

BACKGROUND

The Army has established The Army Distance Learning Program (TADLP) under the auspices of the U.S. Army Training and Doctrine Command (TRADOC). The intent of this program is to capitalize on the capabilities of distance learning (DL) technology to replace resident instruction with DL in those cases where the material can suitably be taught using DL. In effect, this means dividing existing courses into resident learning (RL) and DL phases or modules. Typically, the DL portions of the overall course are prerequisites for follow-on residential instruction. Thus, TADLP will significantly change how individual training is conducted—how leaders and soldiers are developed—both in institutions and in the field.

The Army is pursuing these changes because it believes a number of benefits accrue from DL. These benefits amount to direct or indirect enhancements to training and personnel readiness. DL has potential for delivering targeted training on short notice, can facilitate access to education, and may provide more timely training than a resident course. At the same time, as technology can enhance the speed of learning, course lengths can decrease, and soldiers may spend less time away from their units and less time between operational assignments. Some resource savings may also be possible as the resident training loads on schools decrease. These could take the form of reduced travel costs and reductions in instruction and support staffs, although the latter will be offset by requirements for instructors and support in the DL courses.

Several key features of the DL program determine how it will affect training, the soldiers and leaders being trained, and their units. First, some training will move away from the traditional schoolhouse and closer to where soldiers reside, making the training easier to schedule and deliver. Second, DL can leverage emerging educational technology and media to provide increased access to training material and to deliver the training. Third, by reducing the need for soldiers to leave their units for RL courses elsewhere and by providing significant amounts of training in asynchronous modes,¹ DL provides the potential for increasing flexibility and continuity in the timing of training. Finally, because it moves some training out of directly supervised classrooms and school environments, DL increases the responsibility of soldiers and their chain of command for ensuring timely completion of training.

While the distance learning program is under the purview of the Army's training community—primarily TRADOC and the Army's Deputy Chief of Staff for Operations and Plans (DCSOPS)—the program has broader implications for the Army as a whole. TADLP will directly affect the ways the Army will achieve three of its major goals. These goals, identified as Lines of Operation 3, 4, and 5 in the Army's Transformation Campaign Plan, are

- Manning the Force and Investing in Quality People,
- Maintain Unit Readiness and Training, and
- Training and Leader Development.

These areas directly concern the Army's personnel and training communities, i.e., the DCSPER, the DCSOPS, and TRADOC. But because of DL's potentially wide-reaching effects in all these areas, the Army as a whole has a significant stake in the development of the distance learning program and the direction it takes.

¹In synchronous distance learning, the students are connected with an instructor while the instruction is being presented. They may also be connected with one another. In asynchronous DL, the students work on the course material at a time they choose; they need not be directly connected with anyone else.

RESEARCH FOCUS AND PURPOSE OF THIS REPORT

The features of DL discussed in the preceding paragraph indicate that TADLP can significantly affect the Army's personnel readiness through its impact on the methods, scheduling, timing, and time required for delivery of training. We undertook research for the DCSPER to examine some of those potential personnel readiness implications. In the process, we developed analysis that should help both the personnel community and the Army at large in evaluating DL's potential and ways to capitalize on it. This report and a companion one² on the applications of DL to redressing manpower shortages present the results of our research. While our particular focus was on selected personnel development and readiness implications of the DL program for the Army, we believe the conclusions we draw apply to personnel training and development programs in general.

In this research, we start with discussions of ways in which DL can affect personnel readiness. Because we are looking in particular at the potential for DL to help maintain or improve readiness by keeping soldiers in their units longer, we look at the challenge of stability enhancement in an overall perspective. We then move to a more detailed discussion of how changes in institutional training patterns, enabled by DL conversions, can help the Army enhance stability. We also point out some potential resource implications of DL conversions. We include at the end of the report a broader discussion of DL's potential, drawing on observations already made and on additional insights we gathered during our research.

As we have suggested above, the personnel implications of TADLP (and thus a significant part of the Army's stake in the program) boil down to readiness: can TADLP help to enhance the personnel readiness of the Army? Many of the features of DL—chief among them shorter overall training time, the availability of “on-demand” training packages, and greater flexibility in scheduling—can enhance personnel readiness if judiciously employed.

²Michael G. Shanley, Henry A. Leonard, and John D. Winkler, *Army Distance Learning: Potential for Reducing Shortages in Enlisted Occupations*, Santa Monica, CA: RAND, MR-1318-A, 2001.

We look at personnel readiness at three levels: Army-wide, organizational, and individual. Army-wide personnel readiness depends on the overall natural abilities, training and education, and morale of the Army's people (these are also components of individual readiness) and on the Army's ability to develop, train, position, and motivate them to accomplish their assigned missions. Organizational readiness includes the above considerations and looks more specifically at the degree to which the skills and qualifications of the soldiers in units and organizations match the skill and qualification requirements specified for those units and organizations. Of the three forms of readiness, this is the easiest to quantify: improving the match between the skills of the soldier inventory and the requirements of the organization improves organizational readiness.³ Individual readiness—the skills, training level, general aptitude, and motivation/morale of each individual—is the foundation for the two collective forms of readiness.

