

**STRATEGY
RESEARCH
PROJECT**

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**APPLICATION OF DISTANCE LEARNING
TECHNOLOGY TO STRATEGIC EDUCATION**

BY

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APPLICATION OF DISTANCE LEARNING TECHNOLOGY TO STRATEGIC EDUCATION

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ABSTRACT

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Rapid advances in computer and communication technology present opportunities for the Army War College to enhance and expand strategic knowledge throughout the force. This paper examines the concept and theory of distance learning, briefly traces the history of its development and describes technology currently available. It discusses issues of quality and institutional planning and management and suggests some potential applications at the Army War College. It argues that, through the application of distance learning technology, the Army War College core missions of instruction, research, and outreach can be enhanced to meet the challenges of increased need for strategic knowledge at all levels, limited or declining resources, and the changing needs of students.

Introduction

The past decade has been one of extraordinarily rapid world wide change. Two areas in which change has been particularly rapid and pervasive are world politics and technology. The former has required a complete reassessment of both the national security and the military strategy of the United States. The latter has produced and is producing means to pursue these strategies in ways previously unimagined.

In the area of technology some of the most significant changes have been in computerization and communications. A synergistic effect has developed between these two technologies allowing one to leverage the advancements of the other, producing a phenomenally fast rate of change and improvement that affects nearly every aspect of human endeavor. In the realm of national defense, they have led to what some have referred to as a "revolution" in military affairs. In the realm of education, they have shaken the very foundations of the ideas about how, when, where, and for whom education can be provided.

These technological advances also have profound implications for what military leaders must know and must be able to do. For example, instantaneous global communication has blurred the lines between the strategic, operational, and tactical levels of war and other operations such as peace keeping and peace enforcement. Strategy, which is the ends, ways, and means of accomplishing national policy, is no longer exclusively the "art of the general," as it was for the ancient Greeks. The strategic, operational, and tactical levels of war have collapsed into virtually a single entity. Actions of soldiers at the most direct tactical level can have strategic impacts that they must understand.¹ Likewise, the rapid pace of world events

makes it increasingly difficult for senior leaders to keep fully apprised of matters of strategic importance.

For these reasons, the need for creation and dissemination of strategic knowledge throughout the force has assumed even greater importance. It is the mission of the U. S. Army War College to meet this critical need. Fortunately, harnessing the technologies that generate the impetus for this change can help meet the challenge.

The purpose of the U.S. Army War College is to prepare future strategic leaders for the Army and, more generally, for the entire defense establishment. Its mission is:

"To prepare selected military, civilian and international leaders to assume strategic responsibilities in military and national security organizations; to educate students about the employment of the U.S. Army as part of a unified, joint, or multinational force in support of the national military strategy; to research operational and strategic issues; and to conduct outreach programs that benefit USAWC, the U.S. Army, and the nation."²

The vision statement of the college is to be:

"The nation's preeminent center for strategic leadership and landpower... a learning institution... preparing today's leaders for tomorrow's challenges... pursuing mastery of the strategic art through education, research and outreach."³

In a manner similar to other institutions of higher education, the Army War College faces considerable challenges in fulfilling its mission and achieving its vision. First and foremost is the issue of resources; the budget of the Department of Defense will fall nearly 48% from 1988 to 1998. A decline of this magnitude certainly limits the level of available resources; additionally, this decline effects the nature and needs of the Army and the student population. Secondly, the budget reduction has forced a decline in staffing without a concomitant decline in missions; increased pressure upon the officer corps is the net effect. The top officers who are the best candidates for selection to attend the Army War College are

the very ones who are in most demand by commanders in the field. A third challenge relates to the corresponding studies program through which two-thirds of the college's student population is enrolled. Competition is stiff for enrollment in this high-quality program with selection limited to only those officers with the greatest potential for senior leadership positions. Yet, more than 30% of the students who are selected and enroll do not graduate.⁴ This high rate of attrition is wasteful of resources and human potential.

