Chapter Five

A Well-educated Workforce: Vital Component of National and Economic Security

Myra Howze Shiplett, Wendy Russell, Anne M. Khademian, and Lenora Peters Gant

The world is awash in change. It is the truism of our times. President Barack Obama introduced his National Security Strategy with the following statement:

> Time and again in our Nation's history Americans have risen to meet—and to shape—moments of transition. This must be one of those moments. We live in times of sweeping change. . . . Our strategy starts by recognizing that our strength and influence abroad begin with steps at home. We must grow our economy and reduce our deficit. We must educate our children to compete in an age where knowledge is capital, and the market place is global.[1]

In May 2010, in a speech before the Council on Foreign Relations, Education Secretary Arne Duncan spoke of the importance of a well-educated citizenry: "America's success depends on the success of its individual citizens, just as the progress of humanity ultimately depends on the shared progress of nations. I believe that education has immeasurable power to promote growth and stability in the 21st century."

The history of the United States is replete with examples of the contribution of education to economic and national security. In 1635, less than 30 years after the first settlers landed on North American soil, the Boston Latin School was founded, and the first free school was established in Virginia. In 1636, Harvard College was established in Cambridge, Massachusetts, and in 1693, William and Mary College was founded in what is now Williamsburg, Virginia. In 1862, Congress passed the Morrill Act, which established "land grant" colleges:

> endowment, support, and maintenance of at least one college where the leading object shall be, without excluding

> other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.[2]

By the last third of the 20th century, the citizenry of the United States was among the best educated in the world. In 2010, America was "ranked 12th in the number of 24- to 35-year-olds with college degrees . . . among 36 developed nations."[3] Discussing this issue before Congress last year, Gaston Caperton, president of the College Board, stated, "The growing educational deficit is no less a threat to our nation's long-term well being than the current fiscal crisis. . . . To improve our college completion rates, we must think 'P–16' and improve education from preschool through higher education."[4]

The College Board advocates achieving a 55 percent graduation rate by 2025 if America is to remain competitive with the rest of the world. This goal is in contrast to the 2008 graduation rate of just under 42 percent. To achieve the 55 percent goal, the United States must find a solution that supports college educations for low-income and minority populations within the country. Achieving this goal also assumes that progress can and will be made in getting children enrolled in preschool and elementary school and that they will stay in school through at least an associate's degree:

> According to OECD [Organisation for Economic Co-operation and Development] in 2007 our nation ranked sixth in post-secondary educational attainment in the world among 25- to 60-year-olds. The United States ranked fourth for post secondary attainment for citizens age 55–64. The United States trails the Russian Federation, Israel, and Canada in this age group. As America's aging and highly educated workforce moves into retirement, the nation will rely on young Americans to increase our standing in the world. However . . . among citizens between 25–34 in developed countries, the United States ranks 12th.[5]

In recognition of the inextricable link between national security and economic security, the National Defense University's August 2010 symposium entitled *Economic Security: Neglected Dimension of National Security?* examined various aspects of economic security, including the need for a well-educated workforce to drive the engines of creativity

and economic growth. The human capital discussion panel took its text from President Obama's National Security Strategy:

> In a global economy of vastly increased mobility and interdependence, our own prosperity and leadership depends increasingly on our ability to provide our citizens with the education that they need to succeed, while attracting the premier human capital for our workforce. We must ensure that the most innovative ideas take root in America, while providing our people with the skills that they need to compete.[6]

The panel provided a variety of perspectives—from the importance of understanding the contribution of strategy, to an examination of the challenges currently facing the "P–16" educational system, to graduate education, and finally to the role and relationship between colleges and universities and the national security world of work.

America's High School Pipeline

Wendy Russell has devoted her professional life to educational reform. Her presentation offered insights to the educational challenges facing America. According to her, the Nation's critical national security human capital needs are threefold:

- candidates who are well versed in information technology (IT). Because this is estimated to be one of the top five Federal hiring requirements, that need will translate into 800,000 new IT hires by 2018.
- a diverse workforce that looks like the Nation
- increased supply of critical skills related to fluency in foreign languages and expertise in foreign cultures.[7]

The Federal Government spends between $70 billion and $80 billion each year on a wide variety of IT work, from design, implementation, and maintenance of enterprise-wide systems to assuring that individual employees have computers and support services needed for their jobs. Two out of three Federal agencies identify information technology as a mission-critical occupation: failure to have these capabilities in the workforce means that the organization will fail to accomplish its mission.

