

Reimagining Military Pedagogy: Advancing Stratosgogy to Align Modern Educational Practices with Battlefield Evolution

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DOI Link: <http://dx.doi.org/10.6007/IJARPED/v14-i3/25966>

Published Online: 16 August 2025

Abstract

Professional Military Education (PME) is vital for developing leaders capable of navigating complex security environments, yet many military institutions still rely on outdated, fragmented training that fails to align with modern human capital development. This paper argues for the adoption of a structured and adaptable pedagogical framework to promote critical thinking, ethical leadership, and lifelong learning. It introduces Stratosgogy, an exploratory framework that integrates active learning, scenario-based training, and ethical reasoning while remaining adaptable to varied cultural and operational contexts. Drawing from global PME models, the paper addresses systemic challenges such as poor instructor training, rote learning, and the lack of continuous assessment, proposing Stratosgogy as a flexible pathway for reform and a foundation for further dialogue on modernizing military education

Keywords: Military Education, Military Education, Pedagogy, Education, Social Sciences

Introduction – The Need for a Pedagogical Framework

Within the realm of military training and education, there are several variables that have withstood the test of time and upheld the relevance of soldiers' education. Firstly, the global and regional security architectures will always be dynamic and fluid. Critical turning points in history have shaped and reshaped the conceptualizations of defence and security. The first and second world wars, the cold war and 9/11 are some of the major examples that illustrate this point. Secondly, militaries that responds and adapts quickly to these shifts in the security architecture have a higher probability of prevailing over their adversaries. These also include awareness in changes to trends in military technology and Tactics, Techniques and Procedures (TTPs). Third, military 'culture' and pronounced system of hierarchy will always take precedence in shaping the 'conduct' of the armed forces, thus decision-making and giving orders work through a pronounced chain of command. This corresponds to the importance of leadership and ethics within military organizations, and hence inculcating strong leadership values within military leaders is an infinite objective within any military training/education program. Finally, militaries are not a supra-entity from the wider social make-up of the country (or terrain) they are operating in. Therefore, cultural awareness and being adept at

identifying social and communal requirements are critical for the modern-day soldier. This corresponds to the assertion made by Rosas (2019), that due to the changing state of security affairs “the armed forces must adapt to ensure successful performance and active participation in different scenarios, across different geographical areas with a diversity of cultures”.

It is then crucial for militaries to embrace these variables and factor them into military education programs for officers at all levels. The uncertainty and complexities of contemporary warfare mean that armed forces personnel must enhance their critical thinking capacities. Hence, as how militaries need to adapt to their surroundings, so do their military education, which according to Hedlund, “refers to an academic tradition of research-based knowledge, critical analysis, abstract reasoning, and comfort with ambiguity and uncertainty, while military training refers to well-defined static knowledge and skills to conduct specific tasks” (Hedlund, 2018 pp 3). However, this paper shall delve beyond the obvious importance of military education, and instead explore the importance of having a pedagogical framework to facilitate the effectiveness and efficiencies of military education programs in achieving their objectives. The ultimate aim of this paper is to introduce a semantically and contextually appropriate ‘gogy’—Stratosgogy—tailored to the unique demands of the military domain. It seeks to emphasize the growing significance of military education and advocate for a pedagogical structure that is not only grounded in military realities but also relevant to contemporary operational needs and evolving educational practices. In their analysis of PME literature, Enstad and Hagen found that pedagogy was one of the dominant point of discussion, where it is often seen as a ‘vehicle’ for teaching other subjects. Another notable trend in the documents were those that explore the varying usage of tools as part of the pedagogy such as wargaming, storytelling and battlefield tours (2025).

The objectives of this article are to analyze overarching systemic challenges on a global scale, investigate current pedagogical methodologies, and incorporate these insights within a military framework, thus suggesting a distinctive pedagogical model that possesses universal applicability to military academies, that is adaptable for universal application across military institutions, while remaining sensitive to cultural and contextual particularities.

