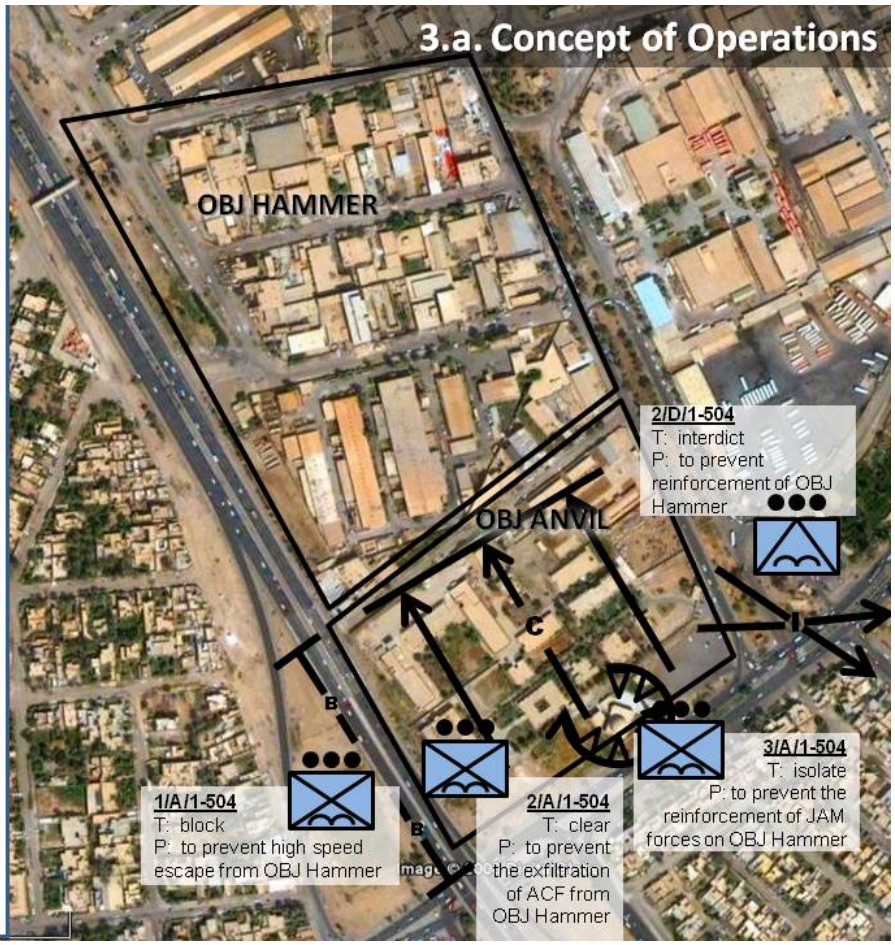
Decisive Operation: 3/A/1-504 isolates vic MB43735 91404 OBJ Anvil IOT prevent the reinforcement of JAM forces on OBJ Hammer.

Shaping Operations:

2/D/1-504 interdicts vic MB43874 91457 IOT prevent counterattack from Sadr City.

1/A/1-504 blocks vic MB43483 91471 IOT prevent vehicular exfiltration along high speed avenue of approach.

2/A/1-504 clears OBJ Anvil IOT prevent the exfiltration of ACF from OBJ Hammer.



1/A/1-504 (SE3):
- Block vic MB 4349 9144 IOT prevent vehicular exfiltration of OBJ Anvil
- Block vic MB 4357 9131 IOT prevent vehicular exfiltration of OBJ Hammer
- Conduct counterreconnaissance within C/1-504 sector to deceive enemy of actual objective
- Establish OP vic MB 4357 9093 to confirm presence of JAM on OBJ Anvil
- On order, establish LZ vic MB 4350 9131 in order to allow reinforcement of the decisive operation

2/A/1-504 (ME):
- On order, clear OBJ Anvil IOT prevent the exfiltration of ACF of OBJ Hammer
- BPT Follow and assume 3/A/1-504 to prevent reinforcement of OBJ Hammer
- Be prepared to attack by fire on OBJ Hammer from vic MB 4353 9152
- Be prepared to receive and employ scouts upon establishment of ABF position.

3/A/1-504 (SE1):
- Isolate vic MB 43731 91409 IOT prevent the reinforcement of JAM forces on OBJ Hammer
- Be prepared to counterattack vic MB 43932 91490 should 2/D/1-504 become decisively engaged

2/D/1-504 (SE2):
- Interdict vic MB 43932 91490 IOT prevent reinforcement of OBJ Anvil
- Coordinate passage of lines with C/1-504 and 3rd BDE, 3ID

Synchronization Matrix

	Planning/ Deception/ Observation	CO (-) LD to RP	Isolate Mosque	Clear OBJ Anvil	Decision Point: CATK from SADR City	Decision Point: ABF on OBJ Hammer
1/SCTS/1-504	OPCON 1/A Establish LP/OP	Observe	Observe	Observe	OPCON 2/D	OPCON 2/A
1/A/1-504	OPCON C/1-504		Block	Block	BPT establish LZ	BPT establish LZ
2/A/1-504		3rd in OOM	Staged at RP	Clear		ABF
3/A/1-504		2nd in OOM	Isolate	Isolate	Reinforce 2/D	Follow and Assume 2/A
2/D/1-504	Coordinate passage of lines	1st in OOM	Interdict	Interdict	Interdict	Interdict
Priority of Fires: Mortars (Illum only) CCA			Illum: 3/A CCA:		Illum: 2/D CCA: 2/D	Illum: 2/A CCA: 2/A
Medical	CCP: TBD AXP: TBD	CCP: Enroute AXP: C/1-504 COP	CCP: RP AXP: RP	CCP: ACP AXP: RP	CCP: 1SG Establishes behind 2/D AXP: RP	CCP: 1SG Establishes behind 2/A AXP: RP
Ammo Resupply Priority	As needed	Unit in Contact	3/A, then units in contact	2/A, then units in contact	2/D, then 3/A	2/A, then 3/A
C2		1SG: behind 2/D CO: behind 3/A XO: behind 2/A				

Coordinating Instructions

Commander's Critical Information Requirements:

- PIR:
  1. What does the activity vic Mosque on OBJ Anvil indicate about the enemy?
  2. Will the enemy employ IEDs or obstacles on approach our routes?
  3. Will and where will the enemy commit his counter attack (Sadr City)?
  4. Will the enemy re-positioning forces from adjacent defensive positions to support an adjacent unit?
  5. What do captured AIF know about VBIED manufacturing capability?
- EEFI:
  1. Location of Scouts
  2. Location of Company Assault Position and release points
  3. Best avenues of approach out of our sector leading to the release point
- FFIR:
  1. Loss of crew served weapons
  2. Loss of mobility of any truck
  3. Frontline trace of B/1-15 as they clear OBJ Hammer