The leadership of the U.S. Army War College recognizes the need for change to address these and other concerns and help shape the future of the institution in a vision statement and plan for change labeled the "Fourth Army War College." The "Fourth Army War College" seeks to aggressively incorporate the latest technology in all aspects of its operation including the delivery of instruction and distance learning through electronic means.⁵ The recently established modernizing department of corresponding studies and distance learning task force will pursue this end.

The thesis of this paper is that through the application of distance learning technology, all three core missions of the institution - *instruction, research* and *outreach* - can be enhanced to meet the new demands of force-wide strategic learning, limited resources, and changes in student population and retention. It will define distance learning concepts, consider the range of capabilities and how they might apply to various program components, and examine managerial and organizational issues.

Definition and Concept

To understand the concept of distance learning or distance education, it is necessary to understand the meaning of the term. Unfortunately, in this rapidly evolving field there is not a universally accepted definition, rather, the definition employed by different authors reflects their particular perception of the role of distance education in their setting. Nonetheless, there are certain characteristics that are recognizable in the most commonly used definitions. As will be demonstrated, these characteristics pertain to the relationships among the teacher, the learner, and the information.

There are at minimum, four components of any teaching-learning situation. They are: a teacher, a learner, a communication system or mode, and something to be taught and learned. In traditional settings, all of these components are present in the same time and place in the “classroom box.” The concept of distance learning redefines and reorganizes the “classroom box” to accommodate separation of any or all the components by time and distance.⁶

Simply put, distance education occurs when students and teachers are separated by distance and, perhaps, time. Technology, which can range from the simple exchange of printed material through mail (correspondence education), to the establishment of interactivity through electronic means, bridges the gap in time and space. The net result is the same regardless of how teacher and student maintain their relationship at a distance: the transporting of information, not people; students stay put and school comes to them.⁷

A Historical Perspective

The basic concept of distance education is not new. Its apparent beginning in the United States occurred in 1728 when an advertisement appeared in the Boston Globe advertising short hand lessons through the mail.⁸ Home, correspondence, external or independent study and open learning are names by which the field has been known over the years. As the field evolved it tended to reflect the technology available at the time. In the earliest years it relied exclusively on printed material. It developed and began to use broadcast technologies in the late 1930's and 1940's. In the late 1960's, a new era in distance education began with the establishment of the Open University in the United Kingdom. This fully accredited, totally-distance oriented institution focused upon high quality and the adult learner. In so doing it earned new credibility, acceptance, and respectability for the field.⁹

In more recent times, the explosion of electronic communications technology has resulted in great new possibilities and a resurgence of interest in the field. While the basic concepts remain unchanged, emphasis is now upon interaction between teachers and learners. Cable television, fiber optics, microwave transmission, slow scan television, satellites, and microcomputer networking are changing the scope of distance education. "These technologies permit live interaction and immediate feedback between teacher and student(s), create opportunities for educational institutions to coordinate schedules and share resources, and provide expanded curricular offerings and educational opportunities for students."¹⁰

During the 1990's, there has been a dramatic expansion of distance learning programs in the higher education community.¹¹ This trend, expected to continue into the future, is

being driven by three factors. The first factor is the characteristics of the student population. Increasingly, adults are seeking opportunities to further their education but lack the time to participate in traditional programs. Second, the continuing evolution of computing and communication technologies make the delivery of high quality programs at a distance increasingly possible. Finally, it is believed that, over the long run, delivery of programs in this manner will prove to be less costly and just as effective as conventional modes of delivery, particularly when an increased number of students can be served and collaboration with other institutions can be established to share resources.

To understand the new growth and popularity of distance education it is important to understand the concepts of bandwidth and interactivity. Bandwidth is the size or “carrying capacity” of the communication channel between the sender and the receiver of a communication. Greater bandwidth permits greater interactivity; the wider the bandwidth of a communications medium, the more immediate and rich can be the learning experience. Greater bandwidth permits greater interactivity. Greater interactivity enables the communication of more feedback to motivate and individualize learning.¹²

Historically, the lack of available bandwidth has hampered instruction over a distance as compared to face-to-face learning situations. For example, correspondence courses that limit communication to the physical transportation of written messages inherently limit immediacy, richness, motivation and individualization.¹³ The ongoing trend toward the merging of computer and communications technology is having tremendous impact upon distance learning by increasing bandwidth and thereby the possibility of greater interactivity at much lesser cost.