A search into literature on global military education practices reveals a plethora of challenges regarding pedagogical practices. It is acknowledged that there are differences in terms of national and regional security settings, strategic objectives and cultural scenarios that require different pedagogical approaches. This article instead argues that the adoption of a structured pedagogical framework in Professional Military Education (PME) is essential to address systemic challenges such as outdated teaching methods, insufficient instructor training, and rigid hierarchical structures, ultimately fostering critical thinking, ethical leadership, and adaptability in military personnel. This generic pedagogical framework is developed based on a synthesis of global best practices, interdisciplinary research, and evidence-based educational theories, tailored to address the unique demands of military training while remaining flexible enough to adapt to diverse national, regional, and cultural contexts. By integrating principles of active learning, scenario-based training, ethical reasoning, and leadership development, this framework aims to bridge the gap between traditional military education and the evolving needs of modern warfare, ensuring that military personnel are not only operationally proficient but also capable of navigating complex, dynamic, and often

ambiguous security environments. This review paper does not seek to offer a universal solution to the persistent shortcomings of military education, but rather aims to stimulate further discussion and research on the concept of Stratosgogy.

Methodology

This review article primarily employs a qualitative literature analysis for the data collection and the basis for the argument in proposing a novel term specifically to put more emphasis on the field of military pedagogy. The author specifically chose this method as military pedagogy is a highly dynamic subject that is constantly experiencing change not only due to the changing nature of warfare but also the ever progressive science of pedagogy and technology. Hence, it is important to dissect the available literature on military education and pedagogy, especially past literature reviews to highlight the common issues, challenges and trends.

Enstad and Hagen (2025), in their significant scoping review, emphasize a lack of a unifying discourse on defence education and call for the development of an international scholarly dialogue. Their writing marks a critical step toward addressing the intellectual fragmentation within the field—an effort this article seeks to build upon and further advance.

Framing Military Pedagogy

Effective pedagogy integrates various instructional techniques, including active learning, experiential learning, and competency-based education, to ensure students acquire both theoretical knowledge and practical skills. It is incumbent upon institutions to be aware that pedagogy must benefit the learners' needs and not merely at the instructors' personal preferences. Juhary (2017) explored the distinctions between pedagogy, andragogy, heutagogy, and military pedagogy, highlighting how the first three "gogies" represent progressive stages of learning—from teacher-directed instruction to self-directed and discovery-based approaches—while military pedagogy stands out as a blended form of learning tailored to the specific needs and contexts of military training.

This paper however would like to contend that military pedagogy is a unique concept altogether, warranting its own term, "Stratosgogy", a combination of the Greek words 'Stratos' (military) and gogy (lead / guidance). Apart from it giving the concept of military pedagogy a semantic appropriation, its relevance lies in the exclusivity of military culture and functionality. As stated in Juhary's paper, military learners constantly need to balance between following instructions and exploring their curiosity and desire to learn. This distinct context also extends and is affected by the 'seniority' or the stage of career the military personnel is in. "Stratosgogy" is therefore a blend of pedagogy (for the junior officers), andragogy and heutagogy (for the senior echelon). Military culture and hierarchy significantly shape the dynamics of the military classroom, particularly when instructors or directing staff hold higher ranks than the students, influencing the learning environment and interactions. Kozina emphasized the profound, yet often unspoken, impact of 'hidden' curricula within military school environments, highlighting how these unofficial elements subtly shape students' behaviors, belief systems, and cognitive frameworks (2021).

Thus, stratosgogy (military pedagogy) have a unique dilemma between striving for progress while simultaneously adhering to the strict codes of military norm. Rubiano highlighted this

when discussing on the implementation of socio-humanistic pedagogies within military education without intervening with military tradition, where she urged the consideration of John Dewey's duality of imagination and policy. Dewey emphasizes the importance of imagination in driving moral and social progress, urging educators and institutions to balance tradition with creative, empathetic approaches to avoid stagnation and promote genuine ethical growth. In military education, this means integrating socio-humanistic values while respecting the institution's structure, using imagination to bridge the gap between tradition and progress. Rubio also acknowledged the multicultural and multi-intellectual make-up of students within military education, and the challenges of developing pedagogical frameworks in the midst of such heterogeneity. To mitigate this, Dewey calls for a flexible and coherent theory of experience in order to establish an operational pedagogy that caters to the diverse learner needs. To further facilitate this framework, he advocates for a more reflexive form of evaluation rather than standardized tests, and that it is a dynamic concept requiring constant 'reformulation and reconstruction', making pedagogy as a 'constant experimentation'. (Rubio, 2019)

Juhary builds on Dewey's theory of experience to argue that military pedagogy is fundamentally rooted in the principles of constructivism. According to this perspective, learners are active participants who continuously integrate new information with their prior knowledge and experiences. This approach emphasizes critical thinking, hands-on learning, and purposeful education, moving away from traditional rote memorization methods (Juhary, 2015). A practical example of this can be seen in the Finnish military's adoption of the flipped classroom model. In this model, learners engage with instructional materials independently before participating in instructor-led sessions. This structure fosters deeper discussions, collaborative problem-solving, and experiential learning, all of which align with constructivist principles.