Fragmentary Order

- Additional Coordinating Instructions:
  - Stop all individuals leaving the OBJ. Immediately detain anyone missing fingers.
- Service Support
  - Female search teams will be at FOB Loyalty, called on demand to OBJ
- Command and Signal
  - No change

A/1-504 Company Fragmentary Order #2
FRAGO 07-12-1 OPERATION TURGIDSON

References:
Mapsheet—
Area of Operations Orientation Briefing
Time Zone Used Throughout Order: Zulu

Copy __ of __ Copies
A/1-504
FOB Loyalty, Baghdad, Iraq
24 0900 SEP 07

Fragmentary Order

- Task Organization:
  - In effect as of this FRAGO
  - 1/A/1-504 returns to company control NLT 24 1900 SEP 07 (see coordinating instructions)
  - 1st Squad of 2/C/1/4-6 IA attached to 3/A/1-504
- Situation: Iranian national, Mahmoud Abkar is suspected of being in vicinity of the Mosque on OBJ Anvil. He has extensive IED experience and is assessing the capability of local IED manufacturing operations.
- Mission: A/1-504 attacks to isolate OBJ Anvil (MB 43656 91494) NLT 242300SEP07, in order to prevent the reinforcement of JAM forces on OBJ Hammer.
- Execution:
  - Concept of Operations: No change
  - Tasks to Maneuver Units: No change

Synchronization Matrix

	Planning/ Deception/Observation	CO (-) LD to RP	Isolate Mosque	Clear OBJ Anvil	Decision Point: CATK from SADR City	Decision Point: ABF on OBJ Hammer
Enemy						
1/SCTS/1-504	OPCON 1/A Establish LP/OP	Observe	Observe	Observe	OPCON 2/D	OPCON 2/A
1/A/1-504	OPCON C/1-504	Return to CO Control NLT 24 2300	Block	Block	BPT establish LZ	BPT establish LZ
2/A/1-504		3rd in OOM	Staged at RP	Clear		ABF
3/A/1-504		2nd in OOM	Isolate	Isolate	Reinforce 2/D	Follow and Assume 2/A
2/D/1-504	Coordinate passage of lines	1st in OOM	Interdict	Interdict	Interdict	Interdict
Priority of Fires: Mortars (Illum only) CCA			Illum: 3/A CCA:		Illum: 2/D CCA: 2/D	Illum: 2/A CCA: 2/A
Medical	CCP: TBD AXP: TBD	CCP: Enroute AXP: C/1-504 COP	CCP: RP AXP: RP	CCP: ACP AXP: RP	CCP: 1SG Establishes behind 2/D AXP: RP	CCP: 1SG Establishes behind 2/A AXP: RP
Ammo Resupply Priority	As needed	Unit in Contact	3/A, then units in contact	2/A, then units in contact	2/D, then 3/A	2/A, then 3/A
C2		1SG: behind 2/D CO: behind 3/A XO: behind 2/A				

Coordinating Instructions

Commander's Critical Information Requirements:

- PIR:
  1. What does the activity vic Mosque on OBJ Anvil indicate about the enemy?
  2. Will the enemy employ IEDs or obstacles on approach our routes?
  3. Will and where will the enemy commit his counter attack (Sadr City)?
  4. Will the enemy re-positioning forces from adjacent defensive positions to support an adjacent unit?
  5. What do captured AIF know about VBIED manufacturing capability?
  6. What does the HVT look like?
- EEFI:
  1. Location of Scouts
  2. Location of Company Assault Position and release points
  3. Best avenues of approach out of our sector leading to the release point
- FFIR:
  1. Loss of crew served weapons
  2. Loss of mobility of any truck
  3. Frontline trace of B/1-15 as they clear OBJ Hammer

Fragmentary Order

- Additional Coordinating Instructions:
  - Due to activity on MSR Congressmen the operation has been delayed to 24 2300 SEP
- Service Support
  - Female search teams will be at FOB Loyalty, called on demand to OBJ
- Command and Signal
  - No change

Market Place

Scenario 2

- Your platoon has been tasked to secure the marketplace. Recently, insurgents have used a variety of conventional and unconventional methods to disrupt the market each week. Those methods included snipers targeting shop owners, suicide bombers, and a kidnapping. Needless to say, attendance at the market has been low, yet it is seen as a key reconstructive effort by the brigade commander.
- The engineer platoon leader, who has access to barrier material and concertina wire, wants to know what help you would like in securing the marketplace. The next market day is five days from now. Your platoon, a civil-affairs team, and a tactical psyops team will be the only forces available on market day.

- **What other information would you desire to complete your plan?**

- **What conditions would have the greatest impact on mission success?**

- **What coordinations will you conduct?**

- **Based on the information provided, provide a tentative mission statement, and a the task and purpose for each squad:**

APPENDIX C

Post Training Evaluation Questionnaire

Enter your USER ID here:_____(6 characters, e.g., CL6789)
As a reminder, you created your USER ID prior to training using the following guidelines:

Use the first two letters of the <u>City</u> in which you were <u>Born</u>	**Use the last four digits of your phone number**	USER ID
Cleveland = CL	XXX-6789	CL6789

Questionnaire starts on next page.

Post Training Evaluation Questionnaire

Based on the instruction you have just completed, using the scale below, please fill in the bubble to indicate how <u>well prepared</u> you are to discuss the following mission planning activities.

		Not at All Prepared	Somewhat Prepared	Prepared	Very Well Prepared	Extremely Prepared – Could Teach This to Others
1. Conduct a thorough **Mission Analysis** (*time analysis, mission analysis 2 levels up, identify initial tasks - specified, implied, and essential, and constraints*)	Prior to Training	○	○	○	○	○
	Post Training	○	○	○	○	○
2. **Analyze Terrain** using a map and/or satellite imagery to support the creation of a COA statement and sketch (*how terrain influences operations, importance of OCOKA in planning*)	Prior to Training	○	○	○	○	○
	Post Training	○	○	○	○	○
3. Consider the military aspects of **Weather** on a mission (*how to incorporate the visibility, wind, precipitation, cloud cover, and temp./humidity format in the analysis*)	Prior to Training	○	○	○	○	○
	Post Training	○	○	○	○	○
4. Describe the **Enemy** and their likely reaction to friendly force actions (how to *consolidate enemy data into disposition, composition & strengths, recent activities, warfighting functions and incorporate these elements in the enemy MPCOA/MDCOA and SITEMP*)	Prior to Training	○	○	○	○	○
	Post Training	○	○	○	○	○
5. **Adjust a Plan** based on reconnaissance or other additional information, and communicate changes to subordinates through the use of COA statement and sketch and synchronization matrix	Prior to Training	○	○	○	○	○
	Post Training	○	○	○	○	○

Post Training Evaluation Questionnaire

Using the scale below, please fill in the bubble to indicate your feelings toward the instruction you received.

