An Integrated Approach to Military Science Course Design

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Literature Review Purpose: Examine the current educational and training literature surrounding Course Design as it pertains to effective military science introductory courses

Abstract.

This paper will investigate the literature surrounding the importance of course design, curriculum, assessment, and student learning.

This paper will then examine the educational literature surrounding the approaches to course design with the renowned learning taxonomies of Dr. Benjamin Bloom and Dr. Dee Fink

This paper will then examine the training literature surrounding the training doctrine and strategy of the United States Army

This paper will then examine the synergy between the USMA Department of Military Instruction Instructor Handbook and the United States Army Doctrine and Training Strategies

This paper will then examine the synergy of the educational and training literature in the USMA Department of Military Instruction Instructor Handbook in terms of student learning and course design

This paper will then examine the literature surrounding “experiential learning.”

This paper will examine emerging literature on the effectiveness of “experiential learning.”

This paper will then seek to combine the educational and training literature on course design to develop an integrated approach to the design of military science instruction.

An Investigation of the Importance of Course Design and Student Learning

There is sufficient research surrounding the alignment of course curriculum and assessments showing a strong relationship to student achievement (Schmidt, 2001). The term curriculum refers to the “blueprint for learning that is derived from content and performance standards” and “is a specific plan with identified lessons in an appropriate form and sequence for directed teaching” (Wiggins & McTighe, 1998, p. 4). The term assessment refers to the “act of determining the extent to which the curricular goals (of the course) are being and have been achieved” (Wiggins & McTighe, 1998, p. 4). Likewise, Norman L. Webb (1997), a researcher on the alignment of curriculum and assessments, agreed. Webb (1997) defined the alignment of course curriculum as “the degree to which expectations [standards] and assessments are in agreement and serve in conjunction with one another to guide the system [course design] towards students learning what they are expected to know and do” (Webb, 1997, p. 4). According to Webb (1997), the alignment of curriculum is intimately related to the “validity” of course content, whereby “validity refers to the appropriateness of inferences made from information produced by an assessment” (Webb, 1997, p. 4).

Similarly, in 2004, a survey of numerous students from three universities found that a course’s structure was the most important factor for learner satisfaction. The study articulated that structure included things such as “clearly defined objectives, assignments, deadlines, and encouraging dialogue” (Stein, 2004, p. 1). Given the importance of course structure, curriculum, and assessments in effective teaching and student learning, the literature review to follow will examine the current educational and teaching practices surrounding effective course design with a narrowed scope on “novice learners” and introductory courses, particularly in the realm of the military sciences.
An Examination of Educational Learning Taxonomies and Course Design

Given the correlation between course structure, curriculum, assessments, effective teaching, and student learning, the strategic value of designing a course and its effect on learning is evident. The historical literature surrounding the process of learning, course design, and military science training (i.e. teaching) is derived predominately from Dr. Benjamin Bloom (1956), Dr. Dee Fink (2003), United Army Doctrine (2003), and the United States Military Academy Department of Military Instruction (2011).

With the publication of the *Taxonomy of Educational Objectives: The Classification of Educational Goals: Handbook I, Cognitive Domain*, Dr. Benjamin Bloom provided a taxonomy of educational objectives as an aid for teachers, administrators, and researchers in the development of curricular and evaluation problems (Bloom, 1956, p. 1). Prior to Dr. Bloom’s publication, a taxonomy traditionally referred to the ordered classification of biological categories such as phylum, class, order, family, genus, species, and variety as a “means of understanding the organization and the various parts of the animal and plant world” (Bloom, 1956, p. 1). However, Dr. Bloom (1956) transposed a new taxonomy or “ordered classification” for educational objectives to improve effective teaching and affect student learning.

In his taxonomy of educational objectives, Dr. Bloom (1956) articulated that learning is a progressive process that moves from concrete to abstract (Bloom, 1956, p. 30). Dr. Bloom (1956) stipulated that the taxonomy of learning consisted of six progressive levels starting with knowledge as the foundation and proceeding to comprehension, application, analysis, synthesis, and evaluation as documented in Figure 1 below. Dr. Bloom (1956) stipulated the learning levels of knowledge, comprehension, and application were more concrete and elementary in comparison to the more abstract and higher order learning levels of analysis, synthesis, and evaluation. Dr. Bloom (1956) stipulated that in order for a student to learn tasks associated with higher order levels, the student must first attain the learning objectives of the preceding levels (Bloom, 1956, pp. 17-20).

In terms of creating a course, Dr. Bloom (1956) stipulated that colleges and universities should focus on the upper levels (analysis, synthesis, and evaluation) of the cognitive domain with the assumption that college students had already acquired the stages of knowledge, comprehension, and application of basic concepts prior to arrival. In terms of the experience of cadets in the field of military science, only 27 of 1292 cadets in the entering class of 2012 were military veterans of the armed forces prior to enrolling in the United States Military Academy (USMA Admissions, 2012). Likewise, amongst the newly enrolled USMA class of 2012, only a very small percentage of cadets received basic military science instruction through High School Junior Army Reserve Officer Training Corps
(ROTC) programs (USMA Admissions Prospectus, 2012, p. 16). In context, given the age restrictions for USMA acceptance, most of prior service and/or JROTC cadets may or may not have fully reached the stages of effective comprehension and application of basic military science concepts prior to enrollment.

Based on the progressive nature of Dr. Bloom’s taxonomy and the introductory nature of the military sciences for the majority of newly enrolled USMA cadets, Dr. Bloom (1956) would conclude that the teaching of the military sciences, at least initially, focus primarily on the levels of knowledge, comprehension, and application first. Dr. Bloom (1956) articulated that the “justification for teaching knowledge is that it is quite frequently regarded as basic to all the other ends or purposes of education” (Bloom, 1956, p. 33). With the absence of basic knowledge, Dr. Bloom (1956) stipulated that “problem solving or thinking (could not) be carried on in a vacuum, but must be based upon knowledge of some of the realities (i.e. previously acquired knowledge to put the problem in context)” (Bloom, 1956, p. 33) In his work, Dr. Bloom (1956) clearly indicated that the acquisition of knowledge was the prerequisite for all other significant learning levels and objectives.