Central to constructivism is the idea of self-directed, autonomous learning, where students take ownership of their educational journey. Instructors, in this framework, act as facilitators rather than sole sources of knowledge, guiding learners as they construct their own understanding (Kosonen et al., 2023). This approach resonates with the broader argument that effective military training environments must integrate insights from cognitive psychology and education. As Vogel-Walcutt (2013) highlights in a comprehensive grounded theory study, "instructional strategies must be rooted in a deep understanding of human cognitive architecture, with trainees' prior knowledge serving as the cornerstone of effective instructional design." Together, these perspectives underscore the importance of designing military pedagogy that is learner-centered, experiential, and grounded in the cognitive and constructivist principles that drive meaningful learning.

Initially, as noted by Annen (2007), military pedagogy (or Stratosgogy) appeared to function only peripherally within broader educational frameworks. However, upon closer analysis, and supported by the 'amplifying factors' identified by Alan Beyerchen, it becomes evident that the evolution of warfare has closely mirrored advancements in various scientific disciplines. This progression can be traced through four major global conflicts: World War I, characterized as the chemists' war; World War II, the physicists' war; the Cold War, the information researchers' war; and the post-9/11 era, which has shifted toward a social scientists' war. This trajectory demonstrates that warfare has increasingly delved into the complexities of human

and social nature, underscoring the necessity of integrating social science into military education.

Indeed, the core principle of pedagogy, as articulated by its proponent Herbart, emphasizes that a learner's fulfillment stems from their relationship with society and their ability to contribute meaningfully to the social structure (Juhary, 2017). This principle reinforces the idea that military education cannot afford to marginalize the social sciences, as understanding human behavior, societal dynamics, and cultural contexts has become integral to modern warfare and strategic operations. Juhary further mentioned that despite the inconclusiveness of its history, military pedagogy noticeably garnered attention since 1994 due to the increasing importance of military training and education (2015). In the past few decades since the interest in military pedagogy took off, scholars have attempted to define and frame it. The table below shows these different schools of thoughts.

No.	Author / Scholar (Year)	Argument
1.	Toiskallio (2003)	military sciences that look into the philosophies, conceptions, visions, doctrines, aims, approaches, and technologies of military education and training
2.	Schunk and Nielssen (2002)	The task of military pedagogy is to solve the problems connected with learning in relation to military education and training. Characteristics include: (a) Adaptability and Proficiency: Military personnel must be willing to cooperate and adapt during training to enhance their skills and knowledge acquisition. (b) Survival and Work in Extreme Conditions: Personnel are trained to operate effectively under harsh and challenging environments. (c) Duty Execution: Personnel must perform their responsibilities efficiently and in accordance with their roles. (d) Adult Responsibilities: Military personnel are treated as adults tasked with critical duties as part of the armed forces. (e) Instructors' Dual Roles: Instructors are not just educators but also serve as administrators or tactical commanders, being military personnel themselves.
3.	Falk (2008)	(a) Military Setting: Military pedagogy refers to teaching and learning that takes place within a military environment. (b) Military Purpose: It is specifically applied to situations where the teaching and learning are aimed at achieving military objectives.
4.	Caforio (2000)	1. Divergent Model: Focuses on equipping military personnel with the specific skills and knowledge required to succeed in missions, emphasizing practical military expertise. 2. Convergent Model: Emphasizes academic training through a structured curriculum, enabling officers to function effectively both within the military and in civilian society. This model allows officers to receive education from civilian institutions.
5.	Encyclopedia of Military Science (highlighted by Szabo, 2013)	Theory of military training and education, the applied science of pedagogy (science of education), military field that deals with the education, training and combat training of soldiers