	Strongly Agree	Agree	Neither Disagree or Agree	Disagree	Strongly Disagree
6. The instruction gave me a much better understanding of the mission planning process	○	○	○	○	○
7. The instructor had a thorough understanding of the topic material	○	○	○	○	○
8. The time devoted to explaining concepts and group discussions was adequate	○	○	○	○	○
9. The instructor covered issues and nuances in the mission planning process that were very helpful	○	○	○	○	○
10. The instruction provided valuable insights on how to effectively approach the mission planning process	○	○	○	○	○
11. The instruction improved my ability to critically analyze and plan an Infantry mission	○	○	○	○	○
12. The class content was valuable to me as a platoon leader.	○	○	○	○	○
13. The topic areas covered in this class will clearly benefit me.	○	○	○	○	○
14. I was thoroughly engaged throughout the class.	○	○	○	○	○
15. I feel that I am better adaptive thinker as a result of this class.	○	○	○	○	○

THANK YOU!

APPENDIX D

Mission Analysis and Planning Behaviorally Anchored Rating Scale (BARS)

1	2	3	4	5
Performance is abstract and rule based, and focuses on variables in isolation.	Performance reflects simple analytical processing using a limited experience base.	Performance reflects a mental model of asset utilization, but remains dependent on analysis and planning rather than recognition and intuition.	Performance reflects a recognitional or intuitive assessment of the situation, but analytical decision making where the individual deliberates about a course of action.	Performance reflects a recognitional ability to assess and decide.
Theme 1. Know and Use All Assets Available Combat leader must not lose sight of the synergistic effects of fighting their command as a combined arms team--this includes not only all assets under their command, but also those which higher headquarters might bring to bear to assist them.				
1	2	3	4	5
Knows Textbook Capabilities	**Matches Assets to Mission Requirements**	**Utilizes Organic Assets to Accomplish Mission Objectives**	**Recognizes Full Range of Assets Required based on Situational Demands**	**Applies Full Range of Assets to Direct the Outcome of the Battle**
Individual knows facts about standard capabilities of organic assets such as ranges of weapons, number of vehicles per unit. The foundational knowledge required to analyze how assets can be applied to the situation has not yet developed.	Organic assets are matched to mission requirements. For example, a tank formation would be allocated to the area where heavy armor is needed for protection. Individual has difficulty prioritizing tasks, so asset utilization is driven by capabilities (what the asset can do) over situational demand (what is the most pressing mission task.)	Individual can prioritize mission tasks and predict how the situation could unfold, and an asset utilization plan is generated against that analysis. However, execution is driven by the plan over the situation, so individual has difficulty adjusting asset utilization to meet changing demands.	Individual recognizes the availability of non-organic and non-military assets in addition to his own organic assets. For example, civilians are recognized to be valuable sources of HUMINT. Situational demands drive asset utilization, rather than the plan or the organic assets at the individual's disposal.	Individual can visualize specific outcomes of asset utilization and has the ability to avoid unwanted consequences. For example, he knows how to command and maneuver his forces to avoid an uprising by the locals. Individual leverages and coordinates organic, non-organic, and non-military assets to achieve mission objectives.
Theme 2. Keep a Focus on the Mission and Higher's Intent. Combat leaders must never lose sight of the purpose and results they are directed to achieve--even when unusual and critical events may draw them in a different direction.				
1	2	3	4	5
Focuses on Own Mission	**Discriminates Intent and Explicit Mission**	**Models Effects of Own Mission and HQ Intent**	**Makes Accurate Predictions**	**Supports Intent**
Individual fixates on own mission rather than considering larger organization's mission. He is unable to consider higher intent.	Mission tasks are paramount to all else, and intent can be articulated but not operationalized. Individual has difficulty prioritizing tasks for mission accomplishment and is often uncertain or overwhelmed as situation evolves. There is a tendency to rely on direction from higher HQ rather than making own decisions.	Individual can prioritize mission tasks and predict how the situation could unfold, and an asset utilization plan is generated against that analysis. However, execution is guided by an efficient but rigid plan that is not adapted to account for changes in the situation.	Individual recognizes how situational factors impact the mission and the path to achieving intent.	Individual can quickly and accurately assess thee situation, visualize contingencies, and devise and action plan that accomplishes the intent while avoiding unwanted consequences.
Theme 3. Model a Thinking Enemy or Populace. Keep a Focus on the Mission and Higher's Intent. Combat leaders must not forget that the adversary is a reasoning human being, intent on defeating them--it's tempting to simplify the battlefield by treating the enemy as static or simply reactive. Likewise, the local populace has its own motivations that drive its actions within the battlespace.				
1	2	3	4	5
Uses Enemy Templates	**Regards the Enemy as Static**	**Regards the Enemy as Intelligent and Dynamic**	**Predicts Enemy Actions**	**Denies Enemy Intent**
Individual acknowledges the enemy superficially and equates him with theoretical or doctrinal templates.	Enemy is understood to have an impact on the mission, but is regarded as static, non-thinking adversary. Individual has trouble distinguishing centers of gravity from the rest of the enemy picture.	Individual analyzes the enemy situation and predicts enemy actions. Ideas about enemy objectives and COA are constructed, but they are general and imprecise.	Individual continually updates his assessment of the enemy situation and his predictions about the enemy's next steps based on situational factors.	Individual visualizes how enemy is act and react, and takes actions to deny enemy intent.
Theme 4. Consider Effects of Terrain Combat leaders must not lose sight of the operational effects of the terrain on which they must fight--every combination of terrain and weather has a significant effect on what can and should be done to accomplish the mission.				
1	2	3	4	5
Uses Terrain Checklists	**Identifies Important Terrain Features**	**Incorporates Terrain into Own Plan**	**Recognizes How the Enemy May Use Terrain**	**Turns Terrain to Own Advantage**
Individual uses standard checklists to determine relevant terrain features. The foundational knowledge required to analyze the impact of terrain on the mission has not yet developed.	Important terrain features are identified and prominent problem areas such as chokepoints are avoided. However, individual remains unable to leverage terrain to own advantage.	Individual performs an analysis of the terrain and incorporates terrain features into the plan. However, the individual tends to adhere to the plan even after the situation has evolved and new information about the terrain becomes available.	Individual continually updates his view on terrain and its impact on the mission as the situation evolves and new terrain features and patterns are discovered.	Individual is quickly able to visualize how terrain will impact the friendly mission and predict enemy actions. He leverages the terrain to his own advantage and denies the enemy's ability to do the same.