Likewise, with the publication of Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses, Dr. Dee Fink (2003) concurred with the importance of Dr. Bloom’s earlier taxonomy on learning. However, Dr. Fink (2003) indicated a need for expressing new kinds of learning that did not necessarily emerge easily from Dr. Bloom’s taxonomy. Dr. Fink (2003) stipulated that Dr. Bloom’s taxonomy did not fully express the importance of student learning in other significant areas such as “learning how to learn, acquiring leadership and interpersonal skills, ethics, communications skills, character, tolerance, and the ability to adapt to change” (Fink, 2003, p. 29). Dr. Fink (2003) stressed the need for a new and broader taxonomy of significant learning. According to Dr. Fink (2003), for learning to occur there had to be some kind of change in the learner, i.e. no change, no learning. For significant learning to occur, Dr. Fink (2003) stipulated that there has to “be some kind of lasting change that is important in terms of the learner’s life” (Fink, 2003, p. 30). With this in mind, Dr. Fink (2003) created a taxonomy based on the six kinds of significant learning goals (Foundational Knowledge, Application, Integration, Human Dimension, Caring, and Learning to Learn) shown below in Figure 2.

**Figure 2: Dr. Fink’s Taxonomy of Significant Learning**

Unlike the hierarchal structure of Dr. Bloom’s learning taxonomy, Dr. Fink (2003) stressed the importance of relating and integrating multiple kinds of learning near simultaneous as much as possible to achieve a significant change in the learner. Dr. Fink (2003) stressed that “teaching is no longer a zero-sum game” whereby a teacher must emphasize the importance of one kind of learning at the expense of other kinds of learning as Dr. Bloom (1956) proposed (Fink, 2003, p. 32). Dr. Fink (2003) stipulated that “when a course or learning experience is able to promote all six kinds of learning, the learner has had a learning experience that can truly be deemed significant” (Fink, 2003, p. 32). The interactive nature of Dr. Fink’s taxonomy of significant learning is seen below in Figure 3.
In terms of designing a course, Dr. Fink (2003) stipulated that teachers should establish course learning goals that integrate all six kinds of learning in an effort to achieve significant student learning “beyond content mastery” (Fink, 2003, p. 33). Similarly to Dr. Bloom (1956), Dr. Fink (2003) wrote his learning taxonomy specifically for colleges and universities involved in higher education. Despite his strong emphasis on integrating the six kinds of learning, Dr. Fink still concurred strongly with Dr. Bloom (2003) that knowledge is the base upon which all other learning begins. Dr. Fink (2003) stated that “foundational knowledge provides the basic knowledge that is necessary for other kinds of learning” (Fink, 2003, p. 31). Dr. Fink concluded that without the prior acquisition of knowledge there could be no integration of other kinds of learning. In context, given the introductory nature of the military sciences to the majority of USMA, most certainly Dr. Fink and Dr. Bloom would agree wholeheartedly that a strong emphasis on teach foundational military science knowledge is the bridge to other kinds of learning.

An Examination of Army Training Doctrine and Strategy

With the publication of Field Manual 7-1: Battle Focused Training in 2003, the United States Army provides a “doctrinal foundation for how to train” and “explains how the Army assesses, plans, prepares, and executes training” (Department of the Army, 2003, p. xii). A close examination of FM 7-1 reveals that the training strategy of the United States Army concurs strongly with the acquisition of knowledge as the foundation for future learning as espoused by the works of both Dr. Bloom (1956) and Dr. Fink (2003) (See Figure 4). FM 7-1 states that “doctrine provides the foundation for training adaptive (thinking) units, staffs, leaders, and individual soldiers” (Department of the Army, 2003, p. 4.31). The term doctrine refers to a concise expression of “time-tested principles (i.e. knowledge) for how Army forces contribute to unified action in campaigns, major operations, battles, and engagements.” FM 7-1 is clear that for doctrine to be useful it must be well know and commonly understood (Department of the Army, 2003, p. Glossary.15).

Figure 4: Army Training Strategy for Adaptive Leaders and Units
In terms of training design (i.e. course design), FM 7-1 states that commanders (i.e. teachers) provide clearly defined objectives in terms of “task, conditions, and standards” to guide the training (i.e. teaching) of soldiers, leaders, and the unit (Department of the Army, 2003, p. xii). FM 7-1 stipulates that commanders prioritize training in units (i.e. classrooms) according to the “battle focus” or wartime mission of the unit (i.e. final course assessment) (Department of the Army, 2003, p. 2.14). The term “battle focus” guides the “planning, preparation, execution, and assessment of each organization’s (i.e. each class’) training program (i.e. course syllabus) to ensure that its members (i.e. students) train as they are going to fight (or be assessed in the future)” (Department of the Army, 2003, p. 2.14). The principle of “battle focus” enables commanders to “recognize that a unit (i.e. class) cannot attain proficiency to standard on every task, whether due to time or other resource constraints (i.e. forty lessons and a classroom environment)” (Department of the Army, 2003, p. 2.14).