6.	Belyakov et al (2024)	Military pedagogy refers to the specialized field of education and training within military institutions, focusing on the development of teaching methods and practices tailored for military personnel
7.	Makhkamov (2020)	Military pedagogy is a branch of pedagogical science, the military pedagogical process of education and training of both military personnel and military teams in the periods of preparation for the successful conduct of hostilities and military professional activity [1, p. 6].
8.	Juhary (2017) and (2019)	In her paper on constructivism as roots of military pedagogy, she adapted to the definition forwarded by Falk (2008), where teaching and learning are for military purposes and that the conduct of education and training are held in a military setting. Military Pedagogy in Malaysia has 3 functions: 1. it provides a concept for teaching and learning in a military setting 2. it provides a philosophy for teaching and learning, focused on building the personalities and characters of future officers 3. it can be considered an approach to teaching and learning, especially in practical areas including classroom layout, teaching methods and the use of various learning theories and technologies (such as blended learning).
9.	Gorodianska (2021)	A complex socio-psychological phenomenon that involves purposeful, motivated, and organized educational activities aimed at preparing military specialists for both peacetime and combat conditions. It ensures the intellectual, professional, and moral-psychological development of personnel through structured training programs, interactive learning, and continuous professional growth. Key characteristics include: (a) Combat-Oriented Learning – Focuses on training personnel in realistic warfare conditions. (b) Leadership and Command Development – Equips officers with decision-making, tactical planning, and leadership skills. (c) Psychological Resilience Training – Strengthens emotional endurance, adaptability, and moral fortitude. (d) Interdisciplinary Knowledge – Integrates military science, technology, ethics, and operational strategy. (e) Lifelong Learning Approach – Encourages continuous education and professional development. (f) Interactive and Digital Methods – Utilizes modern information technologies and distance learning.
10.	Malki and Malki (mentioned in Juhary)	Military Pedagogy describes the demand to change or transform Soldiership in order to make progress instead of repeating the habits of the past.

Upon analysis of the definitions provided by scholars in Table 1, military pedagogy (Stratosgogy) can be defined as the specialized field of education and training within military institutions, focused on developing teaching methods and practices tailored for military personnel. It combines practical skills (e.g., combat readiness, survival in extreme conditions) with academic and leadership training, emphasizing adaptability, discipline, and moral-psychological resilience. Rooted in a military setting and purpose, it integrates interdisciplinary knowledge, modern technologies, and lifelong learning to prepare personnel for both peacetime and combat roles. It also aims to transform soldiers by fostering leadership, decision-making, and character development, ensuring they can meet evolving challenges while upholding military objectives.

Additionally, it can thus be drawn that military pedagogy possesses the following characteristics:

1. **Purpose-Driven Learning** – Focused on achieving **military objectives** in both peacetime and combat scenarios (Falk, 2008; Juhary, 2017).
2. **Adaptability and Proficiency** – Emphasizes the ability to **adapt to dynamic environments** and continuously improve skills (Schunk & Nielssen, 2002; Malki & Malki).
3. **Leadership and Command Development** – Develops **decision-making, tactical leadership, and command skills** for operational effectiveness (Gorodianska, 2021).
4. **Psychological and Moral Resilience** – Strengthens **emotional endurance, ethical judgment, and moral fortitude** under extreme conditions (Schunk & Nielssen, 2002; Gorodianska, 2021).
5. **Integration of Theory and Practice** – Balances **academic knowledge** with **practical military expertise** through both convergent and divergent educational models (Caforio, 2000).
6. **Lifelong Learning Orientation** – Encourages **continuous professional development** beyond initial training, fostering lifelong learning habits (Gorodianska, 2021).
7. **Instructor's Dual Role** – Military instructors act as both **educators and leaders**, often serving in administrative or tactical roles (Schunk & Nielssen, 2002).
8. **Contextual and Environmental Relevance** – Tailored to the **military environment**, addressing operational realities, combat readiness, and strategic demands (Falk, 2008; Toiskallio, 2003).
9. **Interdisciplinary Approach** – Incorporates **military sciences, technology, ethics, and leadership studies** to provide a holistic educational experience (Toiskallio, 2003; Gorodianska, 2021).
10. **Transformational Focus** – Aims to **transform military culture** and promote progressive thinking rather than relying on outdated practices (Malki & Malki)

The author further argues that these characteristics along with the principles of progressive pedagogical practices forms the basis of any workable military pedagogical framework. The new Malaysian Chief of Defence, in his keynote address reiterated that professional military education that is rooted in doctrine / viable framework will provide the strong foundation for producing personnel who are competent, technically and tactically efficient, and effective in leveraging technology when serving in a variety of setting (IG UPNM, 2025). It is also important to highlight, that the need for a pedagogical framework stem from the critical requirement to overcome the lingering issues surrounding military education.