APPENDIX E

Post-Intervention Change at the Dimension Level of Analysis

Table E.1

Change in BARS Dimension 1, Know and Use All Available Assets, from FRAGO 1 to FRAGO 2

FRAGO 1 – Pre-Intervention Performance (Performance Ratings Above 1 on Dimension 1)		**FRAGO 2 – Performance Gains** (Higher Ratings on Dimension 1 from FRAGO 1 Scores)		**FRAGO 2 – Performance Decrements** (Lower Ratings on Dimension 1 from FRAGO 1 Scores)		**FRAGO 2 – No Change** (No Change from FRAGO 1 Scores on Dimension 1)	
Control (5/10)	50%	**Control** (3/10)	30%	**Control** (1/10)	10%	**Control** (6/10)	60%
Cont. Cases/ Invention (8/26)	31%	**Cont. Cases/ Invention/** (6/26)	23%	**Cont. Cases/ Invention** (5/26)	19%	**Cont. Cases/ Invention** (15/26)	58%

Table E.2

Change in BARS Dimension 1, Know and Use All Available Assets, from FRAGO 2 to Near Transfer Performance Ratings by Instructional Approach

FRAGO 2 – Post-Intervention Performance (Performance Ratings Above 1 on Dimension 1)		**Near Transfer – Performance Gains** (Higher Ratings on Dimension 1 from FRAGO 2 Scores)		**Near Transfer – Performance Decrements** (Lower Ratings on Dimension 1 from FRAGO 2 Scores)		**Near Transfer – No Change** (No Change from FRAGO 2 Scores on Dimension 1)	
Control (6/10)	60%	**Control** (1/10)	10%	**Control** (4/10)	40%	**Control** (5/10)	50%
Cont. Cases/ Invention (11/26)	42%	**Cont. Cases/ Invention** (3/23)	13%	**Cont. Cases/ Invention** (8/23)	35%	**Cont. Cases/ Invention** (12/23)	52%

Table E.3

Change in BARS Dimension 2, Keep a Focus on the Mission and Higher's Intent, from FRAGO 1 to FRAGO 2

FRAGO 1 – Pre-Intervention Performance (Performance Ratings Above 1 on Dimension 2)		**FRAGO 2 – Performance Gains** (Higher Ratings on Dimension 2 from FRAGO 1 Scores)		**FRAGO 2 – Performance Decrements** (Lower Ratings on Dimension 2 from FRAGO 1 Scores)		**FRAGO 2 – No Change** (No Change from FRAGO 1 Scores on Dimension 2)	
Control (7/10)	70%	**Control** (0/10)	0%	**Control** (0/10)	0%	**Control** (10/10)	100%
Cont. Cases/ Invention (14/26)	54%	**Cont. Cases/ Invention/** (1/26)	4%	**Cont. Cases/ Invention** (0/26)	0%	**Cont. Cases/ Invention** (25/26)	96%

Table E.4

Change in BARS Dimension 2, Keep a Focus on the Mission and Higher's Intent, from FRAGO 2 to Near Transfer Performance Ratings by Instructional Approach

FRAGO 2 – Post-Intervention Performance (Performance Ratings Above 1 on Dimension 2)		**Near Transfer – Performance Gains** (Higher Ratings on Dimension 2 from FRAGO 2 Scores)		**Near Transfer – Performance Decrements** (Lower Ratings on Dimension 2 from FRAGO 2 Scores)		**Near Transfer – No Change** (No Change from FRAGO 2 Scores on Dimension 2)	
Control (7/10)	70%	**Control** (1/10)	10%	**Control** (4/10)	40%	**Control** (5/10)	50%
Cont. Cases/ Invention (15/26)	58%	**Cont. Cases/ Invention** (1/23)	4%	**Cont. Cases/ Invention** (12/23)	52%	**Cont. Cases/ Invention** (10/23)	43%

Table E.5

Change in BARS Dimension 3, Model a Thinking Enemy or Populace, from FRAGO 1 to FRAGO 2

FRAGO 1 – Pre-Intervention Performance (Performance Ratings Above 1 on Dimension 3)		**FRAGO 2 – Performance Gains** (Higher Ratings on Dimension 3 from FRAGO 1 Scores)		**FRAGO 2 – Performance Decrements** (Lower Ratings on Dimension 3 from FRAGO 1 Scores)		**FRAGO 2 – No Change** (No Change from FRAGO 1 Scores on Dimension 3)	
Control (6/10)	60%	**Control** (1/10)	10%	**Control** (1/10)	10%	**Control** (8/10)	80%
Cont. Cases/ Invention (15/26)	58%	**Cont. Cases/ Invention/** (2/26)	8%	**Cont. Cases/ Invention** (2/26)	8%	**Cont. Cases/ Invention** (22/26)	85%

Table E.6

Change in BARS Dimension 3, Model a Thinking Enemy or Populace, from FRAGO 2 to Near Transfer Performance Ratings by Instructional Approach

FRAGO 2 – Post-Intervention Performance (Performance Ratings Above 1 on Dimension 3)		**Near Transfer – Performance Gains** (Higher Ratings on Dimension 3 from FRAGO 2 Scores)		**Near Transfer – Performance Decrements** (Lower Ratings on Dimension 3 from FRAGO 2 Scores)		**Near Transfer – No Change** (No Change from FRAGO 2 Scores on Dimension 3)	
Control (6/10)	60%	**Control** (1/10)	10%	**Control** (4/10)	40%	**Control** (5/10)	50%
Cont. Cases/ Invention (14/26)	54%	**Cont. Cases/ Invention** (6/23)	26%	**Cont. Cases/ Invention** (7/23)	30%	**Cont. Cases/ Invention** (10/23)	43%

Table E.7

Change in BARS Dimension 4, Consider Effects of Terrain, from FRAGO 1 to FRAGO 2

FRAGO 1 – Pre-Intervention Performance (Performance Ratings Above 1 on Dimension 4)		**FRAGO 2 – Performance Gains** (Higher Ratings on Dimension 4 from FRAGO 1 Scores)		**FRAGO 2 – Performance Decrements** (Lower Ratings on Dimension 4 from FRAGO 1 Scores)		**FRAGO 2 – No Change** (No Change from FRAGO 1 Scores on Dimension 4)	
Control (4/10)	40%	**Control** (0/10)	0%	**Control** (0/10)	0%	**Control** (10/10)	100%
Cont. Cases/ Invention (8/26)	31%	**Cont. Cases/ Invention/** (1/26)	4%	**Cont. Cases/ Invention** (1/26)	4%	**Cont. Cases/ Invention** (24/26)	92%

