

E-LEARNING IN THE MILITARY: MEETING THE CHALLENGE

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ABSTRACT

This paper investigates e-learning (distance learning) in the military by studying three different delivery models currently being used. These models are examined as to their purpose, rationale, commonality, differences, problems, and results to date. They are then placed in the overall context of e-learning in the military. The problem of the lack of good metrics for measuring e-learning is also discussed along with an assessment of the future of e-learning in the military.

Keywords: E-learning, distance learning, e-learning metrics, blended distance learning

INTRODUCTION AND OVERVIEW

E-learning is an exciting new trend for delivering learning at all levels. By combining technology, specialized courseware, and telecommunications, educators are delivering courses of study that overcome the time constraints and geographic boundaries of traditional campus based programs. Working adults are a primary target for distance education programs, with the distance learning market expected to exceed \$15 billion in 2002 [5]. This figure does not include expenditures associated with distance education for specialized training found in U.S. military programs.

Technology is changing our traditional patterns of teaching and learning, especially in higher education. However, there are some fundamental activities common to all successful educational experiences. For example, student to student interaction is discussed by Kearsley [11] as critical to any successful educational experience. Nelson [13] found that e-learning puts more of a burden on students to control their own learning activities, and the e-learning instructor must continually work on approaches to making the course interesting, timely and relevant. Motivation is more difficult and harder to sustain when the instructor does not have a face-to-face personal interaction with students [1].

For both the private sector and the military, e-learning programs are not direct trade-offs with conventional classroom lectures for delivering credit or non-credit education. There are high start-up costs when establishing e-learning programs. In addition to the costs of the technology infrastructure, most traditional courses need extensive work to be delivered in the e-learning format. There is the need for minimum computer competence for students along with easy access to appropriate facilities. To some extent, this limits e-learning access to those that are associated with organizations that have the resources to build and maintain adequate facilities, courseware and programs. These economic, infrastructure and support concerns are particularly important for military education, where students are subject to 24/7 work schedules and rapid deployment to anywhere in the world with very short notice.

Whether private sector or military, successful distance education requires quality, well-delivered material supported by tutorials, counseling and effective program management [10]. Support can come from platforms such as Symposium or Blackboard to provide a forum for student interaction as well as class delivery, but tailored modules are very expensive to produce and require a high level of faculty technical skills. The bottom line is that e-learning consumes large blocks of instructor time, requires technically savvy instructors, is dynamic and ever changing, and is very capital intensive. Performance metrics are scarce, and university experiences range from no measurable differences between traditional lecture and distance education classes to better student performance with e-learning when delivering technology related coursework. The authors were unable to find evidence of any longitudinal studies in the public sector relating e-learning with student success, and much of what is reported is anecdotal.

At the present time there are limited studies dealing with the effectiveness of e-learning for training Army personnel. The Army is concerned with the overall effectiveness of delivering specialized military training using an e-learning course, as well as the relative return on the training investment, including course design, interactions through training technology, and instructional techniques [18]. The research that has been reported by Abell [1] found that unless a traditional course is extensively reconfigured for e-learning delivery, there likely will be no improvement in soldier performance. Courseware design and delivery, more than delivery technology and facilities, seems to be the defining variables in e-learning success.

To better understand the approach taken by the military to deliver distance education, three ongoing military e-learning programs will be profiled: 1) NUWC, a graduate program offered by Bryant College to both military and civilian personnel; 2) The Army Distance Learning Program, headquartered in Ft. Monroe, Virginia, a program with the task of providing world-wide infrastructure and specialized classrooms to support military training; and 3) eArmyU, a program much like the traditional university, concentrating facilities and infrastructure on several large military installations.

NUWC Executive MBA Program

Under a program funded by the U. S. Navy, Bryant College has been offering an executive type MBA program to personnel assigned to the Naval Underwater Warfare Center (NUWC) in Newport, Rhode Island since August 2000. The first cohort group of 25 students is scheduled to graduate in May 2002 while the second cohort group began their studies in August 2001. The objectives of the NUWC MBA program are to provide a nationally accredited business degree program with highly relevant content and a strong experiential component in a format that is compatible with high travel requirements for the participants. While NUWC is a part of the military, it operates in a very competitive environment, and its leadership believed that the course of study in a MBA degree would help NUWC operate like a world-class business [14].

The NUWC MBA is a blended distance learning program with one third of the contact hours (15) for each course delivered in a face-to-face traditional classroom setting and the other two thirds (30) delivered via the Internet in both asynchronous and synchronous mode. Students in the program are furnished with high-end laptop computers equipped with modems and headsets. Software includes the latest version of Windows, MSOffice, Outlook and Symposium, a course

delivery package produced by Centra. The asynchronous portion of each course is delivered with web pages developed using Dreamweaver and e-mail for communication between students and faculty as well as the submission of written assignments. The synchronous portion of the course is delivered using Symposium, which provides for on-line interaction between students and instructor. Instructors can deliver a lesson using two-way audio, a whiteboard, a highlighting feature, application-sharing programs such as Excel or Access, and one way video of the instructor if so desired. The Symposium session is delivered one hour per week per course at a regularly scheduled time. Because of work and travel requirements not all students can attend every weekly session. Students who are unable to attend the weekly session can access a recording of it at their convenience.