Against this background of need, the reality of today's high schools across much of America presents a very different picture. They still

reflect the 1950s design of large, comprehensive schools serving as giant sorting machines for America's students: one track for those bound for college and professional careers, and another for those bound for agricultural and manufacturing jobs in the industrial economy—an economy that no longer exists.

There are 19,000 high schools in the United States that provide education to more than 15 million students. In a 2009 self-reporting survey, 95 percent of teachers stated they have computers in the classroom and that they use technology for instruction. Yet teachers also reported that their students' use of computers in the classroom during instructional time ranged from never (16 percent) to often (34 percent).[8]

Every year, over 1.2 million students—that is, 7,000 every school day—do not graduate from high school on time. Nationwide, only about 70 percent of students earn their high school diplomas. Among minority students, only 57.8 percent of Hispanic, 53.4 percent of African American, and 49.3 percent of American Indian and Alaska Native students in the United States graduate with a regular diploma, compared to 76.2 percent of white students and 80.2 percent of Asian Americans.

In a multinational world connected by technology and cheap and swift transportation to every corner of the globe, a world in which more than 6 billion people speak hundreds of languages and dialects, only 11 states have a 2-year foreign language requirement to meet high school graduation requirements. An additional five states require 2 years of foreign language for admission to the state university system, but not for high school graduation. Two additional states require 2 years for receipt of an advanced diploma, but not a regular diploma.[9] Many have proposals on the books but have tabled them for lack of funding.

A *Wall Street Journal* article reported that test scores for college entrance examinations have stagnated. Of the 1.6 million students who took the American College Testing examination, only 24 percent scored high enough in math, reading, English, and science to ensure they would pass entry-level college courses. This suggests that the core courses they are taking are not rigorous enough to prepare them for college or the workforce.

The price of providing remedial training is high. The Alliance for Excellent Education estimates the Nation loses $3.7 billion each year because students are not learning basic needed skills, including $1.4 billion spent to provide remedial education for students who

have recently completed high school.[10] From the taxpayers' standpoint, remediation is paying for the same education twice.

The alliance estimates that if the 1.2 million high school dropouts from the Class of 2008 had earned their diplomas instead of dropping out, the U.S. economy would have seen an additional $319 billion in wages over these students' lifetimes. The alliance also estimates that the country could expect to lose well over $300 billion in potential earnings in 2009 as well, due to dropouts from the Class of 2008. If this annual pattern is allowed to continue, more than 12 million students will drop out of school during the next decade at a cost to the Nation of more than $3 trillion.[11]

It is these stark facts that led the Obama administration to say that the Nation's long-term prosperity depends on fixing its high schools and preparing students for the global economy, and to include the issues of a sound economy and a well-educated workforce as components of its national security strategy: "From unlocking the cures of tomorrow to creating clean energy industries, from growing our economy and creating jobs to securing our nation in the years to come, there is one constant in addressing these challenges: they all depend on having a highly educated workforce."[12]

Architecture of the High School Educational Future

Peter Smith's book, *Harnessing America's Wasted Talent*, states: "We have reached a tipping point in our educational and economic worlds, the point at which the needs for an informed and appropriately educated citizenry and the capacity to educate them have tipped away from the status quo, toward a future that must be invented quickly."[13]

Step 1: Know Your Customer

Know your customer, which in this case means know your learner. The Net Generation, Generation Y, or Millennials, born between 1978 and 1994, have grown up with technology. They are accustomed to group/team problemsolving. They are used to living in a 24/7 environment and expect constant high-tech stimulation. They want continuous feedback and recognition and flexibility in how they do their work.[14]

Step 2: Student-centric Technology

Schools need to create student-centric technology: a computer with software or online class time and subject matter chosen by the

student. This approach—customizing material to how students learn—will clash with the need to standardize the way schools teach and test. Schools have done what all organizations do with new technologies: cramming them into existing structures, rather than allowing the disruptive technology to take root in a new model and grow, and then changing how they operate to adapt.[15]