Table E.8

Change in BARS Dimension 4, Consider Effects of Terrain, from FRAGO 2 to Near Transfer Performance Ratings by Instructional Approach

FRAGO 2 – Post-Intervention Performance (Performance Ratings Above 1 on Dimension 4)		**Near Transfer – Performance Gains** (Higher Ratings on Dimension 4 from FRAGO 2 Scores)		**Near Transfer – Performance Decrements** (Lower Ratings on Dimension 4 from FRAGO 2 Scores)		**Near Transfer – No Change** (No Change from FRAGO 2 Scores on Dimension 4)	
Control (4/10)	40%	**Control** (2/10)	20%	**Control** (3/10)	30%	**Control** (5/10)	50%
Cont. Cases/ Invention (8/26)	31%	**Cont. Cases/ Invention** (4/23)	17%	**Cont. Cases/ Invention** (7/23)	30%	**Cont. Cases/ Invention** (11/23)	48%

APPENDIX F

Table F.1

Post-Training Questionnaire Descriptive Statistics of Ratings of Perceived Level of Competence Before and After Training

Dimension and Instructional Approach	*N*	Perceived Pre-Training *M* (*SD*)	Perceived Post-Training *M (SD)*	Mean Difference (Post – Pre)
Mission Analysis				
Control	10	2.90 (.88)	3.30 (.67)	.40
Full Invention/Contrasting Cases	31	3.16 (.73)	3.32 (.60)	.16
Terrain Analysis				
Control	10	3.30 (.95)	3.40 (.97)	.10
Full Invention/Contrasting Cases	31	3.35 (.71)	3.45 (.68)	.10
Weather Analysis				
Control	10	3.00 (.67)	3.20 (.63)	.20
Full Invention/Contrasting Cases	31	3.32 (.65)	3.29 (.64)	-.03
Describing the Enemy				
Control	10	3.10 (.88)	3.40 (.70)	.30
Full Invention/Contrasting Cases	31	3.26 (.73)	3.45 (.68)	.19
Adjusting a Plan				
Control	10	2.60 (.84)	3.20 (.79)	.60
Full Invention/Contrasting Cases	31	2.90 (.75)	3.48 (.68)	.58

APPENDIX G

Experimental Condition Trainee

Characteristics-Perceived Outcomes Bivariate Relations

Table G.1

Predictor-Perceived Outcome Bivariate Correlations for the Experimental Training Condition

Variable	Perceived Utility	Adequacy of Coverage	Instructor Understanding	Time Allotment	Class Engagement
1. WPT	.16	.04	.11	-.31^{+}	-.09
2. B5: Extraversion	.08	.25	.12	-.21	.10
3. B5: Consc.	-.04	.06	.14	-.03	-.36^{+}
4. B5: Agree.	-.15	-.04	.24	.21	-.41*
5. B5: Openness	-.11	-.07	.16	.22	-.28
6. B5: Emot. Stab.	.02	.04	.06	. 03	-.19
7. General SE	.04	.11	.20	.05	-.26
8. GO: Learning	.17	.16	.19	.03	-.16
9. GO: Perf. Prove	.06	-.08	-.04	-.02	.02
10. GO: Perf. Avoid	.01	-.19	.03	-.11	.13
11. Metacog. SR	.11	.09	.27	.09	.10
12. ADAPT: Uncert.	.04	-.02	-.26	.34^{+}	.07
13. ADAPT: Creat.	.11	.05	.03	.25	-.18
14. ADAPT: Learn.	.42*	.25	.05	.13	.08
15. Age	-.04	-.01	.15	.24	.33^{+}

Note. $N = 31$ (for bivariate correlations with age, $N = 30$). Because of the small sample size of the experimental group, marginally significant correlations (i.e., $p < .10$) were also flagged. WPT = Wonderlic Personnel Test. Variables 2-6 represent the Big 5 personality dimensions (i.e., extraversion, conscientiousness, agreeableness, openness or intellect, emotional stability). General SE = general self-efficacy. Variables 8-10 represent trait goal orientation (learning, performance-avoid, performance-prove). Metacog. SR = metacognitive self-regulation. Variables 12-14 provide the three subscales selected from the Individual Adaptability measure (uncertainty, creativity, and learning).

