



Marine Corps graduate (left) of Lance Corporal Leadership and Ethics Seminar 01-18 accepts certificate of completion from course director (middle) and her instructor (right), on Marine Corps Base Camp Pendleton, California, July 27, 2018 (U.S. Marine Corps/Brendan M. Mullin)

# Augmenting Bloom for Education in the Cognitive Domain

By Douglas E. Waters and Craig R. Bullis

The unclassified summary of the 2018 National Defense Strategy (NDS) concludes that “to succeed in the emerging security environment, our Department and Joint Force will have to out-think, out-manuever, out-partner, and out-innovate revisionist powers, rogue regimes,

terrorists, and other threat actors.”<sup>1</sup> In describing the required lines of effort to realize the strategy’s objectives, the NDS states that professional military education (PME) will have to be revitalized, with an emphasis on “intellectual leadership” and “independence of action.”<sup>2</sup> The NDS clearly emphasizes a

real need for future joint professionals who possess sophisticated conceptual skills and judgment; judgment is critical because its exercise is a key characterization of any professional.<sup>3</sup>

Truth be told, this NDS-directed renaissance of thinking and judgment within the joint force will require more than a reinvigorated PME system, as a systems-level analysis and approach will be required to engage the entire career life cycle of the joint professional. PME is only one piece of this puzzle, and it

---

Douglas E. Waters is an Assistant Professor of Department of Defense Systems in the Department of Command, Leadership, and Management at the U.S. Army War College. Dr. Craig R. Bullis is a Professor of Management at the U.S. Army War College.

does many things right. Any reform effort should carefully focus on areas for improvement without dismantling or degrading proven and effective practices. However, there continues to be both anecdotal and published statements from senior Department of Defense (DOD) leaders and others that indicate that leadership development systems, to include PME, are failing to produce enough strategic-minded leaders for success in the dynamic, complex emerging security environment.<sup>4</sup> Whether these senior leaders are right (and we believe there is merit to these assertions), exploring targeted areas of reform within PME that enhance strategic thinking development is an unambiguously desirable goal, and one aligned with the NDS line of effort.

Currently, both joint- and Service-level PME programs use Benjamin Bloom's *Taxonomy of Educational Objectives* as the primary means to differentiate learning levels within the conceptual domain. This existing model, proposed by Bloom over 60 years ago, significantly advanced pedagogy by suggesting that education begin with simple comprehension of a topic and progress to more complex conceptual activity such as evaluation and creation. As an example of this approach, the Army's program is instructive. The *Army Learning Model* stresses the importance of education being student-centered, progressive, and sequential, as well as outcome oriented.<sup>5</sup> Progressive and sequential instruction allows higher level courses to build on the foundational material as well as on the experiences of the student population. Outcome-oriented programs enable educational institutions both to add value to the operational employment of learned skills as well as to assess the effectiveness of the instruction. To facilitate these demands, the Army structures its training to follow a task, conditions, and standards framework. Moreover, Army educational systems use Bloom's taxonomy of learning outcomes to differentiate the various learning levels associated with particular learning objectives. The appropriate application of Bloom's taxonomy can improve educational systems by focusing courses and lessons on the desired learning levels.

**Table 1. Bloom's Taxonomy for Learning, Teaching, and Assessing**

Domain of Learning	Definition and Description
Creating	Incorporating components of one concept with a different concept to produce a unique, integrated understanding
Evaluating	Making judgments (and explaining reasoning) regarding the value of the material
Analyzing	Deconstructing complicated material into component parts so that those individual components can be assessed for relevancy
Applying	Using material appropriately in a new situation
Understanding	Comprehending material as to explain details in one's own words
Remembering	Reciting previously learned information from memory

Source: L.W. Anderson et al., *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* (New York: Pearson, Allyn & Bacon, 2001). An important caveat is that both the May 29, 2015, CJCSI and the Army's MCTEP include an earlier version of Bloom's taxonomy as the reference for learning outcomes. The table used in this article reflects the more updated outcomes that have been proposed by Bloom's colleagues.

However, when the learning outcome specifically relates to the cognitive domain, Bloom's taxonomy and the Army training model need a more nuanced application.

