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How the U.S. Military Is Reinventing Learning

By Paul Harris

As the U.S. military gears up to confront new challenges, it's transforming the way service personnel are trained. That means a heavy reliance on e-learning, simulation, and other technologies, and an urgent need for innovative ideas from suppliers.

Within a few years, a U.S. serviceman (or woman) deployed in a military operation will be carrying within his vehicle or gear simulation technology capable of previewing the mission down to the most minute detail.

The equipment will also enable the soldier to access interactive courseware to fulfill any learning need.



Says James E. Shiflett, who heads a training-integrated product team for the Pentagon's Future Combat Systems program, "We're pursuing a radically different approach in which training is an integral part of system design, not a stand-alone application. So, when the soldier operates and trains, the experience is as close as possible to the real thing."

That's only one of the training advances for U.S. military personnel in the 21st century. Currently underway within the Pentagon are a variety of initiatives that will reshape the learning environment for every serviceman and woman. The initiatives reflect a determination not only to prepare the military for new and unexpected challenges, but also to enable soldiers to meet their career objectives.

To a large extent, the military's needs are driving the training industry, especially e-learning. Behind it all is a commitment by the Pentagon to invest more heavily in distance learning technologies, a trend underway throughout the U.S. government. Indeed, e-learning courses have become a mainstay already for military trainers to meet just-in-time training objectives and career advancement goals. As a result, military contracts have become a vital revenue source for e-learning vendors coping with the current slump in the corporate market.

Transforming military training

The sobering risks of global terrorism and the dangers of escalating regional conflicts have prompted the Bush administration to reinvent the way the U.S. military responds to national security threats. No longer will the military focus on specific adversaries. Instead, it will follow a capabilities-based approach aimed at countering expected tactics from a broad range of potential adversaries. To prepare for those demands, servicemen and women must be better equipped and better trained.

Announced earlier this year by Deputy Defense Secretary Paul Wolfowitz is a new strategic plan to transform military training. The marching orders require speed and agility in readying forces to respond decisively to any type of challenge, whenever and wherever it occurs. "We must train like we fight and fight like we train," says Pentagon official Paul W. Mayberry.

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Specifically, the directive requires that a new emphasis on joint training among the military's branches be focused on the operational requirements of combatant commanders. It also calls for the development of a "robust, networked, live, virtual, and constructive training and mission rehearsal environment" that will enable the Department of Defense to build "knowledge-superior" military capabilities.

The plan will review acquisition procedures to identify where training systems interface with acquisition, logistics, personnel, military education, and command and control processes, and ensure that those processes are integrated. Joint training and education will be redrawn as components of lifelong learning and integrated across the total force, made up of active personnel, reservists, and DoD civilians. The transformation will also include a reduction in the number of military occupational specialties (MOSs) as military personnel become more versatile.

The requirement for an integrated live and virtual training environment reads like a prescription for e-learning. It calls for "continuously available networks for mission rehearsal, simulation, and just-in-time training," along with the systematic measurement of performance to improve operational effectiveness. The plan also calls for the "development and assessment of [Advanced Distributed Learning](#), digital knowledge libraries, and job performance technologies" to reshape institutional education and training.

The military is already blazing new trails in joint computer-based training. The first ever virtual training exercise linking many of the Army's and Navy's far-flung test ranges was held in summer 2002, signaling a new era of joint training exercises for the ranges. E-learning vendors are salivating over large acquisition contracts to provide interoperable Net-centric training capabilities such as embedded simulations, job-performance aids, and integrated simulators and training devices.

But the plan isn't an invitation to spend large sums of money, warns David S. C. Chu, undersecretary of defense for personnel and readiness. "It's a summons to use current resources in a more clever fashion," he told a recent gathering of military training officials sponsored by the National Training Systems Association. "Above all, it's an invitation for innovative ideas, especially for the unusual combination of ingredients, the untried approach," he said.

Under the schedule laid out in the directive, a comprehensive Training Transformation Implementation Plan will be presented to the secretary of defense in March 2003. It will identify specific tasks, responsibilities, timelines, resources, and methods to assess completion and measure success. Many of the recommendations can be completed within two to three years, says Wolfowitz.

Training takes center stage

Numerous other e-learning initiatives are underway within the military, some of them significant for the corporate sector. Among them:

The Advanced Distributed Learning Initiative. Headed by the military, this collaborative effort between the public and private sectors is developing standards, tools, and learning-content software for future Web-based learning. ADL's [Sharable Content Object Reference Model](#) (SCORM) has become the standard for granularity and reusability of content. The ADL Co-Laboratory has held six "Plugfests," small conferences of e-learning vendors and representatives from government, business, and academia. The periodic meetings help ADL partners synchronize the evolution of authoring tools, courseware, and LMSs within the open architecture format. The upcoming Plugfest 7 (December 2-5, 2002 in Orlando, Florida) will focus on further development of the SCORM Version 1.3 Sequencing and Application Profile and content or systems that have been updated to implement it.