Some encouraging activities are beginning in this regard, as the example below demonstrates:

> Over the past 10 years, many of California's high schools have gotten worse, according to the *San Francisco Chronicle*. In an encouraging trend, however, thousands of high schoolers across California have joined an educational approach called Linked Learning, which changes the way core academics are taught by combining classroom learning with real-world, work-based experience. The idea behind Linked Learning is simple: To make it easier for students to stay engaged, coursework must be relevant to their aspirations. For instance, at Skyline High School in Oakland, Calif., every 10th-grader chooses from seven different career-themed programs where they spend the next three years combining out-of-school internships in their academy field with a rigorous academic core, taught through the lens of their industry theme, which qualifies every student for college. Teachers are trained to incorporate this work-based experience into the classroom, and vice versa. In Skyline's architecture academy, for example, algebra and physics teachers show their students how the formulas they're learning are used in real-world projects like building bridges or designing buildings. The *Chronicle* describes one student, Cynthia Gutierrez, who entered high school "bored" and garnered mostly Cs and Ds her first year. In the 10th grade, she joined the education academy, centered on careers in education. "Before, I couldn't really connect with my teachers all that well," Gutierrez says. "But in the academy, it was different." Gutierrez's grades improved despite a more demanding course load, and have qualified her for admission to the state university system.[16]

A second example comes from a North Carolina school system. Elementary teachers in the Charlotte-Mecklenburg schools will be more effective at integrating engineering and technology in their science curriculum this year thanks to a curriculum developed by Boston's Museum of Science and local partners that include North Carolina State University, Discovery Place, University of North Carolina at Charlotte, and Duke Energy. Engineering Is Elementary (EIS) uses stories set in various places and cultures to introduce real-life engineering issues, as well as hands-on engineering design challenges that students tackle in groups. According to the Museum of Science, an estimated 1.2 million students in all 50 states will experience learning through EIS this new school year.

Step 3: Recognize the Learning Edges or Leverage Points

Milton Chen, a Senior Fellow of the George Lucas Educational Foundation, outlines innovations our schools need to employ in his book *Education Nation:*

Technology Leverage Point. From the Internet to mobile devices, online curricula and courses, technology-based content, platforms, and experiences are enabling students to learn more earlier.

Leverage of Time and Place. Learning can now truly be 24/7/365 rather than limited to what happens in a classroom 6 hours a day, 5 days a week, 31 weeks a year.

Leverage Point of Youth. Today's youth are becoming the first generation to carry powerful mobile devices wherever they go. These devices are used for instant access to information and their entire social network. This generation learns in a fundamentally different way, and it is teaching us how to restructure the educational system.

Step 4: Facilitate Seamless Transitions between Life, Work, and Credit/Degrees

We offer three examples:

- The California Institute for Regenerative Medicine has developed the country's first high school stem cell curriculum, which will be pitched to science teachers nationally soon and is already being taught at a handful of San Francisco Bay area high schools.

- In three high schools in Arlington County, Virginia (all included in the 100 top high schools in the country), German is taught in the learning lab by a university professor because student course enrollment at each school is not high enough to support a full-time German teacher paid by the district. The class is virtually linked to students in Germany with real-time conversations in German.
- The Westport, Connecticut, school district's math teachers decided to rewrite the algebra curriculum, limiting it to about half of the 90 concepts typically covered in a high school course in hopes of developing a deeper understanding of key topics. They replaced the math textbooks with their own custom-designed online curriculum; the lessons are written in Westport and then sent to a program in India to animate the algorithms and problem sets with animation and sounds.

Step 5: Interorganizational Collaboration

At the Economic Security Symposium, one speaker stated that two-thirds of science and technology innovations involve some kind of interorganizational collaboration. We must begin to employ innovative ways to serve those who have been underserved by traditional education methods. Now more than ever, it is critical that schools partner with universities and the national security, military, and intelligence communities to support Net Generation students as the U.S. economy shifts into a global marketplace, making education not a luxury but a necessity to remain competitive in the work force.