DL programs can influence personnel readiness at all three levels, and this research project has examined the effect of DL at each. For example, the first segment of our research examined ways DL can help the Army more quickly address manpower shortages in under-strength skills. It looked at the potential for DL to enable faster completion of reclassification training, faster promotion qualification, and more efficient forms of additional skill training. Success in these areas would improve the skill mix component of the Army's overall readiness posture⁴ and, in turn, also improve the skill content in units and organizations, enhancing organizational readiness. The organizational effect depends also on judicious distribution of the additional trained soldiers into units and organizations where there are shortfalls: DL enables better organizational readiness but does not by itself lead to such improvements.

In addition, DL programs have the potential to reduce the time soldiers spend away both from unit duties and from their families, thus enhancing stability in units and quality of life—well being—for

³The Army uses statistical measures of this match as part of its unit readiness assessments. The Army also separates organizational readiness into two separate categories: institutional and unit. The personnel readiness effects of DL would be similar for both.

⁴That is, bring the manpower fill in each skill area closer to requirements.

soldiers and families. This report—the second segment of our research—is devoted primarily to a closer look at these effects. The fundamental premise here is that increasing the amount of time soldiers are available to their units will enhance overall readiness. This premise is supported by the fact that turbulence—the rapidity of soldier and especially leader turnover in the Army’s organizations—is an item of interest in readiness reporting and discussions at all levels of the Army. We treat turbulence in more detail in subsequent discussions. A second premise is that improving quality of life for soldiers and families will more subtly improve readiness by improving morale and retention.

We also look at some of the ways the DL program could help overall individual readiness, not only by improving skill qualifications and quality of life, but also by enriching leader development and expanding other opportunities for personal and professional development. Individual readiness is difficult to quantify: such measures as test scores, education levels achieved, and skill training accomplished are helpful but not wholly comprehensive indicators. Our premise here is that enriching leader development and enhancing opportunities for other forms of personal and professional development will enhance individual readiness by producing better-trained and educated soldiers and leaders. The Army’s recent initiative to give soldiers access to Web-based civilian education and skill certification programs is an example of the potential contribution that DL can make to individual readiness. We will look at some other examples of DL’s potential in this area.

DL AND THE QUALITY OF TRAINING AND EDUCATION

While we do not purport to offer a full analysis of the desirability of replacing classroom training with DL, we do believe some discussion of this important issue is warranted. DL’s introduction will bring about large and fundamental changes, technically, organizationally, and culturally, in how training (particularly but not only institutional training) is conducted. Viewed in this way, DL clearly poses some risks to the quality of training, especially during the transition period. Careful implementation and monitoring will continue to be key to maintaining training quality and achieving desired learning out-

comes. This in turn will require continued emphasis and support throughout the Army.

Our analyses in this report and in its companion report carry with them an assumption that DL's potential can be fully realized in many of the Army's training programs without reducing the quality of training. This means DL initiatives must be implemented with due concern for retaining the benefits of residential learning where appropriate, and with careful selectivity in determining which portions of a given training program should be taught using DL. Judgments about DL conversion should also take into account some of the more intangible, but nevertheless real, benefits that RL conveys by allowing soldiers to associate in an academic environment with their peers and with subject matter experts.

The foregoing implies that the superiority of DL should not be taken for granted. On the other hand, we note that a considerable volume of past research supports the contention that DL can provide training as effectively as the classroom training it replaces, and possibly more efficiently in some cases. For example, Phelps et al. (1992) found that knowledge gained in engineering and leadership courses offered to a group of Reserve Component officers was at worst not significantly different between RL and DL groups.⁵ Along the same lines, in a test of distance versus resident education on selected subjects from the Army Command and General Staff Officers Course, Keene and Cary (1992, p.102) found that "students who received the distance learning instruction evinced superior knowledge of the subject matter at the end of the instruction."⁶ Similarly, Farris et al. (1993) found that computer-based training could be used effectively

⁵Specifically, students' self-ratings of knowledge improvement would support a finding of better learning in the DL engineering course. The DL group also had higher performance test scores than the RL group, but the difference was not statistically significant ($p > .05$, thus the "at worst" in the text above). Performance scores in the leadership course were significantly higher for the DL group. The authors noted higher attrition in the DL group as well—this will be a continuing item of concern for unit commanders and institutional training managers. Phelps et al. (1992), pp. 113–125.

⁶Better than the RL group on three of four posttests, with $p < .001$ on two of these. On the fourth, the RL group scored slightly better but the difference was not statistically significant. Keene and Cary (1992), pp. 97–103.

in teaching many of the skills required for artillery fire direction specialists.