This article argues that the progressive application of Bloom's taxonomy is incomplete for education in the cognitive domain. In particular, it argues that thinking competency development must strive for the same learning outcome across all levels of PME. To differentiate those levels, though, outcomes should be augmented by including the *context* in which the behavior is demonstrated. Leaders at all levels are expected to comprehend issues, analyze the situation, apply critical thinking skills, and create innovative solutions. What changes with seniority, however, is complexity of the environmental context. Consequently, PME's role should be to prepare all students to think at high levels, and then do so within increasingly more complex organizational contexts. This will enhance leader performance at all levels and, due to the prominence of conceptual skills at the strategic level,<sup>6</sup> is absolutely necessary to enhance strategic thinking capacity in the joint force. In other words, the proposed framework introduces the requirement for sophisticated conceptual development early in one's career in order to better prepare senior leaders for the complex challenges they face. Such a change will not be easy; it will require a significant adjustment to existing PME policy directed by both the Joint Staff and Services. However, change

is necessary to better prepare joint and Army professionals to meet the cognitive challenges of the operational environment as characterized by the NDS.

This article starts with a short discussion of Bloom's taxonomy, and then both joint and Army curricular development models are examined within the context (and demands) of the cognitive domain. Additionally, it examines mission command as a prototype for how to better achieve conceptual learning outcomes across all educational cohorts. Ultimately, the article offers stratified systems theory (SST) as a complementary framework that can be used to meet the contextual need. Implementing the article's recommendations should enhance PME to better align with the challenges associated with a dynamic, uncertain future.

### Bloom's Levels of Learning

Within military educational settings, outcome-based goals are generally reasonable in focusing instructors and students on the objectives of a particular course or lesson. Inside PME, learning outcomes specify the student's expected learning, as well as the cognitive level of learning for that course or individual lesson within the curriculum.<sup>7</sup> Bloom's taxonomy helps identify this cognitive level of learning using domains that represent increasing levels of cognitive complexity, depending on the desired endstate of the instruction. Bloom first introduced his taxonomy in 1956 to enhance communication and com-

parison of educational outcomes.<sup>8</sup> His initial framework was updated in 2000 by L.W. Anderson and colleagues to include six levels (table 1). The value of this taxonomy within an educational system is that it can orient progressively higher levels of understanding.

### Joint Professional Military Education

As currently applied, the joint curricular development model suggests all PME should be structured progressively (that is, begin at Bloom's lower levels and advance to higher levels within the taxonomy).<sup>9</sup> This progression typically correlates to the rank or organizational level of the students, and can be seen clearly when comparing learning outcomes between different levels of joint professional military education (JPME). For some training domains, the progressive advancement makes sense, even for higher level PME. For example, consider the concept of joint capabilities as taught in officer JPME. Appropriately, the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) begins at a lower outcome level, requiring basic knowledge of joint structures and processes. It then increases the sophistication of content and the expectation of learning outcomes through Intermediate-Level Education and culminates at the Senior Service College (SSC).<sup>10</sup> At the SSCs, not only are the content areas related to national strategy development, but the outcomes are also predominantly at the Analyze and Evaluate levels of Bloom's taxonomy. Because the outcomes identified in the CJCSI relate to knowledge of joint capabilities, it seems reasonable to begin with basic remembering and increase those outcomes over time to evaluation and synthesis. In this way, students leverage both their previous education, as well as their experiences, to better demonstrate the requirements to apply, analyze, and eventually evaluate activities in light of joint requirements.

However, this progressive increase in Bloom's levels is unsatisfactory for all content areas. In fact, within the domain of conceptual capabilities, it is

demonstrably inadequate for educational outcomes at all levels.

### Uniqueness of the Cognitive Domain

The cognitive domain of leadership requirements presents a unique challenge to those developing PME education. The NDS, as mentioned, requires significant conceptual skills among its Servicemembers so they can operate effectively in complex environments. Research highlights the unique importance of high levels of conceptual skill for senior leaders.<sup>11</sup> In fact, T.O. Jacobs argues that the sophisticated application of advanced conceptual capabilities—what he refers to as wisdom (synonymous with our previous use of *judgment*)—is the sine qua non of strategic leadership.<sup>12</sup> Conceptual capability is critical at the strategic level because context and responsibilities are mostly ill-defined, and emerging from an environment that is volatile, uncertain, complex, and ambiguous. Moreover, the character of war for today's (and tomorrow's) leaders requires advanced cognitive skills at every level.<sup>13</sup> Development of such sophisticated skills within the officer corps cannot begin at senior field grade levels, but must start early in one's career.<sup>14</sup>