This rapid technological change is leading to further refinement of the definition of distance education. Some more recent definitions add the concept of interactivity to the simple idea of a teacher and learner being connected by a communications medium. Networking and recombining dispersed and decentralized learners forms new learning communities.¹⁴ Teacher, learner and resources are located on any point or node in this network. No longer needed for teacher or learner, the classroom as a physical entity ceases to exist and the concept of "classroom box" becomes obsolete.

The Quality Issue

As has been observed, the concept and practice of distance learning have existed for many years and have benefited thousands of students. The recent rapid advances have reduced the cost and increased the availability technology resulting in an explosion in the quality and quantity of distance learning programs. As a result, an increasing number of institutions of higher education, including some of the most prestigious in the nation and the world, have implemented or are implementing distance learning programs.

Higher education is traditionally a quality conscious industry. Self regulation through voluntary regional and program specific accrediting agencies and State Postsecondary Review Entities (SPRE) mandated by the Federal government ensures oversight and quality control. These entities conduct cyclical and ongoing reviews of the operation of institutions and educational outcomes to ensure quality. The reputation of institutions as well as the eligibility of its students for governmental financial aid often depends upon the outcome of these reviews. Before initiating new approaches to instruction such as distance education in

this highly scrutinized environment, reputable institutions must first be convinced of both the quality and effectiveness of the program. The increasing willingness of prestigious institutions and the higher education community in general to implement distance learning programs is evidence of their belief in the effectiveness and quality of the approach.

Institutional confidence in the quality of distance education is well founded. Many educators have asked if distant students learn as much as students receiving face to face instruction. Research conducted by Moore and Thompson¹⁵ (1990) and Verdun and Clark¹⁶ (1991) indicates that “teaching and studying at a distance can be as effective as traditional instruction, when the method and technologies used are appropriate to the instructional tasks, there is student - to - student interaction and where there is timely teacher - to - student feedback.”¹⁷

Technologies currently available and those which are emerging, can directly enhance interaction and feedback while enriching instruction by engaging more fully the spectrum of how people learn. These findings, coupled with the prospect of even more significant technological developments in the future, have profound implications for the conduct of distance education. Delivering some kinds of education at a distance as effectively as in a traditional classroom will decrease the justification for gathering students and teachers in the traditional setting and the enormous cost associated with that approach.

Technology Which Supports Distance Learning

While any consideration of distance learning must focus upon educational effectiveness and instructional outcomes desired, any understanding of the range of technical capabilities available is essential. These technologies fall into four basic categories - Print, voice, video, and data.¹⁸

Print remains the most fundamental media for distance learning. Due to the convenience and universality of print, it is likely to remain important. However, even this element is being affected by technology. In some cases, printed text is being converted to a computer readable format and packaged on computer disk or CD - ROM. While this may improve convenience, it does not change the fundamental nature of the media. That is, it remains a passive form of instruction and does little to contribute to the essential elements of interaction and feedback.

Audio technology was among the earliest forms of technology applied to distance learning. These were passive learning devices such as tapes and radio. Telephone and audio conferencing employ audio technology in more interactive ways. Audio telephone conferencing is widely available. Typically, it uses the public telephone system to link learners at two or more locations through an audio bridge. A subset of this technology is audiographic conferencing that combines voice communication with image or data transmission through devices such as electronic blackboards, still video, and personal computers. Audio conferencing has the advantage of being readily available and relatively inexpensive. It does permit some interaction and feedback and can be effective when

combined with other media. Limitations on the type of content communicable in a purely auditory manner and its impersonal nature are primary disadvantages of this media.¹⁹