More generally, studies of various forms of DL have pointed toward a tradeoff between superior performance and reduced training time, compared with the RL courses they are designed to replace. Orlansky and String (1979) make this point in a paper looking at the results of some 30 studies of the effects of DL on military training.⁷ In particular, they note (p. 42) that in most of these studies the principal effect of DL is a reduction in overall time needed to master the required skills. “The fact that student achievement . . . is about the same as that with conventional instruction is also a direct consequence of the fact that students . . . are held in these courses until they master all lessons. The critical variable thus becomes the amount of time needed to complete the courses . . .” The authors go on to point out that in the studies they examined, median time savings were on the order of 30 percent, with only three of the courses actually requiring increased time. They observe that one likely reason for this effect is that the DL instruction is self-paced, so students must only spend as much time as needed to achieve a given performance standard.⁸

Two other observations are worthy of mention in the context of the previous discussion. First, a key reason why DL instruction has been shown to be at least as effective as RL is that the right choices were made in the beginning about what should be taught using DL, and the right amount of attention was paid to the quality of the DL materials. Second, since appropriate use of DL can reduce training time, training managers and the Army leadership are going to be presented with a large number of choices about the tradeoff between reduced training time and improved training effectiveness. These choices will be complicated by the desire in some cases to capture the values of group discussion and close interactions with expert instructors, none of which can be provided as effectively with DL as they can with RL. Thus, we note again that training managers must continue to be

⁷Orlansky and String (1979) provides an in-depth treatment. More condensed discussions of the same general observation can be found in two other articles: Orlansky and String (1981) and Orlansky (1983).

⁸Orlansky and String (1979), pp. 42–48.

judicious in selecting course segments for conversion to DL, and that the quality of DL courseware must be assured. Also, as with any RL curriculum, periodic refinement and adjustment of DL course content will be necessary to maintain currency. In the next paragraphs we note some other areas where continued attention will be needed to uphold the overall quality of training and education as DL programs are introduced.

As mentioned earlier, taking residential time out of courses reduces opportunities for interaction among students and between students and instructors. Many of the Army's RL courses, especially professional development courses, have important group process-oriented collaborative requirements. Losing these components in a DL-supported course could decrease training quality. Some collaboration and group interaction can be built into DL segments of these courses, and consultations with instructors need not always be face to face (they aren't always in RL environments, either). But interactions over electronic media cannot fully substitute in every case for the value of direct personal contact. Also, reducing the length of residential training in some courses will reduce the opportunity for the Army's developing leaders to network with one another. While networking does not contribute directly to training quality per se, it does develop trust and confidence among peers that can enhance their effectiveness in their subsequent careers when they may again be called on to work together. This can legitimately be considered a value of institutional training. The key to maintaining the overall effectiveness of the training program, then, is to retain those aspects of direct interaction that cannot be replaced and to utilize fully the potential of new distance learning technologies to enable quality collaboration and interaction where needed. Application of this principle means there will be clear limits to the degree of DL conversion that would be appropriate.

Another key element of training effectiveness will be the roles of the student, the local commander, supporting installation activities, and the proponent schools. By moving more instruction out of directly supervised residential training environments and into the field, DL increases the responsibility of soldiers and their chains of command for ensuring that training standards are met in a timely manner, but the schools will still play an important role even during DL phases. DL creates a need for new or modified forms of support, e.g.,

“fenced” study time for students at home station, e-mail or Web-based academic aid and supplemental tutorial materials, periodic feedback for students, instructor help lines, and control of performance testing materials. Also, while it may be possible to operate DL phases of courses with somewhat less administrative support, some of this kind of support (e.g., scheduling, enrollment, record keeping, certification) will still be required. Failure to provide adequately for these details in DL-supported courses can lead to higher attrition, longer completion times, insufficient learning or retention of important material, and ultimately a lower quality of training.

In summary, while we hold in this report that DL can maintain high training quality, we also recognize that replacing resident learning with distance learning, if done improperly, can lower training quality. In particular, we note the importance of avoiding the following implementation pitfalls:

- Choosing inappropriate course segments for conversion
- Using inappropriate or outdated instructional media
- Failing to make sufficient changes to existing processes and support activities to support DL’s requirements
- Failing to provide adequate resources
- Providing insufficient incentives for students, commanders, and supporting activities to play their proper roles.

HOW THIS REPORT IS ORGANIZED

The next chapter of this report discusses the issues of turbulence and its flip side, stability. Chapter Three turns to an analysis of one specific type of course, officer career courses, and whether DL would increase stability and at what cost. Chapter Four extends the analysis to other types of courses. The core of the analysis in Chapters Three and Four is our examination of the additional days that soldiers can be available at their home stations. We will also discuss some of the relevant cost factors and provide estimates of some possible modest cost reductions. Chapter Five provides a broader discussion of DL’s potential, drawing on observations already made and offering additional insights gathered during our research. Chapter Six summa-

rizes our stability enhancement findings and presents conclusions, recommendations, and some cautions.