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**EDUCATION AS COMPONENT OF A COMPREHENSIVE
SECURITY APPROACH**

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Abstract:

The aim of this paper is to demonstrate that education is the unifying foundation for all pillars of comprehensive security, including economic resilience, technological superiority, military readiness, and democratic cohesion. The paper examines the direct national security implications of declining educational standards, from recruitment crises in technologically advanced militaries to the erosion of civic literacy, which leaves nations vulnerable to disinformation and internal division. It concludes that fragmented, incremental reforms are insufficient. Instead, a deliberate, unified, and sustained national effort is required, built on a series of concrete policy recommendations. This paper makes the case for a fundamental reframing of education as a core national security investment, essential for securing a nation's future in an increasingly complex and competitive world.

Key words: education, comprehensive, security, approach, resilience,

1. Introduction

A robust and comprehensive education system, with an emphasis on fostering critical thinking, is not merely a component of national well-being but the foundational pillar of national security, essential for cultivating the cognitive agility, democratic resilience, and strategic adaptability required to navigate an increasingly complex and uncertain global landscape.

In 1957, the successful launch of the Soviet satellite Sputnik 1 sent shockwaves through the United States, igniting fears that the nation was falling behind its Cold War adversary in the critical arenas of science and technology. The American response was not primarily military; it was educational. The passage of the National Defense Education Act of 1958 signaled a national consensus: to secure the nation, America had to first educate its citizens. [1] This landmark legislation resulted in the allocation of unprecedented federal funding into science, technology, engineering, and mathematics (STEM) education, fundamentally reshaping American schools and universities. Over half a century later, we are faced with new, more complex array of global challenges, in which the information overload, the ubiquity of social media, the fast pace of the modern life and the emergence of artificial intelligence severely impact's people's ability to construct an accurate image of the reality and makes us vulnerable to malign influence. This influence may originate from commercial actors interested in our purchasing power, but also from state and non-state actors interested in influencing and controlling our minds, as part of cognitive warfare. In this context, once again, the effectiveness of the educational system in providing the population with the necessary tools to resist such influences has emerged as a paramount national security concern.



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The very definition of national security has expanded far beyond the traditional military based approach, as in modern times a nation's security is measured not only by its battalions and battleships but also by the dynamism of its economy, the analytical prowess of its citizens, the resilience of its democratic institutions, and the strategic foresight of its diplomats. Economic competitiveness serves as the bedrock of national power, funding defense and enabling global influence. Technological superiority, particularly in fields like cybersecurity, artificial intelligence, and biotechnology, defines the modern battlefield. Meanwhile, internal social cohesion and a shared commitment to democratic values are the bulwarks against foreign disinformation and internal division, which have become potent weapons in the arsenal of modern adversaries. In this interconnected landscape, a well-educated citizenry is not a luxury; it is the central pillar supporting every one of these strategic imperatives.

This paper argues that an education system prioritizing the cultivation of critical thinking is the most vital component of modern national security. The failure to develop these core cognitive skills in the populace—from foundational instruction to advanced postgraduate research—directly undermines a nation’s ability to innovate economically, adapt technologically, field an agile military, maintain social cohesion, and lead on the world stage. By examining the links between education and the core domains of national power, this analysis will demonstrate that investing in schools, universities, and students is a fundamental and effective long-term strategy for ensuring the security and prosperity.

2. Education as part of a comprehensive security approach

A nation’s economic strength is not merely a source of funding for its military; it is a vital societal function and a cornerstone of a comprehensive security strategy, in a whole-of-society approach, ensuring the continuity of critical functions against a wide spectrum of threats, including economic coercion, supply chain disruptions, and cyberattacks on financial infrastructure. Comprehensive security is the result of the integrated and seamless synergy between several pillars: psychological resilience, effective leadership, a nation’s military power, internal security, a reliable economy, security of infrastructure and supply chains and the functional capacity of the population and services. [2]

A nation’s economic strength is not merely a source of funding for its military; it is a vital societal function and a cornerstone of a comprehensive security strategy. This modern security paradigm extends beyond traditional defense to encompass a whole-of-society approach, ensuring the continuity of critical functions against a wide spectrum of threats, including economic coercion, supply chain disruptions, and cyberattacks on financial infrastructure. In this context, economic resilience—the ability to anticipate, withstand, and adapt to such shocks—becomes a primary national security objective. This resilience is not built on infrastructure or capital alone; it is fundamentally dependent on the cognitive skills and adaptability of the nation's citizenry.