Modeling and simulation. The dramatic increase in the use of simulations as a corporate e-

learning tool is largely the result of pioneering research and applications within the military. Continued advancement of simulation technologies remains a top priority, spurred by a Congress that views simulation as a principal vehicle to improve training, streamline acquisition, support operational testing, and assist in acquisitions. Corporate trainers will reap the benefits of resulting technologies in immersion, networked simulation, interoperability standards, computer-generated characters, and tools for creating simulated environments.

Joint Strike Fighter. The selection of Lockheed Martin's Joint Strike Fighter (F-35) for use by all branches of the U.S. military, as well as certain allies, includes a novel mandate for a common training system. Training will be embedded into the avionics of every aircraft, becoming an integral part of design, with an emphasis when possible on simulation. Designers are seeking innovative ideas for all aspects of the project, including virtual, constructive, and live training systems. "They must appeal to kids who are 10 years old today," says JoAnne Puglisi, Lockheed Martin's training systems manager. "What's out there [now] is not of interest to us."

Navy e-learning. More than any other military branch, the Navy is depending on e-learning to reach its personnel. In May 2001, the chief of naval education and training (CNET) rolled out a [Website](#) to launch, track, and manage 2000 e-learning courses for more than 1.2 million sailors, Marines, retirees, reservists, and civilians. The Navy selected the THINQ TrainingServer LMS to power the enormous system along with an armada of content vendors, all adhering to ADL's SCORM.

eArmyU. An initiative by the Army to provide higher learning opportunities to soldiers has assembled a collection of 21 colleges and universities that grant degrees and certificates via Web-based courses. Soldiers receive up to 100 percent funding for tuition, books, and course fees, as well as a personal laptop, printer, email account, and an ISP account. PwC Consulting, now part of IBM Global Services, has the lead contract as program integrator. Other vendors include Blackboard, Saba, and PeopleSoft.

Navy endorses e-learning

The Navy's "Revolution in Training" is setting a valuable precedent that will affect the growth of e-learning throughout the government and in the corporate sector, asserts Martin Leahy, a THINQ executive who manages the THINQ-Navy relationship. An important ingredient of the Navy learning program is a procedure to ensure compatibility of all courseware with the SCORM standard and THINQ LMS. When the Navy orders a specific course on, say, bioterrorism or water-tight hatch closing, THINQ works closely with the ADL Co-Lab to ensure that the vendor complies with the SCORM standard, Leahy explains.

At ADL's recent Plugfest 6, its latest meeting to promote the adoption of the SCORM standard, THINQ introduced a new tool to verify that newly developed content is compatible with the THINQ LMS. Called the Courseware Compatibility Center (C3), the tool facilitates coordination of Navy course development. "This is a significant step," says Leahy. "In the past, a vendor would develop an e-learning course in a vacuum and then say, 'Here, you make it work.' Not anymore." No longer will we see 15 quality courses written 15 different ways, promises Leahy.

Another Navy learning project seeks to create an environment of learning so sailors can grow both personally and professionally. The Task Force for [Excellence through Commitment to Education and Learning \(EXCEL\)](#) is billed as a "developmental ecosystem" where all elements of education, development, and growth are interwoven and calibrated to ensure maximum success. A "sailor continuum" includes five areas of concentration, called vectors, that combine to create a holistic approach to development and allow sailors to map and measure their progress. "The Navy is competing with industry for top talent, so you can expect the Navy to start competing like an industry," says one Navy trainer. Task Force EXCEL relies heavily on e-learning and runs on the THINQ LMS platform as well.

The personal development vector provides incentives to sailors to develop themselves and

holds leaders accountable for personnel development. In a recent pilot program, sailors could choose from six competency clusters, take college courses, learn about financial management, develop a personalized physical training program, or work on time-management skills.

One pilot group was offered a nine-hour online course of Franklin Covey's "Seven Habits of Highly Effective People." Content provider Ninth House is creating a leadership development pilot program. Another recent Navy e-learning contract went to Santa Monica-based Intelligent Systems Technology to further develop and deliver MainTrain, an e-learning and performance support system designed to teach a variety of critical maintenance skills interactively and assist operators in conducting shipboard procedures. MainTrain transforms raw content into pedagogically sound instruction for the selected delivery device.

