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Distance Learning Broadens, Deepens

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Distance (or distributive) learning (DL) plays an increasing role in all sorts of defense training and education. Training specialists would like to see DL stretch even further, if security concerns and other challenges can be met.

Naval Education and Training Command (NETC) uses learner-centric, problem-based, collaborative-learning environments such as discussion boards, wikis, blogs and group projects, explained John Lasseter, a program specialist in NETC's Learning and Development Division. These combine with web videos and asynchronous instruction by interactive multimedia instruction (IMI), assignments and research projects.

NETC is developing courses in the Sakai Collaborative Learning Environment to reach higher skills and performance outcomes, and is piloting mobile technology with tablets for remediation, job aids and publication at the Center for Security Forces. Knowledge retention and performance on crew-served weapons have improved after six months of this pilot.

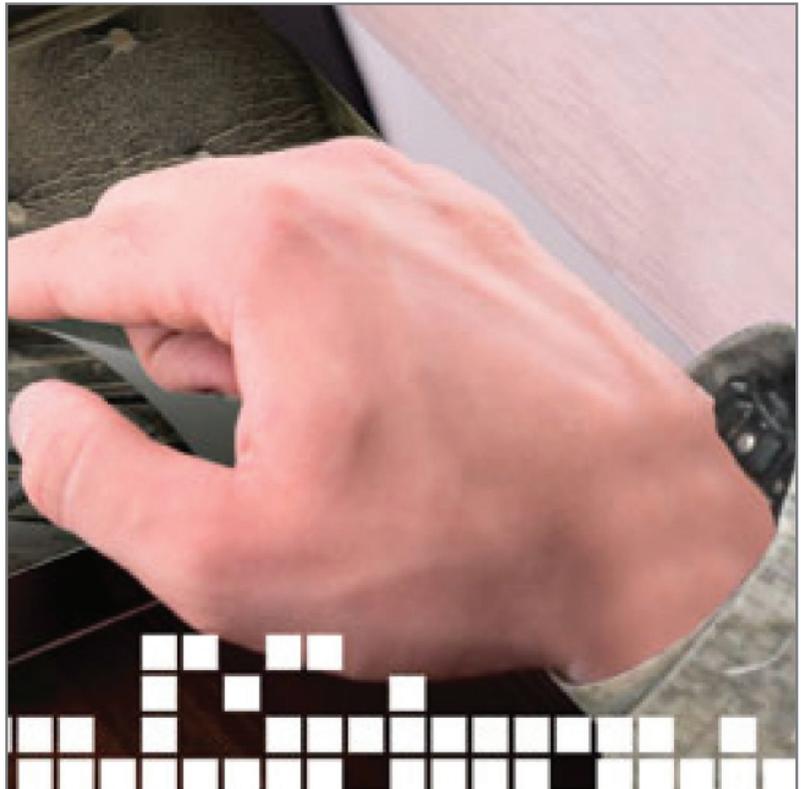
NETC is developing several courses now, and many more will follow when technology and security permit. Hybrid onsite and DL courses include several chaplaincy courses, a supply-officer course and engineering and management courses for Seabees.

DL is useful for any training that does not require using real equipment. "Many objectives can be met using PC simulation, augmented reality and gaming prior to performing tasks in a lab or actual environment," Lasseter explained. But tightened security makes defense training on personal mobile devices over commercial broadband problematic and has prevented DL from keeping pace with non-defense trends.

Lasseter noted that mobile-device sales are booming, while PC sales are dropping. A Naval Academy study predicts 80 percent of Internet access will be by mobile device in 2015, and found that most Academy graduates would use mobile learning if available. Students today expect to download video lectures, instruction, gaming and interactive courseware on any kind of device.

"In the long run, as barriers are breached, DL will save time and money by providing increased access to content, present training content in real time, with greater relevance and engagement for the learner," said Lasseter.

Meanwhile, the Marines are using DL very aggressively. Dennis Chinault, operations officer at Marine Corps University, said MCU's College of Distance Education and Training (CDET) uses IMI to provide students with rich video media, interactive 3-D models and simulation-like capabilities.



Students on MarineNet, the Corps' Learning Management System, take courses such as Survival Evasion, Resistance and Escape (SERE) 100, which teaches SERE through gaming. MarineNet users can also learn the mechanics of, and practice troubleshooting on, commonly used equipment. "The incidental motor vehicle operator courses for HMMWVs and MTRVs provide rich learning experiences," Chinault said.

For professional military education, collaboration tools such as Blackboard link officers with instructors live or delayed. Officers get reading assignments and assessments and engage with instructors via discussion threads. Chinault said courses on the theory and nature of war, national and international security, joint war fighting, small wars, operations and warfare fundamentals lend themselves to collaborative DL.