$^{+}$ $p < .10$

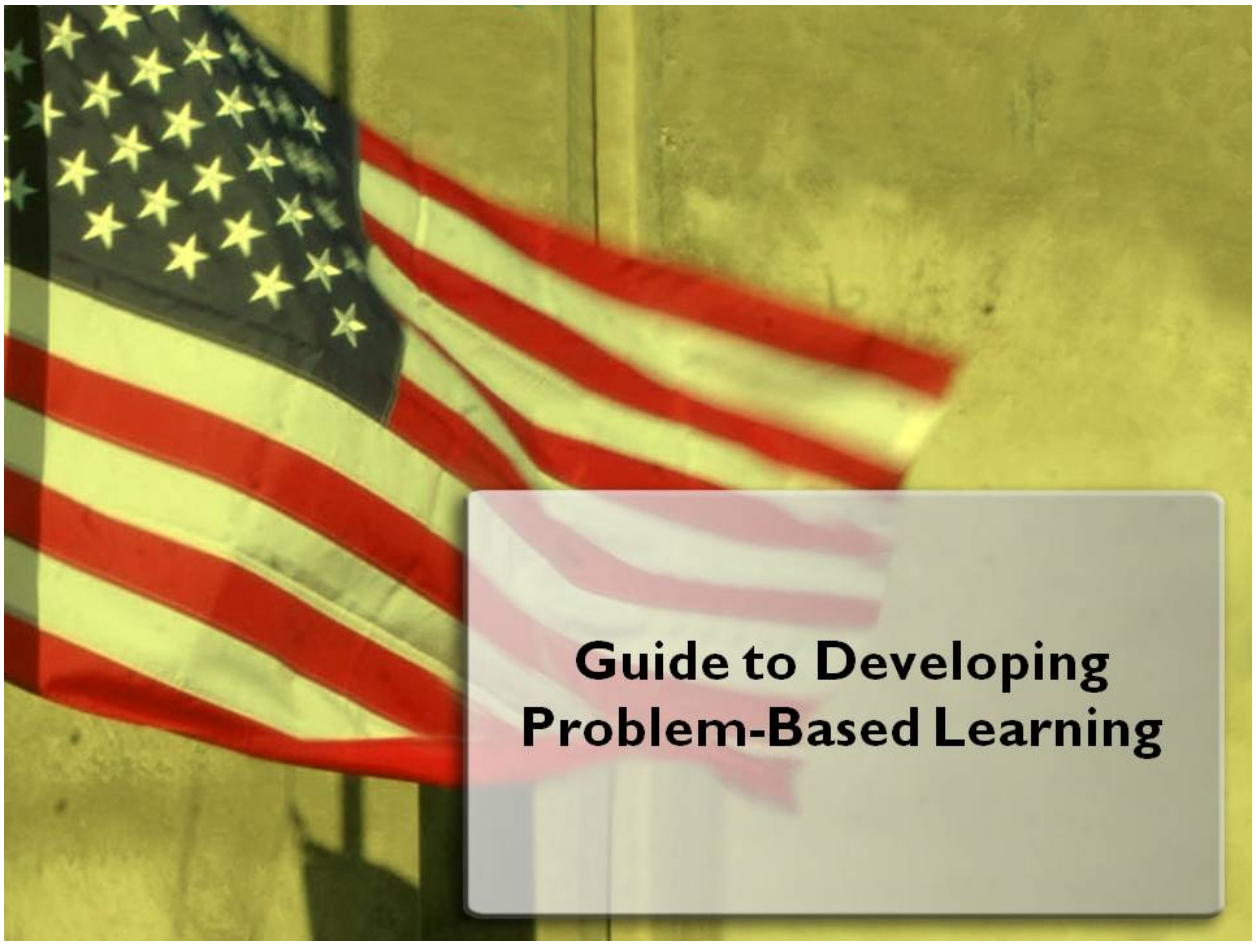
* $p < .05$

APPENDIX H

Instructor Guide to Course Development Using the PBL Approach

First Set of Slides: General Guide

Second Set of Slides: More Specific to Training Troop Leading Procedures


Guide to Developing
Problem-Based Learning

General Overview

There are typically two distinct types of learning outcomes.

- One such outcome is the *acquisition of procedural knowledge* (understanding procedures and facts).
  - For example, the steps you should take before firing your weapon
- The second outcome is the *acquisition of problem solving skills*.
  - For example, deciding whether or not to fire your weapon

Each of these outcomes would require a different training approach.

2

Learning Outcome 1: Procedural Knowledge

Generally, for training procedural knowledge, the Guided Experiential Learning (GEL) approach is effective.

The main premise of GEL is that early guidance, often through lectures, helps the Soldier to learn

- This includes providing accurate demonstrations and then having students participate in practical exercises.

For example, when training Soldiers how to fire a weapon, you can describe the procedures for firing a weapon, provide demonstrations, and then have students practice, all in the course of a classroom lecture.

In many ways, the GEL approach is probably similar to what you are doing already.

3

Learning Outcome 2: Problem Solving Skills

One of the goals of Army training is to produce Soldiers that are skilled in adaptive thinking and problem solving.

An effective approach to training problem solving and adaptive thinking skills is Problem-based Learning (PBL).

Unlike GEL, PBL requires students to try to solve problems on their own, without guidance from the instructor, before any lecture ever happens.

- The idea is that by working, even struggling, with a problem on their own, students will learn more. They will have had experience working with a problem that will provide context for understanding the lecture.

PBL is probably different from what you are doing. You would ask students to solve a problem before you lecture, acting like a facilitator by providing basic guidance and answering questions. You will then lecture afterwards.

4


Applying the Training Approaches
Because what you currently do is similar to GEL, we will not provide guidelines on how to apply GEL to your course. What follows are guidelines for applying PBL to your course.
Keep in mind that you could train a combination of procedural and problem-solving skills in your course. You may be able to apply both training approaches in a single module!
5

Applying the PBL Approach

When applying the PBL approach to a module, consider the following structure:

- **Define a problem you want the students to solve.**
  - For example, in the Troop Leading Procedures module, you want the students to understand how to formulate a plan and to describe that plan in a complete and correct OPORD.
    - Formulating a plan involves critical problem-solving skills, not just understanding the procedure
- **Present the problem to the students before you begin any lecture.**
  - For example, in Orders Production, give the students a WARNO and/or a Company OPORD and tell them to put together a Platoon Order based on that.

6

Applying a PBL Approach

- **Allow the students to analyze the problem (or first phase of problem if applicable) and generate an approach.**
  - For example, in Orders Production, let the students produce their Orders.
- **Involve the students in identifying learning needs & resources.**
  - This will be dependent on class size and time you have
  - For example, in Orders Production, if time permits, let the students think about and identify what sources of information they need to produce the Order.

7

Applying a PBL Approach

- **Let the students develop an initial solution.**
  - Let the students struggle while they try to put together their Order. Only help them if they seem completely stuck.
  - Allow the students to analyze the problem (or first phase of problem if applicable) and generate an approach.
  - Allow the students to discover what they don't know…this will prepare them to learn in the lecture.
- **Provide the students with another assignment that is related to, but slightly different from, the first.**
  - For example, in Orders Production, provide students with a FRAGO that contains information different from the information in the WARNO or in the OPORD. Ask the students to modify their Platoon Order based on the new information.
    - This technique is known as "contrasting cases". By letting students compare how they wrote the OPORD based on the WARNO or FRAGO, you are developing their adaptive thinking skills as they complete an OPORD!

8

Applying a PBL Approach

- **Then, you can begin your lecture.**
  - Demonstrate and explain to the students viable solutions.
  - For example, in Order Production, show the students an example of a good Order and explain what makes it good.
    - Compare elements of the good Order to the Order that the students put together, or other Orders that are incomplete or incorrect. Discuss the differences with the students.

9

Applying a PBL Approach

- **Provide a whole new OPORD exercise**
  - This can be an entirely new scenario based on an entirely different mission.
    - Follow the same approach as before (start by providing a CO OPORD, followed by FRAGOs, etc.)

10

Summary

- **GEL and PBL are both very effective training approaches. You can choose one based on what your goals for the course are:**
  - If you want students to memorize a procedure (steps for firing a weapon), GEL can be very effective.
  - If you want students to develop problem solving skills (changing OPORDs based on new information), then PBL can be very effective.

11

A Final Word of Caution

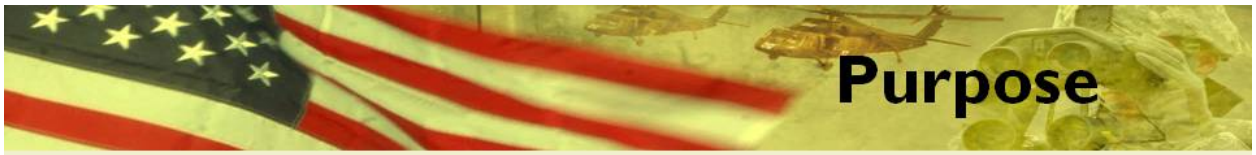
Sometimes it can be difficult to identify your training goals.