Video is a popular media for distance education. Instructional video tools include still images such as slides, films, video tapes, and real time video that may be combined with audio conferencing. Video may be either passive or interactive; the passive approach normally involves production and distribution of video by cassettes, or by broadcast, cable, or satellite. The interactive approach can incorporate one way or two-way video and two-way audio. Use of video, particularly interactive video, has proved to be an effective means for handling complex or abstract concepts, introducing and summarizing and reviewing concepts, and improving student motivation. An important limitation on the use of video, particularly interactive video, is its cost. At present, fully interactive systems typically require a satellite and both uplink and downlink capabilities to tie together a limited number of sites. The capabilities to both send and receive must be available at all the sites.²⁰

The U. S. Air Force Command and Staff College developed an interesting and promising approach to dealing with the high cost of interactive video. The college has created what it refers to as “teleseminars” with a one-way, real time video broadcasting system supplemented with interactive audio. In this format, students gather at any of the 69 Army Satellite Education Network sites or 262 Air National Guard Warrior Network sites to participate in interactive, real time seminar sessions. Instruction emanates from a single uplink site with distribution by way of a leased commercial satellite channel to each of the more than 300 sites. The sites are equipped with facilities for interactive audio.²¹ This system permits effective interaction between students and faculty and provides timely

feedback to students. Its primary limitation is that of access; students must be simultaneously present at a limited number of sites. Future developments in the area of direct broadcasting (DBS) may overcome this impediment and permit student to participate directly from their homes.

The technology that is having great effect on the field is that of personal computers and global computer networks. Applications of this technology include computer assisted instruction (CAI) and computer mediated instruction (CME). Computer assisted instruction uses the computer as a stand-alone, self-contained teaching machine. Students work independently through software and material developed for their use. While this approach does not enhance interaction or personal feedback, it can make the learning experience richer by multimedia presentation of material including video, sound, color and animation. Multimedia authoring software is used to develop courseware and package it on CD-ROM for distribution and use by distance learners.²² This format has the advantage of improving interactivity and the quality of presentation at relatively low cost. It also empowers students to work independently at the time and place of their choosing given the availability of an appropriately configured personal computer system. However, design or redesign of courses and the development of courseware for this medium requires substantial effort.

The growth of public access computer networks, particularly the Internet, has facilitated the growth of computer mediated communication (CMC) for education. The rapid growth and global reach of the "net" present seemingly unbounded opportunities for the development of distance learning. CMI using the Internet or other computer networks incorporates electronic mail to: deliver communications, assignments or software; establish

bulletin boards to facilitate interaction among students and faculty; and provide access to library catalogs, data bases, and more than 1.3 million computers connected world-wide. CMC provides students opportunities for interaction with other students, enables collaborative group work for distance students, facilitates interaction with instructors, decreases turn around time for instructor feedback, allows student access to on-line resources, and permits students to upload and download assignments and take on-line quizzes and tests.²³

The assembly of these capabilities permits the establishment of "virtual" classrooms or seminars where interaction can be either simultaneous (synchronous) or at different times (asynchronous). The medium permits interaction between students and faculty and permits the sharing of data, programs, text, video, sound and graphics depending upon hardware capabilities. Network service providers such as America On Line, or a "home page" produced directly by the institution along with software for interaction known as groupware provides infrastructure for the system.

Some Potential Applications at the Army War College

Invention is the process of developing new tools and technologies. Innovation is the process of finding ways to apply new tools and technologies for the benefit of people and the organization.²⁴ Often innovation is the more difficult and time consuming task. The technologies described in the previous section are powerful tools for expanding and enhancing the educational process. This section will briefly examine three core functions of the Army War College - instruction, research and outreach or public service - to identify

some potential areas where distance learning technologies can bring innovation to the program. There are two overarching principles to follow when assessing what distance learning technologies will work best in a given situation. The first is to focus primarily on the needs of the learner and the organization - not on the technology used. The second is not to assume that any one type of technology provides all the answers and to consider the full range of technology.