The Marine Corps uses DL to deliver military occupation specialty progression training, new equipment training, annual compliance training, requisite training for schools and courses, pre-deployment training, foreign culture and language familiarization, and military education to officers and enlisted Marines. Over 25,000 enlisted Marines have taken professional courses on DL, as have 80 percent of majors and 70 percent of captains. MarineNet now has 5 million electronic course enrollments and more than 3.5 million electronic course completions.

CDET sees DL increasing as fiscal resources decrease and leaders look for efficient training. But there will be challenges. Chinault said these include maintaining security as DL expands on mobile devices. And courses developed without DL in mind require significant effort to adapt for DL. Self-paced DL courses, with just-written content, lack the personal touch, spontaneity and war stories that motivate students. Finally, it is tough to teach operations planning by DL as collaborative planning is very difficult to replicate in DL.

Industry is eager to help the services overcome the challenges and exploit the benefits of DL.

Disti offers technology for creating interactive training, mostly for cockpits, instrumentation and maintenance, explained Scott Ariotti, director of global marketing. The firm works for firms that support the U.S. military. For example, AAI Services selected Disti virtual-maintenance technology to train mechanics on the F-15 Lightning II at Eglin Air Force Base.

Disti can build DL tools, or clients can build them with Disti's new Replic8 software, a system for creating Level 3 and 4 courseware and three-dimensional interactions without programming. General Atomics Electromagnetic Systems adopted Replic8 for training on the electromagnetic aircraft launch system and the advanced arresting gear for the Navy.

Levels 3 and 4 are the high end of virtual courseware, Ariotti explained. "We are geared to interaction with tools within arms reach, the tools they need to touch and work with."

Disti is updating Replicat8 to go beyond desktops to mobile devices. "You will just push a button to publish to mobile devices," Ariotti views training as "something you do, rather than someplace you go. If we can make it like a game, [users] will want to do it."

LearnSmart is another company at the forefront of DL solutions.

"LearnSmart provides a number of DL tools, primarily through our online learning management system [LMS], but also through our iPad application," summarized Vice President of Sales Brian Bashara.

With LearnSmart's LMS, learners receive a high-resolution, full-frame video theater that plays instructional videos, demonstrations and lectures. This high-powered LMS also supports integrated quizzes and laboratories, building contacts with others who can help the student, whiteboard sharing and instant messaging.

"The LMS allows users to make contacts, engage in group learning and share resources," Bashara said. "It provides a distance-learning experience that's in some ways superior to classroom training because of the built-in social-learning options." LearnSmart's iPad application allows users to perform DL without a continuing online connection. Learners download courses when connected and then use the training anywhere.

LearnSmart has a library of training that helps people comply with Defense 8570.1 mandates for credentialing and continuing education of employees with privileged access to defense information systems. LearnSmart also provides custom courses and consultation to military contractors. The firm is now launching a new series of DL courses to help users prepare for project-management certification.

When soldiers are trained to operate heavy equipment, equipment is often not available, noted Melissa Moore, director of government sales at Simformotion/CSE Software. DL is a safe and efficient way to train new personnel or sharpen skills between deployments.

Simformotion's CAT simulators provide virtual training that can be used at any facility or mobile unit. Most simulators feature companion training on an iPad. Currently CAT simulators are used at several military locations including the Army's 357th, 417th and 996th Engineer Companies.

The simulators feature a machine modeled from CAT engineering specifications and environments based on real-world worksites. The simulated machine reacts realistically to terrain. "CAT simulators offer the opportunity for military personnel to train using the same controls and applications as the actual machines," Moore noted.

When used in practice mode, onscreen instructions coach users. In exam mode, instructions are removed and results saved to a database for administrators, instructors and users to define achievements and weaknesses.

Many CAT models are simulated, including articulated, mining and off-highway trucks, construction and mining dozers, the hydraulic excavator, small and large wheel loaders, the M-Series motor grader, the log loader and wheel tractor scraper. Virtual environments vary from construction to mining to forestry worksites.

New simulator models come with a walkaround module that teaches users to complete pre-operation checks to spot faulty parts. This is important as faults can pose safety issues or cause expensive maintenance issue down the road.

Eight or more training exercises are included with each simulator, covering machine-specific applications. For example, hydraulic excavator operators learn how to set a trench box and pipe. Motor grader users learn how to finish-grade a road.

Moore emphasized the importance of the walkaround module and records management software that records hundreds of metrics to track trainee progress. And an optional motion platform allows users to feel vibration and movement, which gives trainees very realistic help in learning precision movements, tipping points and more. Programmers work with motion specialists to ensure the simulated machine responds realistically to environment, maneuvers and terrain.

CAT Simulators also have companion training by eBooks on iPad, which prepare students for simulators with videos, formulas, step-by-step application methods, operator tips and more. The eBook material includes relevant matter, such as common causes of trench failures or common ditch types.

Simformotion will soon introduce a simulator for the 924H small wheel loader, with day and night settings and 13 training exercises. It is also adding model-specific training packs to provide additional exercises for current simulators. And plans have been made to offer walkarounds as a separate download for the iPad.