The fifteen hours of face to face are divided into 3 hours at the beginning of each course, 6 hours in the middle, and 6 hours at the end. Since students routinely take two courses per semester, this translates into face to face sessions of one day at the beginning, two days in the middle and two days at the end of the semester. All these sessions are video taped for those students unable to attend.

Results to date of this program indicate that the combination of face to face sessions and the real time interaction provided by Symposium are very helpful in addressing the lack of interaction between students and instructors found in many e-learning program. As with many e-learning programs delivered over the Internet, bandwidth is sometimes a problem. Downloading the Symposium agenda prior to the live session has done much to alleviate this problem. Also, the students have the option to turn off the video of the instructor which helps with the bandwidth problem. Since much of what NUWC does involves highly confidential work, it has very secure firewalls which presented some problems in delivering course material to students while at work [16].

TADLP

In 1996 the Army approved the concept for The Army Distance Learning Program (TADLP). This program was designed to deliver individual and collective training, Army Modernization Training (AMT), and self-development courses to soldiers and units, anytime, anywhere using multiple means and technologies [2].

TADLP used an evolutionary strategy to design and deliver the program, going from Video Tele-Conferencing and Interactive Multimedia Instruction (IMI) CD-ROM courseware to networked Digital Training Facilities, WEB based courseware, electronic calendars and remote enterprise management. The plan is to convert over 500 courses, covering a variety of subjects affecting Military Occupational Specialties (MOSS), to the TADLP program.

The TADLP web site describes the program as having readiness-based training priorities, a global networked training environment, students trained at home stations, and technology based classrooms. The special features of TADLP outlined on the web site include multimedia courseware, collaborative training opportunities, consistency with DoD, Army, & commercial standards, training on all components to Total Army Standards, and moving away from the traditional resident service school. The authors were given the opportunity to tour the technology support facilities and meet with management and staff to discuss the objectives and

challenges of the program. In discussions with Col. Holmes, TALDP Program Manager, operational goals were outlined as: 1) train to one standard; 2) reduce costs associated with training; 3) improve morale; 4) improve training efficiency; and 5) improve unit readiness. Challenges included bringing courseware on line and marketing the program to soldiers throughout the world.

There are 4 divisions supporting TADLP: the Business Management Division, Operations and Sustainment Division, Horizontal Program Integration Division, and the Technical Management Division. The Army has set an ambitious goal for the next several years to develop almost 500 courses to be delivered in more than 200 e-learning training facilities located on military installations throughout the world. Not only do these facilities have to be built and supervised, the courses have to be developed in a format that will be both effective and efficient for training military personnel. The program has been underway for about four years, and to date the classroom construction and enterprise management systems are well ahead of courseware development. Currently about half the facilities are operational, but only about 6 percent (28 of 480 listed courses) of the anticipated courseware is up and running on the system. It should be noted that courseware development is a different program, under separate management, and not under the control of Col. Holmes. It appears that lack of adequate courseware is a very limiting factor for the success of the TALDP program, and unless courseware can be developed more efficiently and brought on-line, the program will have limited application for the education of soldiers.

eArmyU

The U.S. Army initiated a large scale e-learning program in January 2001 titled Army University Access Online (AUAO), which is better known by the name of its Internet portal, eArmyU. eArmyU is a major effort by the Army to improve retention of its enlisted personnel by offering free associate, bachelors, masters, and certificate programs. While participants can take up to 50 percent of their courses at any of the authorized institutions, they must sign up at a home institution first. To participate, soldiers must have at least three years of service remaining on their current enlistment. Soldiers not having the required three years, can reenlist or extend their current enlistment. Approximately 15 percent of the current participants have either reenlisted or extended their current enlistment. This is significant when the Army states that it costs nearly \$70,000 to train a new recruit [17].

The Army pays for all tuition and course fees as well as textbooks. In addition it provides a technology package to each soldier of a laptop computer, printer, Internet access and an e-mail account. Once a soldier completes a minimum of 12 credits in the first two years of the program, he or she can keep the computer and printer. While eArmyU pays all tuition, there currently is an annual limit of \$3500 per student that is expected to increase to \$4500 by the end of 2002 [3]. Under a contract with PricewaterhouseCoopers, the Army expects to spend \$453 million in the first 5 years of the program. In the first 12 months, 12,000 soldiers enrolled in the program which currently offers more than 90 degree programs from 23 colleges and universities at three Army bases: Fort Benning, Georgia; Fort Campbell, Kentucky; and Fort Hood, Texas. Two new locations, Fort Carlson, Colorado and Fort Lewis, Washington are scheduled to be added in February 2002 [9] and it is scheduled to go Armywide in 2003 [3].

While the numbers for the first year of operation are encouraging, it is also the case that 85 percent of enrollments have occurred at only six institutions, all of which are either close to the bases offering the program or have long standing associations with the Army's education program. It is believed that this is a result of Army education officers advising soldiers being more familiar with these institutions [3].