Development of conceptual skills begins at birth and extends throughout a lifetime of changing personal and professional context. While the PME system has some responsibility for this development, we suggest that solely using Bloom's categorization for the conceptual domain imposes a rigid standardization that handicaps the joint force's human capital development. First, it establishes an expectation too low for the demands on today's leaders; and second, it enables the Services to ignore the challenges of developing cognitive abilities among all ranks. However, integration of contextual levels into conceptual learning outcomes would facilitate development of thinking competencies through a context-relevant curriculum—one that leverages all of Bloom's taxonomy regardless of PME level. In effect, it would reframe inquiry about how we parse PME.

### Augmenting Bloom for Strategic Thinking

To more clearly delineate the idea of contextual consideration within the conceptual domain, we refer to the concept of strategic thinking. Previous work outlines the components of this conceptual capability to include the following:<sup>15</sup>

- *Critical thinking* is defined as “the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed.”<sup>16</sup>
- Creative thinking is considered to be the use of cognitive skills to develop novel ideas, approaches, or solutions that improve outcomes and are valued by others.<sup>17</sup>
- Systems thinking provides a conceptual framework for seeing the whole rather than parts, identifying interrelationships rather than things, and recognizing patterns of change over time.<sup>18</sup>
- Thinking in time includes having a historical perspective—a sense of past, present, and future as it pertains to an issue—as well as the ability to forecast future organizational strengths and weaknesses and external threats and opportunities.<sup>19</sup>

Examining these conceptual competencies in more detail is instructive, as it quickly demonstrates the problematic nature of a sole reliance on the progressive application of Bloom's taxonomy. For example, consider creative thinking, which is defined above as the ability to think in novel ways to improve outcomes. It seems obvious that this capability is required at every level. In other words, it seems reasonable to expect lieutenants (or ensigns) to have knowledge of creative thinking constructs and to comprehend the value of creative thinking in the context of their assignments. We would also expect that they could *understand* and *apply* creative thinking constructs within the domain of their responsibilities. Finally, most would require these younger officers to *analyze* the context for the appropriate use of creative thinking and *evaluate*



General Dunford speaks to students and spouses of Capstone 2018-3, a course for general and flag officers that reinforces comprehension of joint matters and national security strategy, at National Defense University in Washington, DC, May 18, 2018 (DOD/James K. McCann)

the appropriate application of this conceptual skill. But all of those outcomes are restricted to the relatively narrow context of their responsibilities. In most cases, a “lieutenant’s world” is limited to understanding company intent (maybe battalion at the more senior lieutenant ranks) within his or her areas of influence and responsibility. But, to be sure, that context is limited.<sup>20</sup> Despite this, we believe it is reasonable to expect a lieutenant to *evaluate* creative thinking and *create* new understanding by synthesizing other cognitive components and technical skills while adapting to changing circumstances. In fact, establishing an outcome for these young officers only to comprehend or apply is setting expectations too low; the current operating environment simply demands more of these junior officers. In sum, lieutenants need to operate at the highest levels of Bloom’s taxonomy,

even as they demonstrate those capabilities within the more limited confines of their responsibilities.

Such a perspective does not assume that the same outcomes are expected within advanced education curriculum. At a Senior Service College, we expect the same levels of Bloom’s taxonomy to inform the desired learning outcomes. The difference, however, is the context. As SSCs are responsible for facilitating the transition from operationally focused leaders to leaders (and leader advisors) within the strategic domain, the context expands to a different order of magnitude. In fact, one could argue that SSC education should assume few externally constraining limits on leader discretion. So, as in the case of the lieutenant, we would expect the SSC-graduate colonel or captain to be ready to *apply*, *analyze*, and even *evaluate* this adaptive reasoning

but, unlike the lieutenant, do so within the much broader context associated with leadership at the strategic level.