With the publication of the book *Understanding by Design*, Grant Wiggins (1998) also mirrored the training strategy of the United States Army in terms of training design and the “battle focus” concept as the starting point for course design. According to Dr. Wiggins (1998), educators consistently agree that the most effective curriculum or course designs were backwards similar to the battle focus concept. In terms of course design, Dr. Wiggins stipulated that effective course or curriculum design begins not with the selection of a textbook or teaching activities, but starts “with the desired end results (goals or standards) and then derives the curriculum from the evidence of learning (performances) called for by the standard and the teaching needed to equip students to perform” (Wiggins & Mctighe, 1998, p. 8). In short, Dr. Wiggins (1998) the teacher identifies the end result of the course and conducts a task analysis working backwards in terms of the sequence of events that are necessary to achieve the end result. See Figure 5 below for a visual of the “Backwards Design” process to effective curriculum design as articulated by Dr. Wiggins (1998).

**Figure 5: Stages in the Backwards Design Process**

In terms of the principle “battle focus,” Dr. Bloom (1956) also concurred with the training strategy of the United States Army articulated in FM 7-1. Dr. Bloom stated that in terms of curriculum decisions, teachers must determine “How much knowledge should be required learning?” (Bloom, 1956, p. 36). Dr. Bloom (1956) stipulated that teachers must “strike a balance between attempts to include all the knowledge the individual might conceivably acquire in a particular subject and only that knowledge which is most basic to the subject” (Bloom, 1956, p. 36).

After the “battle focused” training priorities are identified, FM 7-1 stipulates that commanders (i.e. teachers) should understand the “linkage between collective mission essential tasks and supporting individual tasks” to derive the “optimum training benefit” (i.e. learning benefit) expected upon the completion of training (i.e. the completion of the course) (Department of the Army, 2003, p. 2.15). See Figure 6 below.
Upon a close examination of the training strategy within FM 7-1: Battle Focused Training, the Army seeks to balance the learning taxonomies of both Dr. Bloom and Dr. Fink. The Army encourages its trainers to utilize the “crawl-walk-run” methodology to training (i.e. teaching) similar to the learning levels espoused by Dr. Bloom. According to the Army, the “crawl-walk-run” methodology is “an objective, incremental, standards-based approach to training” whereby the “tasks initially trained are very basic in the crawl stage,” progressively increasing in difficulty during the walk phase, and finally “approaching the level of realism expected in combat during the run phase” (Department of the Army, 2003, p. Glossary.15). Likewise, the Army encourages integrated learning experiences such as those espoused by Dr. Fink with its emphasis on jumping from individual training tasks directly into integrated unit collective training events (i.e. integrated class learning experiences that focus on a combination of the six different kinds of significant learning).

An Examination of the USMA DMI Instructor Handbook and Army Doctrine and Training Strategies

With the publication of the USMA Department of Military Instruction Instructor Handbook published in 2011, the Department of Military Instruction articulates that the goal of military science curriculum is “focused on developing innovative problem solvers” through the instruction of the fundamental principles of doctrine. The USMA Department of Military Instruction Instructor Handbook states that the “desired outcome of our (military science) program is a leader that can develop simple, but flexible plans to accomplish their assigned missions within the boundaries of their higher commander’s intent” (USMA Military Science Division, 2011, p. 1). Prior to examining the literature surrounding course design and the instruction of the military sciences for the Department of Military Instruction, it is imperative that this review examine the literature surrounding the derivation of commander’s intent, doctrine, and its meaning.

Army Field Manual 3-0 Operations is the United States Army’s premiere doctrinal capstone manual. The term “doctrine” refers to a concise expression of “time-tested principles (i.e. knowledge) for how Army forces contribute to unified action in campaigns, major operations, battles, and engagements” (Department of the Army, 2003, p. Glossary.15) According to FM 3-0, doctrine consists of three components: fundamental principles, tactics, techniques, and procedures (TTPs), and terms and symbols. According to FM 3-0, fundamental principles are defined as the “collective wisdom regarding past, present, and future operations.” FM 3-0 stipulates that TTPs
“support and implement fundamental principles, linking them with associated applications” in terms of both descriptive and prescriptive methods. FM 3-0 stipulates that “terms and symbols” are the commonly understood written and visual professional language of the Army that are necessary to communicate the fundamental principles and TTPs of the organization (Department of the Army, 2008, p. D.1).

FM 3-0 defines the commander’s intent as “a clear, concise statement of what the force must do and the conditions the force must meet to succeed with respect to the enemy, terrain, and civil considerations that represent the desired end state” (Department of the Army, 2008, p. 5.10). In accordance with FM 3-0, “the commander’s intent must be easy to remember and clearly understood two echelons down” (Department of the Army, 2008, p. 5.10). In the context of military science instruction, the term “force” is the teaching faculty of the Department of Military Instruction. Likewise, the term “desired end state” is articulated clearly as the development of effective problem solvers. This literature review will now examine the role of the commander in the operations process (i.e. the synchronization of the military science operation).

According to FM 3-0 Operations, the commander’s intent is derived from the concept of Battle Command. Battle Command is the process whereby “commanders understand the problem, visualize, describe, lead, and assess the situation” (Department of the Army, 2008, p. 5.3). In context, the problem is the development of adaptive leaders through three military science courses and three cadet summer details. See Figure 7 below for a diagram of the Battle Command Process.

As noted above, the first step of the Battle Command Process is that commanders define the problem in terms of the operational environment. In the context of military science instruction, the problem is the situational factors involved in teaching the military sciences in a classroom environment. Later, in the context of the academic environment, this literature review will discuss how Dr. Fink (2003) articulates the situational factors that course directors must consider for designing effective academic courses (Fink, 2003, pp. 68-69).

Subsequently, in the second step of the Battle Command Process, commanders visualize “the mental process of determining a desired end state and envisioning the broad sequence of events by which the force will achieve that end state” (Department of the Army, 2008, p. 5.5). In the context of military science instruction, the “broad sequence of events” represents the dependent relationship of the three military science courses curriculums with its corresponding cadet summer details.