Another speaker, an expert in national security issues, challenged listeners to be aware of the "architecture of the future, to see across the categories to a comprehensive picture of how things relate." Many of our most advanced research laboratories are located in proximity to the Nation's struggling inner-city school systems—New York, Chicago, Los Angeles, and Atlanta, to name just a few. What if we were to link the military training technology that has generated breakthroughs in gaming systems, high-definition video, computer-generated graphics, augmented reality, and artificial intelligence with high school education programs to push the learning envelope?

America's leaders and parents must embrace the importance of connecting with students the way they want to connect to keep them engaged and learning.[17]

America's Graduate Education Pipeline

Dr. Anne Khademian spoke of the *pracademic*—the intersection of academic theory and the practical application of that theory to public policy—and of the effective development and implementation of public programs. She also focused on the fundamental issues of building collaborative capacity in public organization as well as the importance of building a robust, dedicated public service.

Graduate Education as a Pracademic Exercise

Traditional graduate education presumes that the student will spend 1 to 5 years or more on campus immersed in graduate-level classes and research. This model fits a number of students seeking graduate degrees, particularly those pursuing research, teaching, and scholarly occupations as their life's work. But there is another world, one populated by individuals who also seek graduate degrees but do not have the luxury of doing so, or who prefer to work and attend graduate school at the same time. They seek scholarly skills, knowledge, and insights but want to apply this knowledge in private and public institutions. For these individuals, a pracademic graduate education is the answer. Graduate education focused on the pracademic holds great potential for promoting the type of research and practical skills that are essential for engaging the most complex public policy issues. Strong graduate education can foster the collaborative and networking capacities essential for sophisticated research, policy development, and implementation, and can reinvigorate a professional commitment to public service informed by the institutional complexities and policy dynamics of the public arena. While graduate education takes on multiple forms at Virginia Technical University, the focus is on the scholarly development of graduate students as practitioners. These graduate students are often part time, but are deeply committed to growth as a scholar.

Here, the focus is on the full-time practitioner taking one or two classes per semester in a graduate program, usually several years after completing an undergraduate degree. Paul Posner and others have used the term *pracademic* to describe the practitioner/scholar. These

individuals are primarily part-time students in the early to mid-career phase of life. They seek

> continuous engagement between the theoretical and abstract and the practical and real. Classroom settings combine the daily experience of leading, managing, and policy development with the theories of organizational dynamics, public policy processes, institutional characteristics, motivation, and so forth. The discussions are a continuous process of considering theoretical explanations in the context of daily experience. The benefit can be a more realistic grounding of research questions and scholarship, and a means to reconsider, reconceptualize, and reframe the organizational, policy, and leadership challenges of public policy.

Graduate Education Builds Conceptual Thinking and Critical Analysis

A centerpiece of graduate education, particularly in this context, is the emphasis on the capacity for conceptual thinking and critical analysis. The ability to pull back from the minutiae of the immediate and to see broader patterns, constraints, and influences on the policy process is vital for understanding the benefits of collaboration and the points of potential collaboration. The ability to question the accepted or to scrutinize options, whether theoretical or practical, in a systematic manner is central to graduate education, essential for working in collaborative settings, and essential in the emerging world of interagency collaboration and cooperation. In this world, agencies and their employees realize that lasting solutions to complex problems often require horizontal collaboration between and among multiple agencies.

Knowledge continues to increase at a rapid rate. Organizational and individual success often requires a deep, sophisticated knowledge of a field. Graduate education focused on the pracademic contributes to such knowledge. Whether for homeland security, national security, air traffic control, or any number of other fields of study, graduate education offers students the opportunity to dig deeply into the empirical dimensions of key public policy areas through their independent research or through course work.

The focus on collaborative skills for decisionmaking and consensus-building either contingently or longer term, critical analytic skills, and deep sophisticated knowledge of a field are essential components for leading within the complex policy arenas of today.

In policy arenas as complex as national security, homeland security, education, and the like, the stovepiped approaches to policy development and implementation no longer apply. As we have learned in the post-9/11 era, the capacity to share information, make decisions jointly, and deploy resources collectively and strategically requires the ability to lead collaboratively across different agencies, different jurisdictions, and even different countries.