Similar arguments can be applied to critical thinking, as “the deliberate, conscious, and appropriate application of reflective skepticism . . . as a way to improve one’s judgment”<sup>21</sup> should be expected of officers at every seniority level. The same is true of systems thinking, as complexity of systems, including joint, interagency, intergovernmental, and multinational (JIIM) linkages, both inside and outside of the organization, increases at higher levels. Additionally, time horizons at higher levels are substantially longer than those perspectives expected at lower levels.<sup>22</sup> All leaders should analyze and evaluate the effects of their decisions over time, but those horizons expand with the added responsibilities of more senior leadership.



Special operations forces from Lithuania, Poland, and Slovakia participated in U.S.-led Advanced Combat Leaders Course designed to improve lethality in close quarters battle, Slovakia, November 14, 2018 (U.S. Army/Alexis K. Washburn)

## JPME and the Conceptual Domain

We are not meeting this challenge within our current JPME curriculum. Currently, joint leader development is guided by a set of Desired Leader Attributes, one of which directly touches on critical, creative, and strategic thinking competency. This informs learning objective development across the JPME continuum, which follows the same progressive application of Bloom's levels seen in the joint capabilities example provided above. In fact, there are no learning outcomes that directly address critical, creative, or strategic thinking at the precommissioning and primary JPME levels, with intermediate-level outcomes only at the comprehend, apply, and analyze levels.<sup>23</sup>

JPME instruction depends on synergy with Service-specific PME programs, so

if the Services are adequately covering thinking competency development, then perhaps the JPME coverage is acceptable. Unfortunately, this is not the case, as a quick discussion of the Army PME program suggests.

### Army Training and Doctrine Command Educational Standards

The U.S. Army's Training and Doctrine Command (TRADOC) Pamphlet 350-70-14, *Training and Education Development in Support of the Institutional Domain*, outlines educational policy and directs the use of a task-condition-standard framework. This pamphlet correctly argues that "one of the most important steps to designing and developing lessons is developing and writing learning objectives." In support of developing clear learning

goals, TRADOC's policy of task, condition, and standards generally serves the Army well. Specifically, the educational learning objective, the outcome of a class or course, "Describes exactly what the student is capable of performing (the action/behavior), under the stated conditions, to the prescribed standard upon lesson completion." Examples of training development in the TRADOC pamphlet specifically portray the training activity. However, the condition is often categorized as either the training location or the accompaniment of material required to execute the activity. Importantly, the condition normally does not refer to the context in which the activity is performed. While the model is a reasonable start for orienting training activities, as already noted, it is incomplete without this contextual consideration.<sup>24</sup>

**Table 2. Creative Thinking Educational Outcomes Incorporating Bloom Levels and Context**

		Comprehend	Apply	Create/Synthesize
Organizational Level	Strategic (SST Levels VI and VII)	Comprehend policy and strategy, as well as Service and JIIM capabilities	Creatively apply instruments of national power in national and international contexts	Evaluate strategy; develop and implement organizational and systems adaptation and innovation
	Operational (SST Levels IV and V)	Comprehend Service and joint concepts and capabilities	Creatively apply joint doctrine and capabilities within area of operations	Facilitate operational adaptation via operational design and operational art
	Tactical (SST Levels I, II, and III)	Comprehend creativity concepts and doctrine	Creatively apply Service doctrine within area of operations	Exercise tactical adaptation (operate outside of doctrinal constraints but within commander's intent)

Abbreviated Aspects of Bloom's Taxonomy

Relatedly, just as in JPME, TRADOC requires the use of Bloom's taxonomy in the development of learning outcomes. Most often, course developers appropriately create sequential learning objectives by employing consecutively higher levels of Bloom's taxonomy outcomes.<sup>25</sup> However, the preferred method of sequencing should be to move from a limited contextual environment to a more complex contextual environment, while keeping Bloom's level of learning constant. In other words, the action verb of Bloom's model (which represents the desired outcome) remains the same, but the context in which that verb is executed is significantly different. This pedagogical option is not clear in joint or TRADOC guidance, but would afford greater flexibility in meeting the cognitive development needs of leaders at all levels (with less institutional confusion).

### Moving Beyond Discrete Thinking Competencies: Mission Command

The consideration of context is important to the cognitive domain, but similar arguments can be made for other essential leadership responsibilities. In fact, we suggest that the development of mission command be characterized in a similar way. The Army defines *mission command* as "the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower leaders to be agile and adaptive in the conduct of Unified Land Operations."<sup>26</sup> Because of its importance for the success of the

Army's Operating Concept, the U.S. Army Mission Command Training and Education Plan FY18–20 (MCTEP) outlines a comprehensive strategy for its development.