To offer courses through eArmyU, a college or university must join Servicemembers Opportunity Colleges Army Degrees, which is an Army accrediting body. This guarantees the transferability of courses regardless of where taken. This process of being accredited has resulted in the number of approved institutions being 23 rather than the originally proposed 29. To permit more colleges to participate, the requirement that an institution offer a complete degree program on line has been relaxed to the requirement that at least 50 percent of it be offered on line.

Other administrative problems have included the requirement that all courses be offered on the quarterly calendar as opposed to a semester schedule and a standardization of terminology across institutions. While not yet a requirement for accreditation, a call for standardized tuition rates has proven to be a major issue for some institutions [3].

How well is the military doing?

The three military e-learning programs discussed above provide a broad basis for the military's vision as it relates to e-learning training for its 165,000 yearly training load [6]. Similar to massive increases in e-learning in education and business organizations in hopes of improving effective education and training at lower costs, the military has likewise created long-term plans for e-learning. A short summary of e-learning in the military from [18] follows. All the service branches are active in the implementation of e-learning technologies to replace traditional classrooms for both active and reserve components [12]. The TADLP and eArmyU are examples of the Army's vision for e-learning. The Navy's distance learning plan is integrated into an overall plan for training technology which encompasses both active duty and reserve sailors. One major Navy e-learning program is an interactive VTT network used for e-learning and teleconferencing. The Marine Corps plans a wide reaching and interconnected Marine Corps Learning Network (MarineNet) to support individual learning. This plan requires converting traditional courses over the next several years to electronic media targeted for the Internet and Intranet delivery. The Air Force established in 1988 the Air Force Institute for Distance Learning. Over ten thousand Air Force students around the globe take courses delivered in a variety of distance learning formats.

The Advanced Distributed Learning (ADL) initiative at the Department of Defense promotes a strategy of utilizing object-technology for lowering the cost of developing next generation learning technologies. For example, there may be a need for a vehicle simulation (animation) in many different training courseware programs. By creating this as a reusable module (object), courseware development is eased because the reusable object can simply be plugged into any courseware as needed.

As indicated above, metrics for measuring e-learning are weak at best but research seems to indicate that e-learning for training can be effective [4]. The training versus education debate will not be continued here but suffice it to say that much of the e-learning needs in the military are for training—skills needed to do specific tasks. And research seems to support e-learning is effective for training whereas gaps in research question the effectiveness of e-learning for education. Thus, it is important to view the various e-learning programs in the military based upon their objectives.

The authors described above three examples to further illustrate e-learning approaches taken by the military. The objective of the NUWC Executive MBA Program includes the terms “a nationally accredited business degree program ... relevant content...strong experiential component.” Thus, it contains a heavy component of education—business education—that will hopefully result in running parts of the military more effectively and efficiently. The program appears well designed as it includes face-to-face, experiential and e-learning components—a combination deemed effective for education components. Since this is a new program with relatively few students, its impact on the objective of creating a more effective and efficient organization is uncertain at present.

In sharp contrast to the NUWC Executive MBA Program, the TADLP program and part of the eArmyU program are geared toward training. “Improve Readiness” is the overall mission of the TADLP and this is accomplished with standardized individual, collective and self-developed training in an anytime anyplace scenario. With its heavy orientation toward training versus education, this program should be both effective and efficient if the delivery infrastructure is in place and appropriate courseware is available. The authors have been told that the courseware is heavily multi-media based but is quite far behind schedule in terms of completing modules. The good news is that the multi-media approach addresses many of the concerns of e-learning courseware (boring, non-interactive, etc.). The bad news is the long development backlog of such courseware. The infrastructure progress for TADLP greatly surpasses the progress of the courseware and the authors think the program will be hard to market and be successful unless the number of available courseware modules increases dramatically.

The eArmyU program contains components of both training and education with its objective “to create technology-savvy soldiers to support Army transformation, succeed on the digitized battlefield, enhance retention and help soldiers achieve academic degrees”[7]. The degree programs include certificate programs (oriented toward training) and degree programs (oriented toward education). Certainly, the numbers for the first year are impressive (about 12,000 students) and they expect an additional 10,000 for the next year. Also, plans are to expand the program portal to allow courses globally. One of the objectives was retention. Sixteen percent of those in the program extended or re-enlisted. Given the \$70,000 training costs of a new army soldier, a sixteen percent increase in retention represents a significant cost savings that can help offset eArmyU costs. The authors believe this program will be successful and grow.

In summary, the military has recognized the potential e-learning can have on their operational readiness, business operations and retention. Overall, the military is doing a good job moving traditional courseware to various e-learning technologies. However, there are concerns about the speed of courseware development in some areas. Also, the efforts of the Advanced Distributed

Learning (ADL) to create reusable objects suitable for courseware has the potential to improve courseware development in terms of cost, time and quality. This assumes there is coordination across all military branches to take advantage of the objects. Lastly, new technologies could require major changes and approaches in e-learning. If applications utilizing wireless and mobile devices rapidly advance, then costs and applicability of mobile e-learning programs may supplant some current and/or planned military e-learning programs.

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