Mitigatinig Military Education Challenges through Frameworks

Claire Goode, in her literature review on the best practice principles for PME provides a comprehensive coverage of the main issues surrounding PME. She first highlighted that issues found in literature include tensions between the military, academic and ethnic cultures, issues revolving around conformity and compliance versus leadership and individualism, and the difference between education and training (2019). She also stressed the scarcity of research into the effectiveness of PME and curriculum design and course content. Ultimately, as argued by Lamb & Porro, that the traditional approach to PME needs a reform and that a substantial amount of literature talked about the need to review PME. Her article then proceeds to mention pressing issues such as the monological and traditional approach to the learning of personnel, the lack of emancipative, critical thinking amongst military graduates,

hierarchical and cultural inflexibility, poor curriculum design and development and the importance of diversity within perspectives and cultures. Despite the thorough review, this paper would argue that her analysis shed light on a significant gap: the absence of a foundational pedagogical framework within military institutions. This omission underscores the critical need to recognize and address the importance of structured pedagogical approaches in military education. According to Juhary (2019), it is paramount that nations take on a more serious stance on embracing military pedagogy, since it directly influences military education and training. Furthermore, an environmental scan on the trends in general and military pedagogy in Canada revealed several key themes that includes the need for new pedagogies, a gap in pedagogical foundation and little recognition for the value of pedagogy (Scoppio & Covell, 2016).

Erik Hedlund's piece on a generic pedagogical model in the European context provides a more functional suggestion into how a workable model should entail. Despite the diverse locale each military operates in, the fact that nations will converge together for international exercises and operations meant there should be some aspect of harmonization within military education, such as a common concept of curriculum content. He added that a generic model will be an "effective tool in transforming officer education from traditional nonacademic vocational training based on practice-based knowledge and proven experience to professional vocational education based on academic knowledge, research, and critical thinking" (2018). An effective model, he opined, should equally consist of both practice-based knowledge and research-based academic knowledge. The author agrees that both are paramount in the transformation of traditional education to a more professionalized brand of military learning, especially by endorsing academic knowledge, research and critical thinking along with practical applications to, in Hedlund's words, develop a more 'holistic learning' (ibid). However, the author argues that despite advocating for a generic, cross-cultural model, other scholars would advocate for a more tailor-made version. Juhary, for instance, on military pedagogy in the Malaysian context, stated that the pedagogy also heavily emphasizes character building, *fikrah* (nature), *amal* (practices) and *akhlak* (attitude). She stated the subtle difference between the European and the Malaysian brand of pedagogy, where despite the internationalization of education, graduates must build a solid spiritual and socio-cultural foundation (2019).

At the same time, an effective pedagogical science should not undermine the importance of the role of instructors / educators within its mechanism. The study by Scoppio and Covell (2016) revealed that educational challenges within the Canadian military system stems from a lack of and resistance of educators towards pedagogical innovations. The lack of support systems and the recognition of their changing roles amidst recent trends in the education landscape further exacerbates the learning dilemma. Rosas also supports the notion that a strong pedagogical base lies in the competency of its educators, and highlighted the continuous didactic and pedagogical training for the teachers at the Colegio Militar de la Nacion of the Argentine Republic. She also added that the educators themselves must be immersed in the concept of lifelong learning and pursue higher qualifications to ensure the competency of its military education (2019).

A prominent and recurring theme throughout the literature is the critical importance of adapting to, adopting, and mastering advancing technologies. This goes beyond merely

acquiring cutting-edge or state-of-the-art tools; it also involves addressing the evolving needs of a new generation of officers who are more immersed in and reliant on digital technology and multimedia compared to their predecessors. These "digital natives" (Juhary, 2019; Rubiano, 2019) are accustomed to multitasking and demand a distinct pedagogical approach tailored to their unique learning styles and expectations. These digital natives, or modern conscripts as argued by Kosonen et al., have inspired a modern pedagogical paradigm shift in the Finnish Defence Forces (2023). This shift is evident in the Finnish military's extensive integration of Advanced Distributed Learning (ADL) platforms, such as Moodle-based e-learning environments, which enable flexible, self-paced learning and complement flipped classroom methods to create a more interactive and learner-centered military education system.

However, as Lieutenant Colonel Thomas Menath reminds us, the significant advancements in military technology do not diminish the importance of humanities in battle (2018). This principle—that technological progress must coexist with enduring humanistic values—is reinforced by Scoppio and Covell's (2016) study, which warns against prioritizing dynamic learning technologies at the expense of solid pedagogical foundations. Together, these insights underscore the necessity of integrating both innovation and tradition into military education: while technology equips officers with modern tools, the humanities and structured pedagogy ensure they retain the ethical grounding, critical thinking, and cultural awareness required to lead effectively in complex, morally fraught environments.