The MCTEP correctly asserts that "building competence follows a systematic approach, from mastering individual competencies to applying them in increasingly complex and ambiguous situations." Such an outcome aligns with our argument for explicit inclusion of context in learning outcomes. However, the learning outcomes specified in appendix A of the MCTEP demand the same progression of Bloom's outcomes that we criticize in the cognitive domain, generally beginning with *comprehend* for lieutenants and progressing (sequentially) to *evaluation* at the colonel level.<sup>27</sup>

Such an educational orientation does not achieve the Army Mission Command Strategic Endstate 1, which reads, "All Army leaders understand and practice the MC philosophy."<sup>28</sup> Clearly, company-grade officers practice mission command in much narrower circumstances than commanders at higher levels. While many examples emerge from the listing, we focus on one as an exemplar: "Exercise disciplined initiative." The MCTEP suggests lieutenants and captains are taught to *comprehend* and *analyze* levels, with *application* being the outcome achieved in the operational domain.<sup>29</sup> Disciplined initiative is the essence of mission command, and, as such, officers should recognize the many factors associated with discipline, including subordinate training levels, levels of trust, and complexity of the task. And all

officers should be educated to analyze and evaluate all of these components so that each one—lieutenant through general—is best prepared to make the most effective decision. As directed in the MCTEP, however, such instruction is not considered until the Command and General Staff College or the SSC. We believe that is too late. Instead, mirroring our arguments before, we suggest that higher level outcomes are included at junior levels, using the more narrowly constrained context as the distinguishing characteristic of the desired outcomes.

This criticism is not aimed at the developers of the MCTEP, who did an impressive job outlining a detailed and comprehensive plan to attain the Army's goals concerning mission command. MCTEP developers followed current Army curriculum development methodology, and it is this curriculum development model that needs to change.

It is clear that the current joint and Army curriculum development models are incomplete. Sole reliance on the progressive application of Bloom's taxonomy, even when augmented by the Army's task, condition, and standards framework, does not provide enough context to better prepare joint and Army leaders for the cognitive demands of the current and future operating environment. Because of the importance of integrating Bloom with contextual considerations, a framework for capturing those considerations is required.

Joint Publication (JP) 3-0, *Joint Operations*, defines three levels of warfare: strategic, operational, and tactical, and such a framework can provide a

**Table 3. The Stratified Systems Model of Organizational Leadership**

			Task Requirements and Characteristics						
Stratum	Domain	Toe Grade	Type of Unit Supervised with Civil Service Correlates		Systems, Resource, and Policy	Scope of Work		SST Postulated Time Horizon for Planning	Primary Perspective
			Military Unit	Civil Service (Political Appointees)		Representative no. of Subordinates (Military)	Sphere of Influence or Intelligence		
VII	Indirect - Strategic Systems	General	Unified or Subunified Command, or Army Command	Cabinet Secretary	Create and integrate complex systems; organize acquisition of major resources; create policy	100,000–500,000	Global	20+ years	JIIM + Industry + International
VI		Lieutenant General	Theater Army/ Corps	Deputy Secretary	Oversee direct operations of subordinate divisions; allocate resources; interpret and apply policy	50,000–200,000	National and Multinational	10–20 years	JIIM + Industry
V	Organizational	Major General	Division, Major Enabling Command	Under Secretary	Direct operation of complex systems; allocate assigned resources; interpret and implement policy	10,000–25,000	Regional (Limited Multinational)	5–10 years	Joint and Multinational
IV		Brigadier General	Minor Enabling Command	Assistant Secretary	Direct operation of systems; tailor or task organize resource allocations to interdependent subordinate programs and subsystems; implement policy	5,000–10,000	Sector	4–7 years	Joint
	Colonel	Brigade/ Group	2,500–5,000		10–20KM				
III	Direct	Lieutenant Colonel/ Sergeant Major	Battalion	Principal Staff	Develop and execute plans and task organize subsystems; prioritize resources; translate and implement policy and assigned missions	300–1,000	4–15KM	1+ years	Service
		Major	Battalion Staff Level						
II	Command	Captain/ First Sergeant	Company	Assistant Principal	Supervise direct performance of subsystems; anticipate/solve real-time problems; shift resources; translate and implement policy	60–200	1.5–5KM	3+ months	Branch/ Technology
I		Lieutenant; NCOs	Platoon; Section, Squad, Team	Clerical and Other Office Supervisor	Direct performance of work; use practical judgment to solve ongoing problems	3–40	400M–3KM	Less than 3 months	System-Specific Technology