An educated populace, trained in critical thinking and complex problem-solving, is the most crucial asset for ensuring this *economic continuity*. While a traditional view emphasizes a skills gap in specific technical fields, a comprehensive security perspective reveals a more profound need for a workforce capable of analytical reasoning and creative adaptation. Such individuals can pivot between industries, innovate in response to resource scarcity, and develop novel solutions to unforeseen economic challenges. An education system that prioritizes critical inquiry prepares citizens to be active participants in a resilient economy, capable of collaborating across public, private, and non-governmental sectors to identify vulnerabilities and build redundancies. Economic resilience is built on a foundation of human capital and an educated workforce, populated by



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engineers, logisticians, economists, and skilled technicians, is essential for designing, building, and maintaining critical infrastructure and secure supply chains. Beyond specialization, a general education that fosters critical thinking and adaptability allows a workforce to innovate in response to economic coercion or disruption, retooling industries and rerouting supply lines to ensure the continuity of the national economy.

The mobilization of all national resources during a crisis goes beyond the simple mobilization of civilian industry for wartime production, as it should include the population's *psychological resilience* and its ability to function cohesively under extreme stress. In the battlefield of information, where hybrid threats, disinformation, and psychological warfare aim to fracture societal trust and paralyze decision-making long before any physical conflict begins, the primary defense against such tactics is a citizenry educated to think critically. Such an education equips citizens to discern credible information from propaganda, to question narratives that prey on emotion and bias, and to understand the historical and cultural contexts behind geopolitical events. This is not a passive skill, but an active form of defense, acting as a vaccine that inoculates the public against manipulation and fosters the unity required for a collective response in a crisis. Educational disciplines often dismissed as "soft"—such as history, civics, philosophy, and media literacy—are, in fact, central to building this cognitive armor. They teach students to evaluate sources, recognize logical fallacies, and appreciate diverse perspectives, thereby strengthening the very fabric of social cohesion that adversaries seek to unravel. By shifting the educational focus from memorization to a culture of critical inquiry, a nation moves beyond preparing for conventional warfare and actively builds the intellectual and psychological resilience.

The whole-of-society coordination demanded by comprehensive security requires *leaders* who can navigate immense complexity and make sound judgments under pressure. Higher education in fields such as public administration, strategic studies, and international relations is crucial for developing this expertise, while at a more fundamental level, an education grounded in critical thinking and ethical reasoning cultivates leaders who can analyze multifaceted problems, anticipate cascading consequences, and inspire public trust during a crisis.

The *modern military* requires more than just technically proficient soldiers, it needs adaptable, critical thinkers. An educated military force is better equipped to operate sophisticated technological systems, make autonomous and ethical decisions in the fog of war, and develop innovative strategies to outmaneuver adversaries. From the non-commissioned officer on the ground to the highest levels of the Pentagon, the ability to think critically is the ultimate force multiplier.

The readiness and capability of a nation's military are directly and inextricably linked to the educational attainment of its population. In an era of complex, rapidly evolving threats, the traditional metrics of military power—such as the number of troops or the sophistication of hardware—are insufficient. The decisive advantage now lies in the cognitive abilities of service members at every level, from the front-line soldier to the strategic planner. An education system that fails to produce a sufficient pool of qualified recruits and that neglects the cultivation of critical thinking skills represents a direct threat to the development and sustainment of a nation's defense capabilities.

While there are no comprehensive European-wide statistics specifically tracking how literacy levels affect military conscription or recruitment, there is substantial evidence from multiple sources showing that low literacy and educational deficits are a significant barrier to military readiness in Europe. For instance, the numbers regarding the literacy level of army recruits in the UK for the period 2016-2019 are extremely worrying, with 4,240 soldiers having the reading ability of nine to 11-year-olds and fifty had literacy levels of a five to seven-year-old, in direct contravention of



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established military rules [3], in the context of a decrease in the overall level of literacy in the European societies, with 18-28% of adults in major European countries having literacy levels incompatible with modern military service requirements [4]

A direct impact of this situation is that military commanders will have to work with soldiers who cannot read basic instructions, and many countries are experiencing unprecedented recruitment and retention crises.