After visualizing the mental process for solving the problem, commanders seek to describe the commander’s intent and develop a concept of the operation in the third step of the Battle Command Process. A commander’s concept of the operation is a “statement that directs the manner in which subordinate units cooperate to accomplish
the mission and establishes a sequence of actions the force will use to achieve that end state” (Department of the Army, 2008, p. 5.11). The commander expresses his concept of the operation in terms of the decisive, shaping, and sustaining operations to describe to the subordinates how to accomplish the mission (Department of the Army, 2008, p. 5.11). In the context of military science instruction, the decisive operation for military science instruction and problem solving would be the capstone military science course that supports the cadet summer details of cadet leader development training (CLDT) and the cadet troop leader training (CTLT) program. Similarly, the first shaping operation would be the military science course that supports the cadet leader development training (CLDT). Likewise, the second shaping operation would be the military science course that supports cadet field training (CFT). Given the relationship of the military science courses, FM 3-0 would stipulate that these courses cooperate in terms of their military science curriculum.

Finally, after developing the commander’s intent and concept of the operation, commanders issue mission orders to subordinates in the last step of the Battle Command Process. FM 3-0 Operations states that mission orders “emphasize to subordinates the results to be attained, not how they are to achieve them” and also provide “maximum freedom of action in determining how to best accomplish assigned missions” (Department of the Army, 2008, p. 5.10). In the context of military science instruction, the “results” are the important military science concepts that must be trained during each military science course. FM 3-0 is very clear in not expressing to subordinates how these results should be achieved.

An Examination of the USMA DMI Instructor Handbook, Student Learning, and Course Design

The literature review to follow will examine the synergy of the USMA Department of Military Instruction Instructor Handbook (2011), Army Field Manual 3-0: Operations (2008), Army Field Manual 7-1: Battle Focused Training (2003), and the literature surrounding student learning and course design. In terms of the commander’s intent of military science instruction, the handbook states very clearly that the desired end state of the military science curriculum is to create students that are “innovative problem solvers.” This is in alignment with the training strategy of the United States Army of creating adaptive leaders (See Figure 4 above). The commander’s intent of all USMA military science curriculums is articulated in the first four pages of the handbook. According to the USMA Department of Military Instructor Handbook (2011), all military science classroom instruction will utilize the guiding military science teaching strategy described below and exhibited in Figure 8 to accomplish the commander’s intent:

“All instruction in our core Military Science classes is scenario-based, allowing the cadet to discover concepts and principles on their own… Through the use of tactical decision-making exercises, the cadets learn concepts, skills, and information within the context of a tactical operation. The cadets are immersed in the scenario, and they learn through trial and error, making decisions, and formulating plans as the situation necessitates. At critical points, the instructor introduces a change to the situation…that requires cadets to adapt to new circumstances. Only after experimentation is the “theory” or doctrine formally introduced” (USMA Military Science Division, 2011, p. 1).

* TDE = Tactical Decision Exercise

* ALM = Adaptive Leader Model

Figure 8: DMI Military Science Teaching Strategy
Likewise, the USMA Department of Military Instruction Instructor Handbook (2011) is in alignment with FM 3-0: Operations as previously stated above that doctrine consists of the three primary components:

1. Fundamental principles that guide future action and decision making
2. Tactics, techniques, and procedures that illustrate methods that have worked under specific sets of conditions
3. Standard terminology and symbols that allow military professionals to increase clarity of communications (USMA Military Science Division, 2011, p. 2)

However, following the identification of the three components of doctrine, the USMA Department of Military Instruction Instructor Handbook (2011), unlike FM 3-0: Operations, marginalizes the last two components of doctrine as inhibitors to effective problem solving by focusing on “what to think” as opposed to “how to think.” The handbook states that the Army predominately focuses on the last two components and gives scant attention to the first. Therefore, the USMA Department of Military Instruction Instructor Handbook states the main emphasis of all military science instruction will be oriented towards teaching students to understand the fundamental principles (USMA Military Science Division, 2011, p. 2). The handbook does not articulate to the military science instructor the level of attention the later two principles should play for the three military science curriculums.

In terms of the predominate literature on educational and training objectives, the USMA Department of Military Instruction Instructor Handbook (2011) fails to state for the student which fundamental principles of doctrine must be learned and for the instructor what specific principles must be taught for each military course. The fundamental principles of doctrine in accordance with the educational literature of Dr. Bloom and Dr. Fink would be labeled learning goals or learning objectives for each course. The USMA Department of Military Instruction Instructor Handbook (2011) is 56 pages in its entirety, but never truly highlights for the instructor or the student what must be taught and learned. The USMA Department of Military Instructor Handbook (2011) clearly articulates the desired end state of the initial commander’s intent in terms of the Battle Command Process, but fails short in several areas as articulated in Figure 7.

In terms of understanding the problem (Step 1) of the Battle Command Process, the USMA Department of Military Instructor Handbook (2011) does not take into consideration the operational environment of the military science instructor. In Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses (2003), Dr. Fink states that all course curriculum should take into account the situational factors involved in the course design process. Dr. Fink (2003) stipulated that a course director should examine the following: the specific context (i.e. the number of students, course level, length of class meetings, etc.), expectations of external groups (i.e. the curriculum goals of the profession, the department, etc.), the nature of the subject (i.e. is the subject convergent towards single right answers or multiple answers, etc.), the characteristics of the learners (i.e. full versus part time students, prior experiences, knowledge, skills, and attitudes, etc.), the characteristics of the teachers (i.e. level of competence, confidence, experience, etc.), and the special pedagogical challenge (i.e. the special situation that challenges the student and teacher to make it a rewarding experience). Dr. Fink (2003) stipulated that unless a thorough review of these factors is conducted the course might not work for the students involved, fit the teacher, or otherwise totally miss the mark (Fink, 2003, pp. 68-69). In terms of introductory military science courses, the USMA Department of Military Instruction Instructor Handbook (2011) never discusses these factors and also espouses a teaching strategy of “experiential learning” that focuses not on the instruction of foundational knowledge, but on the method of instruction (See Figure 8). Educational Literature (i.e. Dr. Fink and Dr. Bloom) and Army Doctrine (FMs 3-0 and 7-1) are very clear that doctrine is the beginning, not the end as espoused by the USMA Department of Military Instruction Instructor Handbook (2011).