Sources: Adapted from Thomas O. Jacobs and Elliott Jaques, "Executive Leadership," in *Handbook of Military Psychology*, ed. Reuven Gal and A. David Mangelsdorff (New York: Wiley, 1991); and Kenneth W. Lucas and Joan Markessini, *Senior Leadership in a Changing World Order: Requisite Skills for U.S. Army One- and Two-Star Assignments* (Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences, April 1993).

starting point for this discussion.<sup>30</sup> Table 2 demonstrates this application for creative thinking using the JP 3-0 framework and abbreviated Bloom's taxonomy levels for simplicity and readability. While not all encompassing, this approach clearly demonstrates an improved methodology that appropriately challenges officers at junior, intermediate, and senior levels to display appropriate levels of conceptual competence within the frame of the warfighting environment they will face at their respective levels. This JP 3-0 contextual differentiation is certainly a step in the right direction, but we suggest more fidelity is required. For that reason, joint and Service curriculum developers may want to consider the more comprehensive SST model to orient contextual considerations.

### Stratified Systems Theory

SST uses multiple dimensions to distinguish leadership responsibilities by level.<sup>31</sup> This framework proposes seven organizational strata and provides comparisons of military units to politically appointed DOD civilian leaders (table 3). We summarize unique tasks associated with those positions as well as differentiate the organization based on the representative number of subordinates as well as the sphere of influence. The time horizon for planning provides the original authors' synopsis of the time orientation that a leader within a particular stratum should consider. The framework also adds the "perspective" column to highlight the increasingly complex functional orientation required by a leader at successive levels. Such limiting of both time and responsibilities is functional as it reduces some of the uncertainty associated with a longer term view and allows the lower level leader to be more focused on achieving more specified assigned tasks.

For the context of this article, then, the benefit of the SST model is the articulation and differentiation of general responsibilities and unique characteristics at each level, allowing comparison across levels to better understand the increased complexity in the world to which leaders at all levels are progressing. Consequently,

it also provides a ready-to-use template for curriculum developers to insert critical contextual components for education related to the cognitive domain.

We recommend that the Joint Staff and Services consider a modification from the "task, condition, standard" framework of curriculum design to one that includes "task, condition, standard, and context." Understandably, including this additional dimension to PME makes education more complicated. However, we suggest those concerns can be moderated with two caveats. First, higher levels of context can be introduced with similar instruction across PME levels (in accordance with higher level outcomes of Bloom's taxonomy) by employing increasingly complex case studies and faculty examples to represent the contextual differences. Second, the addition of "context" is only necessary for certain domains. This article recommends that at least the cognitive domain, as well as aspects of mission command, are viable candidates for the expanded perspective, but there are many technical skills in which Bloom's taxonomy alone provides sufficient differentiation. Curriculum developers can use their tacit expertise to assist the Joint Staff and Service educational systems in identifying those areas where expanded context is necessary. In the end, though, improving PME through such considerations provides students the best preparation for the challenges they will face in future operational assignments.

### Conclusion

The National Defense Strategy is clear in articulating the need for a new approach to PME:

*PME has stagnated, focused more on the accomplishment of mandatory credit at the expense of lethality and ingenuity. We will emphasize intellectual leadership and military professionalism in the art and science of warfighting, deepening our knowledge of history while embracing new technology and techniques to counter competitors. PME will emphasize independence of action in warfighting concepts to lessen the impact of degraded/lost communications in combat. PME is to be used as a strategic*

*asset to build trust and interoperability across the Joint Forces and with allied and partner forces.*<sup>32</sup>

Ingenuity, intellectual leadership, professionalism, and independence of action require leaders at all levels who are requisitely skilled in handling cognitive complexity. They must be able to identify internal and external threats and opportunities, and interpret those signals to focus organizational action. These leaders must also reconcile paradoxes that exist within the complex environment and provide clear guidance both for the preparation and conduct of military action. In other words, to shoulder the leadership challenges implicit in the NDS, leaders of all ranks must be able to contend with significant conceptual demands. We believe this article advocates a targeted approach within PME that is aligned with meeting these demands.