The Pedagogical Guiding Framework

Based on the literature analysis done above, the author hereby proposes a model of 'stratosgogy', based on the challenges, best practices and technological innovations associated with military pedagogy. It needs to be stressed that such a model is an adaptive framework that is meant to be aligned with not only contemporary pedagogical practices but also the needs of the modern army. As mentioned in the previous section, the military must be able to strike the paramount balance to ensure that it leverages on technology, but not allow it to completely overtake the conduct of business to the point it neglects ethics and reduces soldiers' technical capacities. The proposed model essentially consists of two parts, namely the foundational pillars of Stratosgogy, which are the underlying philosophies and guiding principles that define its core ideology, and the structural components, the practical and operational elements that suggests the design and execution of PME. Below is the proposed model.

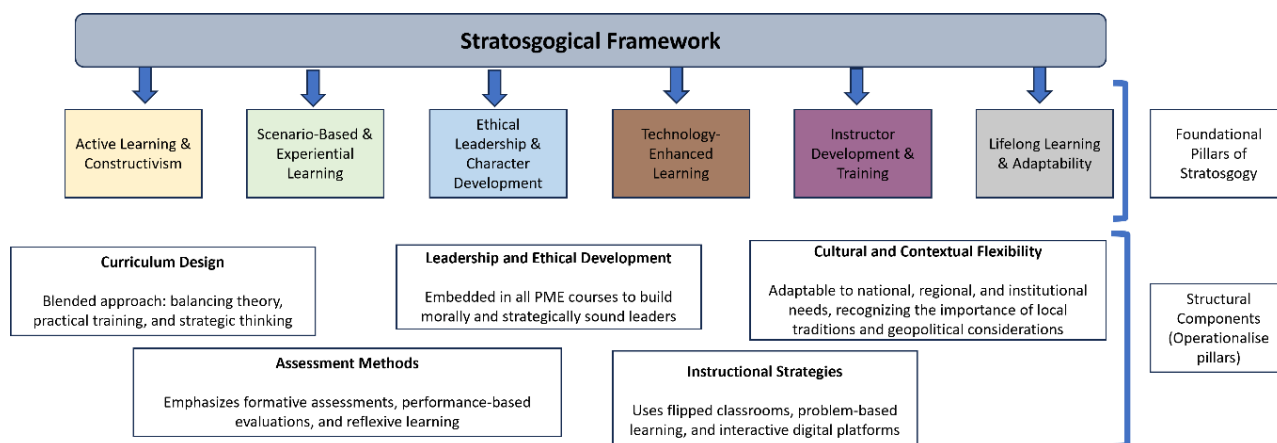


Figure 1 The Proposed 'Stratosgogical' Framework

Source: Author

Conclusion and Further Research

The Stratosgogy Framework represents a necessary evolution in Professional Military Education (PME), addressing the complexities of modern warfare, the diverse social makeup of military students, and the rapid pace of technological advancement. As global security challenges grow increasingly dynamic, PME must evolve to develop adaptable, ethical, and operationally proficient leaders who can navigate uncertainty with confidence.

This framework recognizes that military education is distinct from civilian education, requiring an integrated approach that blends pedagogy, andragogy, and heutagogy. Military learners range from trainees developing foundational competencies to seasoned officers engaging in self-directed strategic learning, necessitating a model that supports lifelong learning, ethical reasoning, and scenario-based decision-making.

While institutional resistance and resource constraints pose challenges, the long-term benefits of a structured pedagogical framework—enhanced decision-making, improved leadership, and greater adaptability—far outweigh these obstacles. The integration of advanced learning technologies, such as flipped classrooms, wargaming, and AI-driven simulations, provides unprecedented opportunities to modernize PME while maintaining its core mission of preparing personnel for high-stakes environments.

Furthermore, this model is not rigidly universal but instead contextually adaptable, allowing PME institutions to customize curricula based on national, regional, and operational needs. The Stratosgogy Framework provides a structured yet flexible approach that ensures military education remains responsive to evolving security landscapes, reinforcing the imperative that PME must be as agile and forward-thinking as the military profession itself.

Beyond the military, this framework also offers valuable insights for other high-stakes professions, such as emergency response, law enforcement, and crisis management, where adaptability, ethical leadership, and rapid decision-making are equally crucial. As warfare and global security continue to shift, PME must remain a dynamic force for developing the next generation of military leaders, ensuring they are not only prepared for today's challenges but capable of shaping the future of defense and security.

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