In terms of the visualization of the problem (Step 2) of the Battle Command Process, the USMA Department of Military Instruction Instructor Handbook (2011) states the desired end state of “developing innovative problem solvers,” but does not articulate the “broad sequence of events” that represent the relationship upon which the three military science course curriculums are to be integrated and build upon one another. According to the USMA Department of Military Instruction Instructor Handbook (2011) there is no distinct in terms of learning goals or learning outcomes between the three military science course curriculums and the cadet summer details in terms of the commander’s intent. With the publication of The Course Syllabus: A Learning Centered Approach, Dr. Judith...
O’Brien (2008) stated very clearly that course objectives must indicate to students “what they will have to do (in terms of course content) and under what conditions” (O’Brien, Millis, & Cohen, 2008, p. 54). According to Dr. O’Brien (2008), course objectives must indicate to students their role in the “accountability” of course content. Upon reading the USMA Department of Military Instruction Instructor Handbook (2011), the military instructor and course director is assigned very little in terms of accountability of what must be taught in the instruction of each military science course.

In terms of describing the commander’s intent and developing a concept of the operation for military science course curriculums, the USMA Department of Military Instruction Instructor Handbook (2011) fails to develop a clearly defined concept of the operation. There is no differentiation between the military science courses in terms of the decisive, shaping, and sustaining operations either at the tactical level (within the course), at the operation level (between the military courses), and at the strategic level (in terms of shaping cadet summer training). The training strategy of the United States Army in terms of training design and the “battle focus” concept supports the conduct of “backwards planning” as stated earlier. Additionally, Dr. Wiggins (1998) with the publication of Understanding by Design concurs that educators must design course curriculum by looking at the desired results of the course(s) in a backward fashion. If the capstone military science course feeds the capstone cadet summer detail and is the decisive operation in terms of military sciences courses, the USMA Department of Military Instruction Instructor Handbook (2011) should state clearly the learning outcomes and goals that support the desired ends state of performance in CLDT. Likewise, if the interim military science course is a shaping operation for both the capstone military science course and a cadet summer detail, the USMA Department of Military Instruction Instructor Handbook (2011) should state clearly the learning outcomes and goals that support the desired end state prior to entry into the capstone course.

In terms of issuing mission orders in the last step of the Battle Command Process, the USMA Department of Military Instruction Instructor Handbook (2011) does not issue any mission orders. Again, FM 3-0 Operations clearly states that mission orders “emphasize to subordinates the results to be attained, not how they are to achieve them” and also provide “maximum freedom of action in determining how to best accomplish assigned missions” (Department of the Army, 2008, p. 5.10). In the context of military science instruction, the “results” are the important military science concepts that must be trained during each military science course in support of the cadet summer details. With the educational publication titled McKeachie’s Teaching Tips: Strategies, Research, and Theory for College and University Teachers (2011), Dr. Wilbert McKeachie (2011) stated that course directors in the construction of course curriculum (i.e. course learning outcomes or objectives) should utilize the acronym SMART. According to Dr. McKeachie (2011), all course learning outcomes or objectives should be: specific (i.e. in terms of expectations), measurable (i.e. able to how students accountable), agreeable (i.e. clearly understood by the student), related (i.e. with a clear structure and linkage between assignments), and allow sufficient time for completion (McKeachie & Svinicki, 2011). In terms of the mission orders derived from the concept of operation for the instruction of the military sciences, the USMA Department of Military Instruction Instructor Handbook (2011) fails to fully articulate specifically what is expected of students and/or instructors in terms of learning outcomes or objectives for individual courses or holistically as a military science program. In contrast the relevant mission orders of the USMA Department of Military Instruction Instructor Handbook (2011) defy the explicit guidance within its definition. The definition of mission orders clearly states to specify the results, not how they are to be achieved. According to TM 3-0 Operations, mission orders where necessary synchronize subordinate actions to achieve mission success (Department of the Army, 2008, p. 5.10). The USMA Department of Military Instruction Instructor Handbook (2011) states all military science instructors will focus on “how to think” as opposed to “what to think,” yet with its firm guidance on “teaching strategy,” the handbook prescribes more so “the method to teach” as opposed to “what to teach.” The term “teaching strategy” refers to “a particular combination of learning activities in a particular sequence” (Fink, 2003, p. 130). The particular “teaching strategy” espoused by the instructor handbook is the “experiential learning model.”

As espoused in Figure 8, the military science teaching strategy does not begin with knowledge or doctrine as the foundation for future military science learning. From the standpoint of the preponderance of educational literature on learning taxonomies and the training strategy of the United States Army, the USMA Military Science teaching strategy disregards the acquisition of knowledge as the foundation for significant learning. According to Dr. Fink (2003), “almost all kinds of significant learning will be based on (i.e. foundational knowledge), and hence will require students to have, an in-depth understanding of some subject matter” prior to the integration of other kinds of learning (Fink, 2003, p. 38). Likewise, given the progressive nature of Bloom’s learning taxonomy, Dr. Bloom (1956) would agree with Dr. Fink’s analysis. Dr. Bloom’s first learning stage is titled “knowledge” and is a
prerequisite for other stages of learning. Both Dr. Fink and Dr. Bloom are in agreement that for effective comprehension and application, a student must possess a basic understanding of foundational knowledge. Likewise, as noted above in Figure 4, the foundation of the training strategy of the United States Army as espoused in *FM 7-1 Battle Focused Training* is doctrine, yet doctrine is the last stage of learning in the USMA Military Science teaching strategy.