The categorization of learning outcomes in accordance with Bloom's taxonomy makes sense for many of the educational domains that students are taught in PME. However, the appropriate use of Bloom's taxonomy depends on the pedagogical domain and the context in which that knowledge, skill, or attribute is demonstrated. For some content domains the context matters less, so a progression through Bloom's knowledge levels across the levels of PME is appropriate. However, we suggest that some domains, and in the cognitive domain in particular, a similar application fails to meet the needs of our population. Instead, the differentiating educational outcome should be the context in which the educational domain is demonstrated. Such contextual differences better highlight the unique differences in education across JPME and Service PME educational systems.

Teaching to the higher level outcomes earlier in one's career, even with the more constrained context, sets the conditions for better employment of those skills at the highest levels, when the context is much more unconstrained. Consequently, development of complex thinking skills, as well as other critical considerations, must begin early in PME.



To build such appreciation for their importance and difficulty, PME outcomes should reflect Bloom's higher level requirements across all levels. JFQ

## Notes

<sup>1</sup> *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Department of Defense, 2018), 5.

<sup>2</sup> *Ibid.*, 8.

<sup>3</sup> Don M. Snider, "The U.S. Army as Profession," in *The Future of the Army Profession*, 2<sup>nd</sup> ed., ed. Don M. Snider and Lloyd J. Matthews (Boston: McGraw Hill, 2005), 3–39.

<sup>4</sup> For representative examples, see Gordon B. Davis, Thomas C. Graves, and Christopher N. Prigge, "The Strategic Planning 'Problem,'" *Military Review* (November–December 2013), 12; Heather M.K. Wolters, Anna P. Grome, and Ryan M. Hinds, *Exploring Strategic Thinking: Insights to Assess, Develop, and Retain Army Strategic Thinkers*, Research Product 2013-01 (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, February 2013), 3; and Bob Scales, *Scales on War: The Future of America's Military at Risk* (Annapolis, MD: Naval Institute Press, 2016), 187–198.

<sup>5</sup> The Army Learning Model is referenced in several publications, including Richard J. Stafford and William Mark Thornhill II, "The Army Learning Model: Changing the Way Sustainers Train," *Army Sustainment* 44, no. 2 (March–April 2012), available at <[www.almc.army.mil/alog/issues/MarApril12/Army\\_Learning\\_Model.html](http://www.almc.army.mil/alog/issues/MarApril12/Army_Learning_Model.html)>.

<sup>6</sup> Steven D. Clement and Donna Ayers, *Leadership for the 1970s: A Matrix of Organizational Leadership Dimensions*, Army Leadership Monograph Series 8 (Fort Benjamin Harrison, IN: Army Administrative Business Center, 1976).

<sup>7</sup> Army Training and Doctrine Command (TRADOC) Pamphlet 350-70-7, *Army Educational Processes* (Fort Eustis, VA: TRADOC, January 9, 2013), 13–14.

<sup>8</sup> Benjamin S. Bloom, ed., *Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook I: Cognitive Domain* (New York: David McKay Company, 1956).

<sup>9</sup> Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01E, *Officer Professional Military Education Policy* (Washington, DC: The Joint Staff, May 29, 2015).

<sup>10</sup> *Ibid.*

<sup>11</sup> Executive research within the Army is reviewed in Stephen J. Zaccaro, *Models and Theories of Executive Leadership: A Conceptual/Empirical Review and Integration* (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1996).

<sup>12</sup> Thomas O. Jacobs, *Executive Leadership: The Competitive Edge* (Washington, DC: National War College, 2009).

<sup>13</sup> TRADOC Pamphlet 525-3-1, *The U.S. Army Operating Concept: Win in a Complex World* (Fort Eustis, VA: TRADOC, October 7, 2014), 8–16, available at <[www.g8.army.mil/pdf/army\\_operating\\_concept\\_tp\\_525-3-1\\_7oct2014.pdf](http://www.g8.army.mil/pdf/army_operating_concept_tp_525-3-1_7oct2014.pdf)>.