- For example, you could teach students a process for completing an OPORD (and use the GEL approach), or you could develop the critical thinking skills required to complete an OPORD (and use the PBL approach).

Clarifying your goals with your colleagues, staff, and students will go a long way to choosing the approach (or combination of approaches) that will work best for you.

12


IBOLC:
PBL Approach To
Troop Leading
Procedures



Purpose

- One of the goals of Army training is to enable Soldiers to become adaptive thinkers
- Adaptive thinking allows Soldiers to change their unfolding plans based on the ever changing conditions of military operations
- Superior adaptive thinking skills are essential for effective planning and decision making
- These skills can be trained in your current curriculum by using different teaching techniques
- The purpose of this Instructor Guide is to provide you with an example of how to teach students to think adaptively as they go through the Make a Tentative Plan portion of Troop Leading Procedures and write an OPORD
  - In particular, students need to think of their plan as working models that need to be updated as conditions change
    - For example, changes to enemy forces, friendly forces, and/or terrain
  - The intent is for students to see not just the immediate impact of a change, but also identify the second and third order effects and their impact on the plan

2

General Overview

- One way to effectively train adaptive thinking is by using a Problem Based Learning (PBL) approach
- PBL has two key characteristics:
- First, the PBL approach is different from traditional approaches in that students get to work on a "problem" first, before your lecture
  - In the case of Orders Production, working on a "problem" means students working on their OPORD before the lecture
- Presenting the "problem" first will allow the students to struggle through it and then seek out answers in the lecture, which will put them in a better position to learn

3

General Overview (cont.)

- **The second characteristic of PBL is the Contrasting Case**
  - The Contrasting Case is a modification to the original problem that requires students to change their plan
  - Students must use their adaptive thinking skills to determine how to best change their plan
- **The Contrasting Case highlights key factors you want the students to understand**
  - For example, to get students to understand the effect of time of day on the operation, present a problem that is set in the morning and then a Contrasting Case that is set at night

4

Example use of PBL

- **The following example is based on a recent demonstration of how to train adaptive thinking skills in the context of TLP.**
  - In this example, students play the role of a platoon leader conducting operations in the vicinity of a mosque. The tasks to units change over time, as does their designation as being the decisive operation.
- **The learning objectives are:**
  - Students understand the difference between a mission that is focused on terrain and a mission that is focused on the enemy
  - Students develop a better model of how the enemy will react
  - Students understand the capability and synchronization of friendly forces.
- **The contrasts between the OPORD and the FRAGOs were chosen to highlight the above teaching points.**
  - The next slide highlights the specific changes that occur over time starting with the OPORD and through the FRAGOs. In addition, the final column explains what the intended student response is.
  - For example, the platoon task change from being terrain-focused (secure) to enemy-focused (isolate).

5

Overall Concept	OPORD	FRAGO 1	FRAGO 2	Intended Impact on Student's Order
Platoon leader understands the difference between a mission that is focused on terrain versus a mission that is focused on the enemy	Platoon's primary task is to secure	primary task changes to isolate	n/a	The order should address the mosque's ability to psychologically influence the fight with the loudspeaker
	Battalion operation is terrain focused	Battalion operation becomes enemy focused (neutralize, contain, defeat)		The platoon leader should change his tasks to be enemy focused.
Platoon leader develops a better model of how the enemy will react		High Value Target on OBJ Hammer	High Value Target on OBJ Anvil	The platoon leader should expect the enemy to fight to allow the HVT to escape.
		CCIR include "What do captured AIF know?"		The platoon leader has an explicit plan to capture and question AIF.
		Coordinating Instruction: "Stop all individuals leaving the objective. Detain anyone missing fingers."		The platoon leader should have a specific plan to direct individuals to a point where they can be searched inspected. The tactical psyops team is likely the best choice to do this.
Platoon Leader understands the capability and synchronization of friendly forces		Synchronization matrix is included		If not in the order already, the platoon leader should recognize that the company has two decision points. He should direct rehearsals or contingency tasks based on these DP's.
	2/A is the decisive operation	3/A becomes the decisive operation		Keeping the mosque from influencing the neutralization of OBJ Hammer has now become the main priority.
	Platoon has organic assets	Platoon gains a tactical psyops team	Platoon gains an Iraqi Army squad	Does the platoon leader use these specialized assets in an effective manner, based on the unique capabilities they have to offer?
	Daylight Mission	Daylight Mission	Nighttime Mission	Does the platoon leader address the use of the IA squad at night (they lack NVG capability.)