Complexity requires collaboration and inclusion. This means:

- understanding multiple arenas, sectors, jurisdictions (deep knowledge)
- understanding the points of interaction, tensions, compatibilities (conceptual capacities)
- forging discussion, alternative ways of understanding problems, forging consensus (analytic capacities)
- decisionmaking (experience).

Two pertinent examples of this are President Obama's recently announced policy to eliminate homelessness in America within a decade and the work of the Project on National Security Reform whose goal is to achieve reform of the national security system.

Ending homelessness in America within a decade can only occur if multiple agencies collaborate and combine their talents and resources to tackle the complex and difficult set of issues that contribute to homelessness:

> On June 22, the lead Cabinet secretaries from the United States Interagency Council on Homelessness (USICH), from the U.S. Departments of Housing and Urban Development, Labor, Health and Human Services, and Veterans Affairs joined Executive Director of the USICH Barbara Poppe to unveil and submit to the President and Congress the nation's first comprehensive strategy to prevent and end homelessness. . . . By combining permanent housing with

> support services, federal, state, and local efforts have reduced the number of people who are chronically homeless by one-third in the last five years.

The nonprofit organization Project on National Security Reform also has identified interagency collaboration as an essential component for assuring the Nation's security. In the global world, national security means using all the elements of national power in acheiving a peaceful world. This occurs not just as a result of military might, but also requires a sound and vibrant economy, an educational system that produces well-educated individuals who can think critically and conceptualize alternatives, and a citizenry that understands the power of assisting other nations in achieving economic and political goals. Thus, those agencies involved in national security functions must work together to assure that all the elements of national power are coordinated to assure our country's security.

Building a Vibrant and Effective Public Service

Graduate education focused on the pracademic can also be essential for rebuilding a professional commitment to public service, which requires an understanding of the complexity of governance and the challenges of governing. Graduate education can provide this deep understanding. It also provides insight into the evolving role of government and agencies and the evolving relationship of government with the private sector, with citizens, with contracting partners, and with other nations of the world.

The challenges of accountability are central to effective and efficient government. Accountability is a term everyone uses, but we often cannot agree on what it might mean in practice. If we are to govern in more collaborative ways, we will need more creative methods of demonstrating accountability for joint and multipartner efforts, including efforts to broaden and improve performance measurement.

There are also the challenges of governing to protect fundamental values. All policymaking involves balancing priorities and preferences, as well as balancing principles, such as security and privacy. Graduate education focused on deep knowledge, conceptual capacity, and critical analytic skills creates a foundation for engaging in this balancing effort in an informed and meaningful way.

By challenging students to think deeply and broadly about the complex issues of our times, graduate education provides a means to strengthen the abilities of those in public service to analyze and identify

the root causes of problems and then to work collaboratively to fashion effective and efficient solutions to the problems at hand. This enhanced capacity to make government function better helps increase citizens' belief and faith in their government.

Results for Public Organizations

As this chapter has discussed and described, a well-educated workforce is essential for economic growth and for effective and efficient government. A real-life example of how these factors play out is found in the work of Dr. Lenora Peters Gant, who manages an academic outreach program for the Office of the Director of National Intelligence (ODNI) on behalf of the U.S. Intelligence Community (IC). Dr. Gant has built an academic outreach program that now extends to over 30 colleges and universities. Established in 2004, the Center of Academic Excellence (CAE) program in national security studies was created to support the IC need for multiple sources of well-educated young professionals to fill the many interesting and exciting professions in the community.

Unlike a lot of academic programs or partnerships that tend to emphasize immediate results, this program focuses on building long-term partnerships with colleges and universities in mission-critical occupations to help assure multiple sources of well-educated college graduates to work for intelligence agencies. This program, now in its seventh year, provides competitive grants to colleges and universities to encourage the development of curricula in a variety of scientific and technical areas, foreign languages, cultural immersion, and similar studies.

The program's goals are three-fold:

- to develop long-term academic partnerships with accredited colleges and universities that have diverse student populations and courses of academic study that align with the IC core skill requirements
- to provide financial and technical support to these educational institutions so they can shape curricula to meet specific IC needs
- to leverage and cultivate IC relationships with faculty and students of those institutions to ensure that the community has a diverse, highly qualified, and motivated applicant pool for its mission-critical occupations.