<sup>14</sup> As an important caveat, though, this article's focus on conceptual capability is not intended to reduce the importance of either technical or interpersonal skills. Skeptics often argue that an excessive focus on cognitive ability would select highly intelligent but less socially and emotionally fluent individuals as future general officers (for fans of the television situational comedy *The Big Bang Theory*, Dr. Sheldon Cooper comes to mind). However, this counter argument forgets that some of the great general and flag officers (for example, George C. Marshall, Dwight D. Eisenhower, Chester W. Nimitz) were men who possessed remarkable skills in all three of these domains. In parallel with advances the joint force is making in the development of its leaders' technical and interpersonal skills, it should also focus on the advancement of conceptual skills.

<sup>15</sup> Douglas E. Waters, "Understanding Strategic Thinking and Developing Strategic Leaders," *Joint Force Quarterly* 63 (4<sup>th</sup> Quarter 2011), 116.

<sup>16</sup> Diane F. Halpern, *Thought & Knowledge: An Introduction to Critical Thinking*, 4<sup>th</sup> ed. (Mahway, NJ: Lawrence Erlbaum Associates, 2003), 6.

<sup>17</sup> Teresa M. Amabile, *Creativity in Context: Update to the Social Psychology of Creativity* (Boulder, CO: Westview Press, 1996), 37–38.

<sup>18</sup> Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Doubleday, 2006), 6–7.

<sup>19</sup> The concept of thinking in time was originally described by Neustadt and May, and later classified by Jeanne Liedtka as one of the five elements of strategic thinking. See Richard E. Neustadt and Ernest R. May, *Thinking in Time: The Uses of History for Decision Makers* (New York: The Free Press, 1986); and Jeanne M. Liedtka, "Strategic Thinking: Can It Be Taught?" *Long Range Planning* 31, no. 1 (1998), 123.

<sup>20</sup> One scholar argues that the responsibility of each level of leadership is to narrow the focus and responsibilities of each lower organization, thereby allowing more junior leaders to be more narrowly oriented than those at more senior levels.

<sup>21</sup> Stephen J. Gerras, *Thinking Critically about Critical Thinking: A Fundamental Guide for Strategic Leaders* (Carlisle Barracks, PA: U.S. Army War College, August 2008), available at <<http://ssl.armywarcollege.edu/dclm/pubs/CT%20Paper%20AY10.docx>>.

<sup>22</sup> Elliott Jaques, *Requisite Organization: A Total System for Effective Managerial Organi-*

*zation and Managerial Leadership for the 21<sup>st</sup> Century* (Arlington, VA: Cason Hall, 1996).

<sup>23</sup> CJCSI 1800.01E, *Officer Professional Military Education Policy*, Enclosure E; A-2, A-3, and Enclosure E. Endnote encompasses paragraph.

<sup>24</sup> TRADOC Pamphlet 350-70-14, *Training and Education Development in Support of the Institutional Domain* (Fort Eustis, VA: TRADOC, March 27, 2015), 67–70.

<sup>25</sup> *Ibid.*, 62, 69.

<sup>26</sup> Army Doctrine Publication 6-0, *Mission Command* (Washington, DC: Headquarters Department of the Army, March 12, 2014), 1, available at <[https://armypubs.army.mil/epubs/DR\\_pubs/DR\\_a/pdf/web/adp6\\_0.pdf](https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/adp6_0.pdf)>.

<sup>27</sup> *U.S. Army Mission Command Training and Education Plan FY18–20* (Washington, DC: Headquarters Department of the Army, June 2017), v, A-1–A-6.

<sup>28</sup> *U.S. Army Mission Command Strategy FY13–19* (Washington, DC: Headquarters Department of the Army, June 12, 2013), 1.

<sup>29</sup> *U.S. Army Mission Command Training and Education Plan FY18–20*, A-2.

<sup>30</sup> Joint Publication 3-0, *Joint Operations* (Washington, DC: The Joint Staff, January 2017).

<sup>31</sup> Jaques, *Requisite Organization*; Thomas O. Jacobs and Elliott Jaques, "Executive Leadership," in *Handbook of Military Psychology*, ed. Reuven Gal and A. David Mangelsdorff (New York: Wiley, 1991), 431–447.

<sup>32</sup> *Summary of the 2018 National Defense Strategy of the United States.*