The contemporary battlefield is characterized by ambiguity, information overload, and the need for decentralized decision-making. As such, the most critical attribute for a modern service member should not be blind obedience but disciplined initiative, the ability to make sound judgments and act decisively, even when orders are no longer applicable to the situation [5]. This requires a high degree of critical thinking, as military leaders at all levels must be able to analyze complex situations, identify biases in their own thinking, evaluate conflicting information, and anticipate the second- and third-order effects of their actions, given that "critical thought becomes an essential precursor to physical defense tactics, as uninformed action itself is a risk factor" [6] An education system that emphasizes problem-solving, analytical reasoning, and intellectual agility is therefore a direct contributor to combat effectiveness.

The development of future defense capabilities, from cyber warfare and artificial intelligence to space operations and logistics, is entirely dependent on a highly educated workforce. This goes beyond the uniformed military to include the civilian scientists, engineers, and technicians in the defense industrial base, with the higher education institutions as the primary engine for this talent, providing not only the specialized technical knowledge but also the broad, interdisciplinary perspective required for innovation. Professional Military Education (PME) and civilian graduate programs are essential for cultivating strategic leaders who can manage complexity, develop long-range plans, and ensure the military as an institution can adapt faster than its adversaries. Lifelong learning, through continuous professional dialogue, dedicated reading, and formal coursework, is no longer a personal development goal but a strategic necessity for maintaining a cognitive edge throughout a military career. [5]

A nation's internal security depends on a professional class of law enforcement, intelligence analysts, and emergency managers who can understand and mitigate complex domestic threats. Education in sociology, psychology, and data analysis allows these professionals to identify patterns of radicalization, de-escalate community conflicts, and manage crises effectively. Furthermore, a broadly educated and civically engaged populace is more likely to trust and cooperate with security institutions, fostering a safer society from the ground up.

A nation's security is not solely dependent on its ability to counter external threats; it is equally reliant on its internal strength and cohesion. A significant and growing threat to national security now comes from within, fueled by deep social and political polarization, the pervasive spread of foreign-led disinformation campaigns, and a tangible decline in shared democratic values. These internal divisions can be exploited by adversaries to weaken the nation's resolve, erode trust in democratic institutions, and paralyze decision-making, making a country vulnerable without a single shot being fired. In this context, a well-informed and engaged citizenry is the first and most crucial line of defense.

Civic education should not be viewed as an academic subject but a critical tool for building resilience against cognitive warfare and manipulation. By teaching the mechanics of government, the rights and responsibilities of citizenship, and the importance of critical thinking, civic education equips citizens to identify disinformation, engage in civil discourse, and maintain faith in the democratic process. It fosters a shared understanding of the nation's constitutional republic and the



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values of tolerance and diversity that bind a pluralistic society together, thereby strengthening the social fabric against attempts to tear it apart.

The pillar of *ensuring the continuity of governance and of the essential services* is directly dependent on a sound education system, as a well-educated population is a healthier, more self-sufficient, and more capable population. This is related to health literacy, which is critical during pandemics and in order to resist manipulation, to financial literacy that contributes to a more stable personal funds management, to digital literacy which increases the resilience in the face of cyberattacks and disinformation, but also for ensuring the trust of the population in the authorities in case of crisis and the ability of the population to remain self-sufficient until the authorities can respond.

In an interconnected world, national security is inseparable from *global alliances and effective diplomacy*. An education system that emphasizes foreign languages, cultural studies, and international relations creates a cadre of diplomats, intelligence officers, and global business leaders who can navigate complex international environments, build trust with allies, and advance the nation’s interests peacefully.

As the modern warfare and national security are increasingly defined by *technological supremacy*, the current and future battlefields are a complex, multi-domain environment where dominance in artificial intelligence, quantum computing, space, and cyberspace are as critical as traditional military capabilities. This technological reliance creates an urgent demand for scientists, engineers, and technologists, but also increases the need for enhanced education in this field for military personnel, across all levels of command. The increased use of the Emerging and Disruptive Technologies in the battlefield is recognized through the adaptations of doctrines (such as the shift from joint operations towards multi domain operations), but the doctrines need to be implemented and this cannot be done without a properly educated workforce.

3. Policy Recommendations and the Path Forward

The preceding analysis demonstrates that addressing these multifaceted challenge requires a deliberate, unified, and sustained national effort that moves beyond fragmented initiatives and treats education as the strategic imperative it is. The path forward for any modern state must be built on a series of concrete, actionable policy recommendations detailed below, which directly address the identified weaknesses in economic resilience, technological innovation, military readiness, civic cohesion, and global competence.