The purpose of education is to effect change in the learner. In considering the application of technology to instruction, as in course and curriculum design, the focus must be on instructional outcomes, not on the technology of delivery. "The key to effective distance education is focusing on the needs of the learners, the requirement of the content and the constraints faced by the teacher, before selecting a delivery system"²⁵ Without exception, effective distance education programs begin with careful planning and a focused understanding of course requirements and the needs of the student. A detailed understanding of these elements should form the basis for choosing appropriate technology.²⁶ It is important that the exploration of technologies not take precedence over analysis of the purpose and use of the potential system. "In short, managers must ask themselves what is to be done, why it is being done and who will benefit."²⁷ Integrating the efforts and perspectives of students, faculty, support staff and administrators is the best way to accomplish this. Meeting the instructional needs of students is the cornerstone and test by which success or failure must be judged. However, the success of any distance learning effort begins with the faculty. Faculty must develop an understanding of the characteristics

and needs of distant students, adopt new teaching styles and function effectively as facilitators as well as content providers.²⁸

After clarity of purpose is achieved, appropriateness and effectiveness are the criteria for evaluating available media.²⁹ Typically, such a systematic approach will lead to a mix of instructional media, meeting the needs of the learner in a manner that is instructionally effective and economically prudent.³⁰ The organizational structure of the Army War College derives from and corresponds to the institution's key functions of instruction, research, and outreach. The instructional element consists of three subject matter departments and a functional department, the Department of Corresponding Studies. The Strategic Studies Institute, the Military History Institute, the Center for Strategic Studies and the Army Physical Fitness Research Institute are the primary executors of the research and outreach components of the mission. A substantial academic support organization and academic library provide support to the above.³¹

In the realm of instruction at the U. S. Army War College, the most obvious application for distance learning technology is the Corresponding Studies Program. This totally print-based program consists of ten courses designed for completion in two years. The program includes two week long resident seminar programs at the War College campus in each of the summers. Written submissions associated with each of the ten courses and the resident phase seminars are the fundamental learning vehicles of the college. The program is of high quality. While the college does not have degree granting authority, the American Council on Education (ACE) recommends that universities consider granting up to 21 graduate credits for completion of the program.³²

A key fact about this program is the wide geographic dispersion of enrolled students. For example, presently enrolled students reside in 47 states and many countries. The program is rigorous and only about 65% of those who enroll complete the program.

Currently totally print based, the program suffers from the limitations associated with that medium including passivity, limited interaction, slow feedback, lack of richness of presentation, and motivation. Distance learning technology provides several ways to address these shortcomings.

The first and perhaps most obvious action would be to supplement the printed material with non interactive audio and video media. For example, an important component of the resident program is a series of lectures by distinguished speakers and subject matter experts, including faculty, on topics under study. A question and answer period and seminar discussions follow these large group lectures. As most of these subjects closely relate to the corresponding studies course work, these lectures could be captured in an audio / video format for inclusion in the corresponding studies program materials. Ideally, these lectures could be broadcast to allow student interaction by telephone. Although desirable, this approach may be impracticable, given the wide dispersion of students and the attendant scheduling difficulties. Alternatively, these programs could be distribute to students using video cassette tapes.

Another possible application is to convert existing courses and printed material to digital and electronic form for distribution to students. This would have the effect of reducing the volume of printed material distributed through the mail. Instructional effectiveness can also be improved if the conversion is accompanied by some course

redesign. That is, courses can be redesigned into multimedia packages including sound, video, and text that can be “played” on student personal computers at home or at offices. An example of this type of course development is being successfully applied by the Air Command and Staff College multimedia course project.³³ In addition, voluminous material used primarily for student research as opposed to verbatim study can be provided in a “searchable” format.

The technology for accomplishing this is readily available at relatively low cost. However, it is important to recognize that the course design required to apply it effectively is essential and could be costly. Improvement in presentation is vital if the change to electronic media is to be effective in improving learning. Otherwise, the result will be the same - passive, non interactive instruction - placed in a different form without qualitative improvement.