An examination of the literature surrounding Experiential Learning

As noted above in Figure 8, the introduction of the Tactical Decision Exercise (TDE) represents the current starting point for all cadet learning in terms of the military sciences, i.e. the experiential learning model. Upon the issuance of a TDE, cadet(s) reflect on the problem at hand by observing, orienting themselves to the problem, making a decision, and taking action on a solution. According to the military science “teaching strategy,” cadet(s) brief and defend their answer, rightly or wrongly, and receive feedback from the instructor and their cadet peers in order to conceptualize the military science concept(s) without the foreknowledge of the existing doctrine surrounding the military science concept. Through the after action review (AAR) process, cadets continue active experimentation to supposedly arrive at the foundational knowledge or military science concept through experience (USMA Military Science Division, 2011, p. 1).

The *USMA Department of Military Instruction Instructor Handbook* (2011) holds in reverence the view of Dr. David A. Kolb that learning arises not from foundational knowledge, but the innate ability of the student to reflect, conceptualize abstract concepts, and learn through active experimentation or “experiential learning” alone (Kolb & Fry, Toward An Applied Theory of Experiential Learning, 1975). The concept of experiential learning surfaced in 1975 with the publication of *Toward an Applied Theory of Experiential Learning* by Dr. David A Kolb and Dr. Ron Fry. According to the theory, students learn best through an experience or by doing. Students are given the opportunity to learn and apply a concept(s) through a concrete experience allowing student reflection, conceptualization abstract concepts, and active experimentation to eventually arrive at a solution as outlined in Figure 9 below (Kolb & Fry, Toward An Applied Theory of Experiential Learning, 1975).

With the subsequent publication of *Experiential Learning* in 1984, Dr. Kolb in contrast to Dr. Bloom and Dr. Fink deemphasizes the need for the introduction of knowledge as the beginning for all other stages of learning. Rather, according to Dr. Kolb, “Knowledge results from the combination of grasping experience and transforming it” (Kolb, Experiential Learning, 1984)

**Figure 9: Dr. Kolb’s Experiential Learning Model (ELM)**

An Examination of Emerging Literature on the Effectiveness of “Experiential Learning”

Recently, Dr. Richard E. Clark (2012) examined the validity of teaching novices (i.e. beginners) through partially guided instruction, i.e. “experiential learning,” in his publication titled *Putting Students on the Path to Learning: A Case for Fully Guided Instruction*. Dr. Clark (2012) concluded that “decades of research clearly demonstrate that for novices (comprising virtually all students), direct, explicit instruction is more effective and more efficient than partial guidance.” Dr. Clark (2012) also concluded that when teaching new content and skills to
novices, “teachers are more effective when they provide explicit guidance accompanied by practice and feedback, not when they require students to discover many aspects of what they must learn” (Clark, Kirschner, & Sweller, 2012, p. 6). Dr. Clark (2012) differentiated fully guided instruction by stating that partially guided instruction is given various names to include “discovery learning, problem-based learning, inquiry-learning, experiential learning, and constructive learning” (Clark, Kirschner, & Sweller, 2012, p. 7). In this research, Dr. Clark (2012) states that effective “fully guided teaching” is when teachers “fully explain the concepts and skills that students are required to learn” and guide the students through the concepts through practice and corrective feedback (Clark, Kirschner, & Sweller, 2012, p. 6).

Over a 50 year period, upon examining the controlled experiments and research of comparing “fully guided” versus “partially guided / experiential instruction,” Dr. Clark (2012) concluded that the “the research provided overwhelming evidence that, for everyone but experts, partial guidance during instruction is significantly less effective than full guidance” (Clark, Kirschner, & Sweller, 2012, p. 7). Dr. Clark (2012) stated that researchers observed the following with regard to students taught purely through “experiential learning:”

1. Students often become lost, frustrated, and their confusion lead to misconceptions about concepts (Clark, Kirschner, & Sweller, 2012, p. 7)
2. Students taught explicitly through experiential learning were not better at applying previously discovered concepts to different context as opposed to students taught through “fully guided instruction.” On the contrary, students taught through “fully guided instruction” were far better. (Clark, Kirschner, & Sweller, 2012, p. 7)
3. Only the best and brightest students discover learning concepts through “experiential learning” (Clark, Kirschner, & Sweller, 2012, p. 8)
4. The frustrated and lost students usually copied the best and brightest students instead of actually applying the concepts themselves (Clark, Kirschner, & Sweller, 2012, p. 8).
5. “Some students believed they discovered the correct information or solution, but they were mistaken and so learned a misconception that interfered with the later learning and problem solving. Even after being shown the right answer, the student is still likely to recall his or her discovery – not the correction” (Clark, Kirschner, & Sweller, 2012, p. 8).
6. Experiential Learning may take substantially more class periods than “fully guided instruction” (Clark, Kirschner, & Sweller, 2012, p. 8).

In conclusion, Dr. Clark (2012) made two compelling arguments. First, Dr. Clark (2012) stated that “many educators confuse “experiential learning” which is a theory of how one learns and sees the world, with the prescription for how to teach” (Clark, Kirschner, & Sweller, 2012, p. 8). In terms of the description of how students learn by doing, this statement concurs with the philosophies of Dr. Kolb (1975), but in terms of “how to teach.” Lastly, Dr. Clark (2012) concurs with the learning taxonomies of Dr. Bloom and Dr. Fink in terms of the derivation of learning. Dr. Clark (2012) states “learning requires the construction of knowledge” and “withholding information from students does not facilitate the construction of knowledge” (Clark, Kirschner, & Sweller, 2012, p. 8).