The Navy has turned to another e-learning vendor, OutStart, to develop the Navy Integrated Learning Asset Repository System (NILARS). OutStart's content-centric learning platform, Evolution, will help accelerate the Navy's transformation toward an enterprise, Web-based learning model, says the vendor. "This initiative is going to help prove the concept of collaboration and distributive development and delivery of content," claims Michelle Bruce, OutStart's chief learning officer. "Many corporations are trying to do the same thing. If this initiative can build a collaborative environment for all military learners, it will demonstrate its value and feasibility," she says.

Simulation takes off

Nothing captures the imagination of military trainers like simulation. Simply put, people learn best by making mistakes, and simulation technologies allow them to do that without penalty. It's why the military is spending heavily to bring the most realistic and entertaining simulations to the computer screen. "It's the next big wave of e-learning," assures Leahy. An example: To prepare pilots for dangerous missions, the military can now send a drone down into a targeted valley and then put collected information in a simulation-based training exercise. When pilots get to the actual location, they will have previously experienced it.

Advances in interactive techniques such as game-based learning are viewed as crucial to future military recruitment and retention efforts. Even the entertainment industry, which knows teenagers better than anyone, is helping the military create eye-popping simulations. The University of Southern California is in the middle of a five-year Army contract to create the Institute for Creative Technologies (ICT). The institute has recruited talent from the entertainment and game development industries to bring improvements to immersive training simulation. Its ultimate goal is creation of the Experience Learning System (ELS), which would promote learning through active rather than passive systems. Details can be found at www.ict.usc.edu/disp.php.

The Pentagon's new dependence on joint simulation activities is accompanied by a decision by DoD brass to eliminate the very office within the Pentagon created to accomplish that mission: the Defense Modeling and Simulation Office (DMSO). The move, announced summer 2002, would be part of a proposed US\$700 million cut in science and technology funding and programs at the Pentagon. The cut is being vigorously opposed by supporters within the military as well as simulation and modeling vendors.

Two e-learning sites compete

Meanwhile, e-learning continues to flourish throughout the rest of the U.S. government. One area of particular interest to content vendors is the emergence of two cooperative buying organizations within the government that provide online learning to federal employees, including those in the military.

Launched in July was the Gov Online Learning Center, established by the Office of Personnel Management. The new training site, www.golearn.gov, was created as one of the 24 e-

government initiatives that support the President's Management Agenda to reduce duplication among the agencies. Powered by GeoLearning's GeoMaestro LMS with content from SkillSoft and NETg, the site seeks to provide one-stop access to just-in-time training for 1.8 million U.S. workers.

The site evolved from the Department of Transportation's Virtual University e-learning site, a move that raised eyebrows among devotees of FasTrac, an e-learning initiative established several years ago by the National Security Agency that's also available to any government employee. FasTrac is powered by the THINQ LMS and serves about 400,000 employees. Boosters were reportedly surprised that the White House ignored their operation in launching Golearn, but insiders suggest that there's room for both programs to establish respective niches in government e-learning.

Caution: roadblocks ahead

Military administrators and trainers are faced with numerous obstacles as they seek to implement learning initiatives. Cultural, operational, technological, and financial difficulties are among the hazards that will have to be successfully navigated if goals are to be achieved.

One principal barrier is the need for every service branch to instill its own specific culture on its personnel, seen as a glaring conflict with DoD's joint training mandate. It's precisely because of that cultural issue that "we still don't have agreement of the services to go joint on the JSF," concedes Puglisi. The services are concerned that if they assign a recently recruited Marine to an Air Force base, for example, that individual won't receive the initial cultural infusion within his own service--a key component at the first level of training for every branch. "Each is different, and we need to figure that out," says Puglisi.

Another challenge is the need for new learning technologies that will inspire today's Nintendo generation. Such techniques as game-based interactive learning will be paramount if the military is to capture the imagination of tomorrow's servicemen and women and retain them for their entire careers. "So far, e-learning has been a big disappointment at my installation," grumbles one skeptical military trainer who attended the training transformation conference. "Right now, it's nothing more than a digital page turner," he says.

Yet another problem for the military, as for businesses, is the intolerable amount of time typically required for development of custom e-learning courseware. "We need to fix that," says Fred Lewis, executive director of NTSA. "The military simply can't wait 18 months for development of a course." The problem is compounded by the chronic obsolescence of training materials that support fast-changing military systems and the constant need for training a workforce that typically turns over every 18 months.

Some training managers also question just how cost-effective a dependence on e-learning ultimately will be for the military. After all, says one seasoned trainer, every student in an e-learning course must still be personally managed by somebody. Says the trainer: "In an organization with more than 1.7 million service personnel, that's still an expensive proposition."

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