The program has six key strategic criteria and program components:

- IC-related curricula in core skills–related disciplines. CAE institutions must design, develop, and reshape curricula in disciplines that support IC mission-critical skills and competencies
- Foreign travel/study abroad/cultural immersion or awareness. CAE institutions must implement a competitive process and program to develop competencies in regional and international expertise, critical languages, and cultural awareness
- IC regional colloquium/seminar. CAE institutions must develop and host a National Security Colloquium in conjunction with consortium institutions in the institution's geographic area to promote awareness about IC mission, IC careers, value of public service, co-ops, internships, and opportunities for scholarships to study in IC-related fields
- Precollegiate and high school outreach. CAE institutions must develop and host high school outreach programs to attract talent to national security–related fields of study and promote awareness about the IC mission and functions
- National security–related research. As applicable, CAE institutions will conduct national security research in support of building intellectual capital in interdisciplinary fields of study, including the science, technology, engineering, and mathematics fields
- Mandatory reporting, assessment, and evaluation. CAE institutions must conduct assessments, track metrics to ensure return on investment, and report findings and linkages in accordance with ODNI guidance that focuses on an IC workforce prepared for 21st-century challenges.

The ODNI program has provided an additional benefit for the colleges, the students, and the Intelligence Community. It has served to educate students, professors, and other citizens about the functions of government generally and the Intelligence Community specifically. In a time when many citizens find their government complex and difficult to understand, this program made understanding the role and functions of government easier.

Conclusion

A vibrant, growing economy that provides jobs for America's citizens is an essential component of our national security. A critical success factor for such an economy is a well-educated workforce, equipped to deal with the complexities of the 21st century. We all have a stake in assuring that our children and our neighbor's children are well educated. The security of our nation demands this commitment.

Notes

[1] The White House, *National Security Strategy*, May 2010, available at <www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf>.

[2] Edmund Sass, American Educational History Web site, available at <www.cloudnet.com/~edrbsass/educationhistorytimeline.html>.

[3] Tamar Levin, "Once a Leader, U.S. Lags in Attaining College Degrees," *The New York Times*, July 23, 2010.

[4] Ibid.

[5] John Michael Lee, Jr., and Anita Rawls, "The College Completion Agenda: 2010 Report," College Board Advocacy and Policy Center, 2010, 9.

[6] *National Security Strategy*.

[7] Wendy Russell, *Strategic Human Capital Plan* (Washington, DC: Office of the Director of National Intelligence, 2006); Viveck Kundra, *NetGeneration: Preparing for Change in the Federal Information Workforce* (Washington, DC: Chief information Officers Council, April 2010).

[8] Lucinda Gray, Nina Thomas, and Laurie Lewis, *Teachers' Use of Educational Technology in U.S. Public Schools: 2009* (Washington, DC: U.S. Department of Education, IES National Center on Education Statistics, May 2010), 6, 12.

[9] Janice Kittok and Ryan Wertz, "World Languages Graduation Requirements," National Council of State Supervisors for Languages, March 2010.

[10] Alliance for Excellent Education Web site, available at <www.all4ed.org/about_the_crisis>.

[11] Ibid.

[12] *National Security Strategy*.

[13] Peter Smith, *Harnessing America's Wasted Talent: A New Ecology of Learning* (San Francisco: Jossey Bass, 2010), 114.

[14] Anastasia Goodstein and Mike Dover, *The Net Generation "Dark Side": Myths and Realities of the Cohort in the Workplace and Marketplace* (Toronto: New Paradigm Learning Corporation, 2010), 19.

[15] Clayton M. Christensen. *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (New York: McGraw-Hill, 2008).

[16] James E. Canales, "Linking Courses to Careers Improves Grad Rate," *The San Francisco Chronicle*, July 25, 2010, available at <www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2010/07/24/IN1K1EGR92.DTL#ixzz0uz2DMpfp>.

[17] Michael Jenkins, Vice President of Admissions and Marketing, Everest University Online.