An Integrated Approach to Military Science Course Design

Upon further examination of the preponderance of literature and research surrounding to the topic of student learning and course design, there are diverging schools of thought with regard to how student’s learn and the strategies by which to instruct students. Based on the preponderance of literature and research, the teaching strategy of the USMA Military Science Division are predominately outside of the mainstream in terms of where to begin with student learning and how to best instruct novices in the military sciences with an overreliance on “experiential learning.”

Based on the preponderance of literature, the Department of Military Instruction should seek to modify its teaching strategy to bring it more in line with the renowned taxonomies of learning and most importantly the training strategy of the United States Army as it applies particularly to introductory courses and knowledge. Significant literature and research demonstrates that “fully guided instruction” as opposed to “partially guided or experiential” instruction is more effective particularly with the instruction of novices (Clark, Kirschner, & Sweller, 2012). This most importantly applies to the introductory military science courses. The Department of Military Instruction should seek to make the following changes to the teaching strategy in terms of introductory military science courses:
1. Place an emphasis on the instruction of content knowledge prior to the introduction of experiential learning. (Bloom/Fink/US Army)
2. Instructors fully explain the learning outcomes and skills following instruction. (Bloom/Fink/US Army: Knowledge)
3. Instructors thoroughly teach the application of concepts and skills prior to student practice. (Bloom/Fink/US Army: Knowledge)
4. Instructors confirm students having an understanding of basic concepts and skills prior to student practice. (Bloom: Comprehension)
5. Instructors afford students practice through guided practical exercises or tactical decision games. (Bloom: Application and Analysis)(Fink: Application)
6. Students brief their instructor and peers in class. (Bloom: Synthesis)(Fink: Integration / Caring / Human Dimension)
7. Instructors render corrective feedback to students through after action reviews. (Bloom: Evaluation)(Fink: Learning How to Learn)
8. Instructors build and merge learned knowledge into the introduction of new learning outcomes. (Bloom: Evaluation)(Fink: Learning How to Learn)

Upon a further examination of the literature surrounding the learning taxonomies of Dr. Bloom and Dr. Fink, experiential learning, and the training doctrine and strategy of the United States Army, DMI should seek to modify its teaching strategy in order to integrate the strengths of mainstream literature and research. With regard to the course design of an introductory military science courses, the USMA Military Science Division should seek to make the following changes:

**Figure 10: New Military Science Division Teaching Strategy**

First, the USMA Military Science Division should alter its teaching strategy according to Figure 10 above. Second, during the subsequent phases of instruction for a future military science introductory course, the USMA Military Science Division should seek to emphasize the instruction of basic military content knowledge (i.e. map reading as an example) and seek to build other concepts upon the initial concept. Third, upon the instruction of a basic military concept and cadet comprehension of said basic concepts, the Military Science Division should make cadets show mastery (example: map reading, plotting military grid coordinates, and basic land navigation principles, i.e. azimuth and map distance). The military science introductory course should progress to the next higher learning levels of application to solve basic land navigational problems as espoused by Dr. Bloom. Fourth, during the first phase of basic military concepts instruction (example: map reading and basic land navigation), the course should seek to gradually integrate combinations of the six kinds of significant learning goals as espoused by Dr. Fink through
practical exercises. Lastly, as the USMA Military Science Division should introduce more foundational knowledge of basic military science concepts building upon previously learned concepts (i.e. squad task organization, weapons capabilities, movement formations, movement techniques, etc.). The military science introductory course should seek to fully integrate the six significant learning goals of Dr. Fink through the utilization of a squad tactical decision game after content mastery in the new knowledge is achieved (example: a squad route selection TDE whereby cadets apply basic map reading and land navigation concepts learned in phase one with appropriate weapons employment, movement formations, and techniques inside of a squad).

In regards to creating an integrated approach to the course design of an introductory military science course, Dr. Fink (2003) best articulates how to create a course in which students have significant learning experiences using his twelve step course design process (Fink, 2003, p. 67). See Figure 11 below.

**Figure 11: Dr. Fink’s Twelve Steps of Integrated Course Design**

<table>
<thead>
<tr>
<th>Initial Phase: Building Components Parts</th>
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<tbody>
<tr>
<td>1. Situational Factors</td>
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<td>2. Learning Goals</td>
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<tr>
<td>3. Feedback &amp; Assessment</td>
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<tr>
<td>4. Teaching &amp; Learning Activities</td>
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<tr>
<td>5. Integrate the Component Parts</td>
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<tr>
<th>Intermediate Phase: Coherent Whole</th>
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<td>6. Course Structure</td>
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<tr>
<td>7. Teaching Strategy</td>
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<td>8. Overall Set of Learning Activities</td>
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</tbody>
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<tr>
<th>Final Phase: Four Remaining Tasks</th>
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<tr>
<td>9. Grading System</td>
</tr>
<tr>
<td>10. Possible Problems</td>
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<tr>
<td>11. Write Syllabus</td>
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<tr>
<td>12. Evaluation of Course and Teaching</td>
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</table>

In terms of identifying the situational factors in course design (Step 1), Dr. Fink (2003) stipulates that a course director should examine the following:

- The specific context (i.e. the number of students, course level, length of class meetings, etc.)
- The expectations of external groups (i.e. the curriculum goals of the profession, the department, etc.)
- The nature of the subject (i.e. is the subject convergent towards single right answers or multiple answers)
- The characteristics of the learners (i.e. full versus part time students, prior experiences, knowledge, skills, and attitudes, etc.)
- The characteristics of the teachers (i.e. level of competence, confidence, experience, etc.)
- The special pedagogical challenge (i.e. the special situation that challenges the student and teacher to make it rewarding experience) (Fink, 2003, pp. 68-69).