6

Order of Events

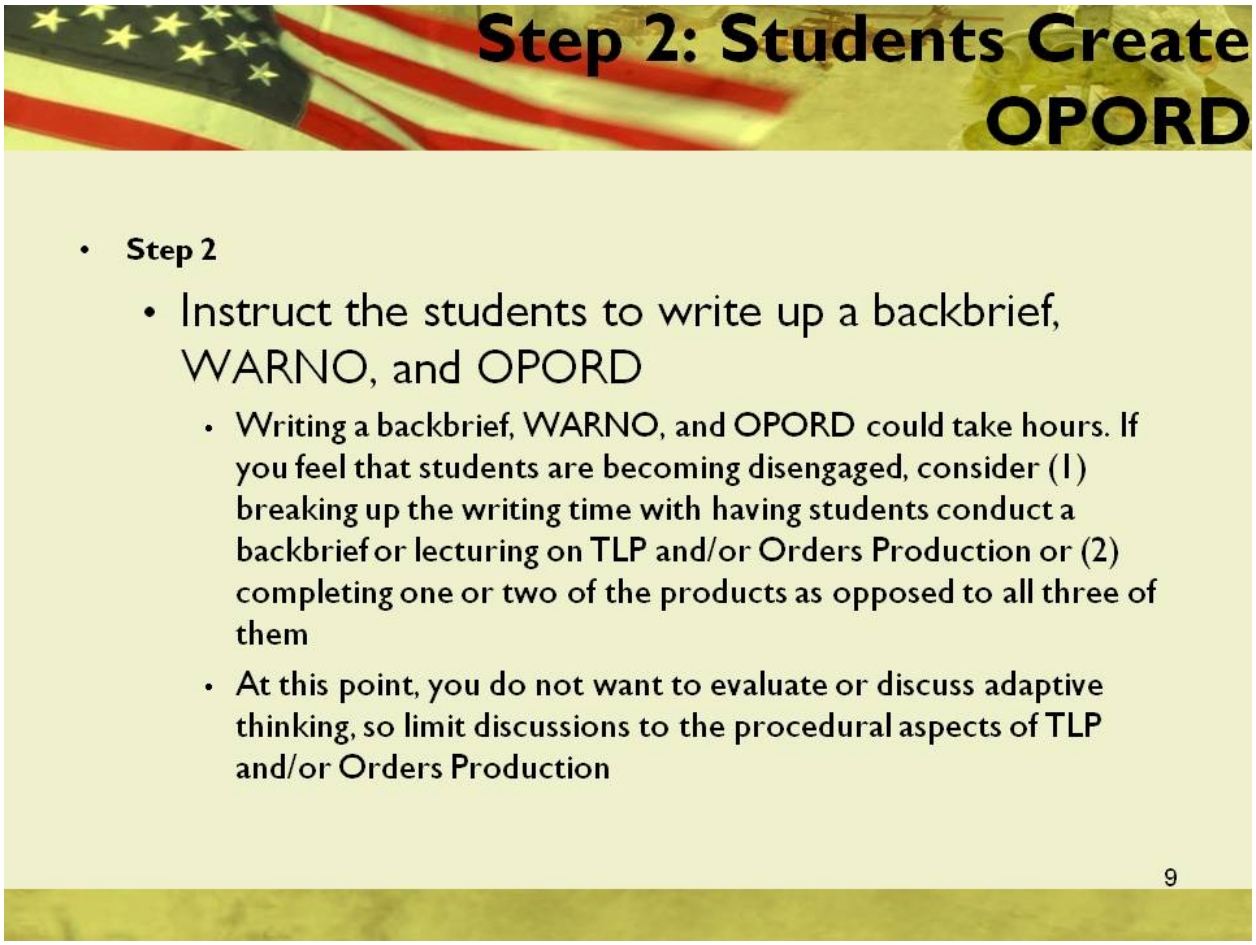
1. Initially, you will provide the students with an AO brief and a Company OPORD
    1. The AO Briefing is extensive. It may be useful to provide the students a read-ahead copy, then discuss questions they may have in class prior to receiving the OPORD.
2. In response, the students will generate a backbrief, WARNO, and OPORD
    1. If you are time constrained, you can proceed directly to the OPORD
3. You will then provide students with a FRAGO that introduces a "contrast" to some condition in the OPORD and have students update their OPORD
    1. The reason for the change in the FRAGO is that we want the students to work "the problem" as information changes over time
4. At this point, you will lead a lecture/discussion that prompts students to consider the factors that influenced their changing plans
    1. It is likely that many students did not understand the full impact of the change on their plan, so you should tailor your discussion to helping the students discover the impact of the change.
5. After the discussion, you will provide the students with a second FRAGO that introduces another "contrast" and again have students update their OPORD
    1. Students should be able to demonstrate an improved understanding of the full impact of change

7

Step 1: Provide AO brief and Company OPORD

- **Step 1a**
  - Conduct the AO brief and then brief the Company OPORD to students
    - If possible, distribute paper handouts to the students for reference
    - If you would like to exercise the Receive the Mission steps of the TLP, you could certainly do so by providing a WARNO
- **Step 1b**
  - Allow students to ask clarification questions

8


Step 2: Students Create OPORD
• Step 2
• Instruct the students to write up a backbrief, WARNO, and OPORD
• Writing a backbrief, WARNO, and OPORD could take hours. If you feel that students are becoming disengaged, consider (1) breaking up the writing time with having students conduct a backbrief or lecturing on TLP and/or Orders Production or (2) completing one or two of the products as opposed to all three of them
• At this point, you do not want to evaluate or discuss adaptive thinking, so limit discussions to the procedural aspects of TLP and/or Orders Production
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Step 3: Provide FRAGO

- **Step 3a**
  - Handout Company FRAGO 1
  - As mentioned in the contrasts table, the FRAGO changes the operation from being focused on terrain to being focused on the enemy
    - It is unlikely that Lieutenants will recognize the impact of these changes—that is intended, and will be the basis of your lecture/discussion. For further reading on why/how this technique works, click here
- **Step 3b**
  - Let students update their OPORDs
- **Step 3c**
  - Allow students to ask clarification questions
- **Step 3d**
  - It can be useful to get a sense of how students changed their OPORDs
  - You can either collect their OPORDs or have the students brief them

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Step 4: Lecture/Discussion

- This step is a combination of lecture and group discussion
- We recommend that you use students' OPORDs to start discussion and then transition to the lecture from slides
- **Step 4a**
  - Use students' OPORDs to drive discussion
  - It is OK to ask them questions such as "What was your original plan? Did anything in the FRAGO make you change your plan? What changes did you make? Why?"
  - Point out the "contrasts" to the students and ask them whether they noticed the "contrasts" and made changes to their OPORDs
    - Tell students that they need to create a working model of the situation and be ready to update it as new information comes in
  - Ask other students to comment on each other's OPORDs
- **Step 4b**
  - Talk to specific teaching points on your slides but be sure to tie them back to how this information helps the students to create a working model of the situation
  - We recommend using the learning objectives from Slide 5, or relating content from your existing slides to those learning objectives to stress the adaptive thinking component.

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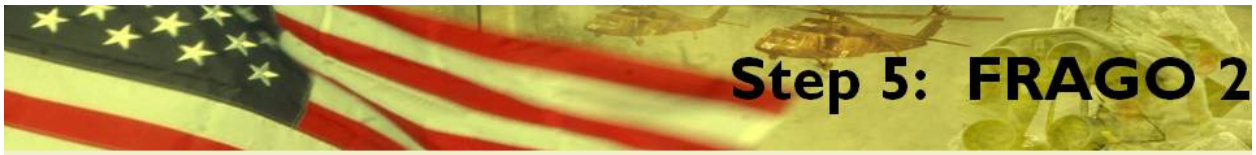

Step 5: FRAGO 2

- **Step 5a**
  - FRAGO 2 offers the students the opportunity to think more deeply about the 2nd and 3rd order effects of a change. Now that some of the weaknesses in their thinking have been exposed and they have realized the impact of the lecture/discussion, they should be willing to try again to "get it right."
- **Step 5b**
  - It is important that the contrasts are not exactly the same as the initial ones
    - For example, if a light infantry squad was added to the Platoon's task organization in FRAGO 1, it requires little thought by the platoon leader if another light infantry squad is again added
    - Or, it might be useful to add an engineer squad or a AT section if the instructor wishes to make the teaching point that Platoon leader must fully think through how he will use attachments
- **Step 5c**
  - Time permitting, you can present students with an entirely new scenario.
    - This will help you assess their ability to apply what they learned to a new problem

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