The first step for any government must be to establish a high-level, cross-sector National Security Education Council, comprising senior leaders from government ministries (defense, foreign affairs, education, and economy), private industry, academia, and the military and tasked with conducting a comprehensive audit of the nation's educational system through the lens of comprehensive security. Its mandate would be to identify critical deficiencies, establish clear, measurable national goals for educational attainment in key areas, and recommend a unified national strategy. This would elevate the issue to the highest level of government and create the political will necessary for sustained, long-term reform.

In order to build resilience against internal and external threats, a nation must rebuild its foundational educational capacity, based on 2 main pillars. First, the central government should create a framework that incentivizes regional and local authorities to adopt and implement robust, evidence-based standards for civic education, media literacy, and critical thinking. These standards should be treated as a national priority, encouraging the integration of critical thinking skills across



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all subjects. This provides a first line of defense against the disinformation that erodes democratic cohesion and weakens the state from within.

Secondly, the recruitment crises observed in modern, technologically advanced militaries highlight that basic literacy is a non-negotiable prerequisite for any effective defense force or skilled workforce. National policy must address the root causes of declining literacy rates, supporting early childhood education and evidence-based reading instruction to ensure that every student graduates with the fundamental ability to read, comprehend, and analyze complex information.

Technological superiority requires a strategic and unified approach to STEM talent development. A government, in partnership with its defense and technology industries, should formally adopt and fund the creation of a nationwide network of regionally anchored technology education ecosystems. The paths forward refer to the creation of a central organization to provide national oversight and local bodies to manage regional efforts, ensuring alignment between educational institutions and the specific workforce needs of nearby military installations and high-tech industries, providing funding to scale proven public-private partnership models that integrate secondary school, higher education, and industry experience and offering tax incentives and preferential treatment in government contracting for firms that actively participate in these initiatives through mentorships, paid internships, and curriculum co-development.

Ultimately, the path forward requires a fundamental shift in the national mindset. Education must be reframed not as a social spending issue but as a core national security investment, as vital to a nation's defense as investments in advanced weaponry and cybersecurity infrastructure. The long-term costs of educational failure (brittle economy, a hollowed-out military, a divided populace, and a diminished standing in the world) are far greater than the cost of investing in schools, teachers, and students today. Securing any nation's future begins in the classroom, and the time for decisive, unified action is now.

4. Conclusions

This paper has argued that the security of a modern nation is inextricably linked to the quality and focus of its educational system. The analysis has demonstrated that education is not a peripheral social policy but the foundational pillar upon which all other instruments of national power are built. A nation that neglects the cognitive and civic development of its people is, in fact, practicing a form of unilateral disarmament. To allow educational standards to decline, to permit civic literacy to atrophy, and to ignore the cultivation of critical thinking is to cede the future to adversaries who understand that the most decisive battles of the 21st century will be won not on the basis of steel and firepower, but on the intellectual and psychological resilience of a nation's people.

Policymakers, educators, industry leaders, and the public must forge a new national consensus that recognizes education as the central pillar of a comprehensive security strategy. This requires more than just funding, demanding a strategic, unified, and sustained effort to rebuild the nation's educational foundations. Securing the future is a task that begins not in the war room or the factory, but in the classroom.

References:

- [1] National Defense Education Act, 1958
<https://history.house.gov/HouseRecord/Detail/15032436195>
- [2] Berzina, I. From ‘Total’ to ‘Comprehensive’ National Defence: the Development of the Concept in Europe, Volume 6, Issue 2 (2020), pp. 1–9, <https://doi.org/10.2478/jobs-2020-0006>



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[3] British army recruits can barely read and write, <https://www.presstv.ir/Detail/2020/04/05/622379/UK-Army-Recruitment-Crisis-Illiteracy>

[4] New PIAAC results show declining literacy and increasing inequality in many European countries – Better adult learning is necessary, <https://eaea.org/2024/12/11/new-piaac-results-show-declining-literacy-and-increasing-inequality-in-many-european-countries-better-adult-learning-is-necessary/>

[5] Hardy, T. NCOs and the Power of Critical Thinking, 2004. <https://www.armyupress.army.mil/Journals/NCO-Journal/Archives/2024/September/Critical-Thinking/>

[6] Critical Thinking for Military Leaders, <https://www.idb.org/critical-thinking-for-military-leaders-2/>