Dr. Fink (2003) stipulates that unless a thorough review of these factors is conducted the course might not work for the students involved, fit the teacher, or otherwise totally miss the mark (Fink, 2003, pp. 68-69).

In terms of developing course learning goals (Step 2), Dr. Fink (2003) states that the course director should seek to outline these goals in terms of the six kinds of significant learning (i.e. foundational knowledge, application, integration, human dimension, caring, and learning how to learn) (Fink, 2003, p. 258). Likewise, as discovered...
earlier from Dr. McKeachie (2011), the learning goals should be specific, measurable, agreeable, related, and allow sufficient time for the student to complete (McKeachie & Svinicki, 2011).

In terms of developing feedback and assessment (Step 3), Dr. Fink (2003) stipulates that the course director should “formulate grading and assessment procedures that support learning rather than hinder it” (Fink, 2003, p. 82). Dr. Fink (2003) encourages course directors to utilize educative assessments that are centered on encouraging students to continue to learn as opposed to audit-ive assessments that look backwards. Dr. Fink (2003) states that educative assessments have four primary components: “forward looking assessment, criteria and standards, self-assessment (i.e. causes the student to reflect), and encourage FIDeLity (i.e. are frequent, immediate, discriminating, and delivered lovingly) (Fink, 2003, p. 83).

In terms of developing teaching and learning activities (Step 4), Dr. Fink (2003) states that a course director should select or develop “learning activities that reflect the principles of active learning” (Fink, 2003, pp. 258-259). The term active learning implies “anything that involves students in doing things and thinking about the things they are doing” (Fink, 2003, p. 103).

In terms of integrating the component parts (Step 5), Dr. Fink (2003) states that a course director should analyze the effectiveness of Steps 1-4. Likewise, the course director should find the resources that both the student and the instructors need to support each of the learning activities outlined in Step 4 (Fink, 2003, pp. 258-259). See figure 12 below for the integration of Steps 1-5.

**Figure 12: The Initial Phase of a Course Design**

![Image](https://via.placeholder.com/150)

In terms of developing a course structure (Step 6), Dr. Fink (2003) states that a course director should “identify the most important concepts, topics, or themes that constitutes the subject of the course – usually at least four and no more than seven” (Fink, 2003, p. 128). According to Dr. Fink (2003), these topics should be arranged in a sequence either from chronologically, simple to complex, or beginning with fundamentals to new emerging ideas.

In terms of developing a teaching strategy (Step 7), Dr. Fink (2003) states that a course director first identify “the specific learning activities that will be effective enough to accomplish the significant learning goals” in terms of out-of-class and in-class activities (i.e. reading, homework, observations, study groups, lectures, discussions, writing assignments, small group activities, TDEs, etc.) (Fink, 2003, p. 130). During this step, the course director should seek to arrange these individual learning activities into an effective teaching strategy in terms of in-class and out-of-class activities that build upon one another. See Figure 13 below.
In terms developing an overall set of learning activities (Step 8), Dr. Fink (2003) stipulates that the course director should “integrate the course structure and the instructional strategy into an overall scheme of learning activities” (Fink, 2003, pp. 138-139). See Figure 14 below.

**Example:**

**Topic 1:** Map Reading (Lessons 1-7)
**Topic 2:** SQD/PLT Task Organization (Lessons 8-12)
- Weapons Capabilities
- Weapons EST Lab
- Weapons Symbols
  - Squad Tactical Movement
  - Squad Tactical Movement TDE (Lesson 12)
**Topic 3:** Intro. Troop Leading Procedures (Lessons 13-16)
- Introduction to Squad Ambush
- Warning Order (Lesson 18)
- Review / Mid Term Exam (Lesson 19)
  - Pre-combat Inspection Lab (Lesson 20)

In terms of developing a grading system (Step 9), Dr. Fink (2003) states that a course director should “select a grading system that reflects the full range of learning goals and activities” and weight each item relatively according to their level of importance (Fink, 2003, p. 262).

**Example Grading System**

| Phase I Map Reading 1 WPR | 100 Points |
| Phase I Map Reading 2 WPR | 150 Points |
| Phase II Weapons Symbols and Capabilities Quiz 1 | 50 Points |
| Phase III Tactical Tacks Symbols and Troop Leading Procedures Quiz 2 | 50 Points |
| Phase III Warning Order Homework | 50 Points |
| Quarter Term Exam | 200 Points |
| Instructor Points | 100 Points |
| Total Course Points | 600 Points |

In terms of considering what could go wrong with the course (Step 10), Dr. Fink (2003) suggests to the course director analyze the first draft of the course to determine the following:

- If the course accounts for the situational factors?
- If the course includes high level learning goals?
- If the course’s feedback and assessment activities reflect the principles of educative assessment?
- If the teaching and learning activities include active learning?
• If the students have time to do their out-of-class assignments?
• If the students have the necessary resources for the course? (Fink, 2003, pp. 262-263)

In terms of writing a course syllabus (Step 11), Dr. Fink (2003) states that a course director should include the following information:

• General Management Information (i.e. instructor, office hours, phone, etc.)
• Goals for the course.
• Structure and Sequence of class activities, including dates for major assignments, tests, and projects.
• Text and other required reading materials.
• Grading procedures.
• Course policies (i.e. attendance, work turned in late, make-up exams, etc.) (Fink, 2003, p. 263)

Lastly, in terms of the evaluation of the course and its teaching (Step 12), Dr. Fink (2003) states that the course director should plan for the following:

• An evaluation of the course itself and its performance?
• The types of mid-term and end-of-term feedback you will need?
• The degree to which your goals for the course were achieved?
• The effectiveness of particular learning activities?
• Your ability to interact effectively with students?
• What sources can give you information you need to answer the above questions? (i.e. videotape, audiotape, student interviews, questionnaires, outside observers, test results, etc.) (Fink, 2003, p. 263)

Bibliography