Computer mediated communication and instruction is the technology that perhaps has the most immediate applicability to the corresponding studies program. This technology typically incorporates computer conferencing, electronic mail and electronic bulletin boards. Students and instructors use personal computers and modems to connect to a central computer that is running a conferencing software package. This method can transcend both time and distance as sessions can be held either concurrently or at different times. Innovative use of this technology enables establishment of “virtual” classrooms or seminar rooms. Besides increasing the efficiency of course routines such as giving and receiving assignments, the technology enables a broad range of interaction and permits rapid feedback. For example, the virtual classroom can be structured to facilitate course related and social

interaction with peers, enable student collaborative projects, facilitate interaction with the faculty instructor, decrease turn around time for instructor feedback, allow students to access on line resources and upload and download assignments.³⁴ Research indicates that this form of distance learning works best for courses involving discussion, brainstorming, problem solving and "...reflective contributions which might be based on special preparation or research."³⁵ These are precisely the higher order skills that the Army War College seeks to develop.

The use of CMC and the virtual classroom has proved effective. An example is a pilot project involving the U. S. Army Reserve Forces School of the Engineer Officer Advanced Course. A study of this program conducted by the U. S. Army Research Institute for the Behavioral and Social Sciences found an increase in completion rates over traditional correspondence course participants, better performance on retention scores and costs below correspondence and resident course programs.³⁶

The administration of the Army War college is well aware of these potential benefits. In 1995, a task force was appointed to study modernization of the corresponding studies program through distance learning technology. Initial changes should occur for the class entering in 1997.

CMC does have its limitations. Students must have the appropriate hardware, software and network connection to participate. Also, the much touted desk top multi-point interactive video conferencing that would substantially enhance this approach is not yet readily and economically available. Predictions are that developments in this area will be rapid and dramatic. At least one expert has stated that "...it's going to be embarrassing how

much better people learn..” with interactive video as compared with less sophisticated techniques.³⁷

While the corresponding studies program is perhaps the most obvious area for the application of distance learning technology it is not at all the only opportunity. Indeed, many institutions are finding that the primary benefit of this technology is not the “exporting” of instruction. Rather, the most beneficial results are achieved through applications that facilitate inter institutional collaboration. This collaboration can permit the expansion of programs or course offerings, increase the richness of current programs, and permit increased enrollment at reasonable cost. Accordingly, distance learning technology may have at least as much benefit for the resident program as it does for the corresponding studies program.

The Army War College resident program enrolls approximately 360 selected active and reserve component officers, government civilian employees and international fellows in a ten month course of instruction at Carlisle Barracks. The organization of the curriculum is three academic terms during which students take three core courses and eight advanced courses. Other requirements include a regional strategic appraisal, a strategic crisis exercise, a significant research paper and a week long national security seminar. The primary mode of instruction is faculty led small group seminars of eighteen students supplemented with large group lectures by distinguished guest speakers. Each course requires substantial reading, writing and oral presentation. Equipment for each seminar room includes an extensive array of instructional technology including networked computers, video projector, video cassette player, opaque (Elmo) projector, and broadcast (cable) and closed circuit television. A touch screen display at the instructor’s station controls this system of integrated devices. In spite of

many capabilities, the primary use of this system is the display and projection of bullet slides outlining the topics of discussion.

There is little doubt that the small group seminar setting maximizes opportunities for student interaction and the potential for effective instructor feedback. The unlimited bandwidth that exists in this face-to-face setting virtually assures this will be the case. Having met these most fundamental requirements, technological resources can improve the richness and economy of instruction through interinstitutional collaboration.

An important aspect of the mission of the U.S. Army War college is to prepare senior officers to serve in a defense establishment characterized by "jointness," that is, involvement of all the services and a wide array of other government entities in the planning and execution of operations. It is important that officers understand the culture, capabilities and procedures of elements different from their own. The Army War College curriculum incorporates education in joint affairs through lectures, readings and a practical exercise. In addition, the organization of each seminar group includes one or more students from each of the services, the reserve components, and a civilian employee. The expectation is that these individuals bring with them the perspective of their organization. While this is helpful, individual experience and knowledge limits the effectiveness of this approach. Much more effective interaction and learning in this area could occur through the application of distance learning technology to achieve inter institutional collaboration.

Each of the military services operates a senior service or war college. In many ways the missions of these institutions are similar and include education in joint matters and award of the Military Education Level 1 (MEL1) designation to graduates. Each of the institutions

is valuable in that each reflects the unique organizational culture of its sponsoring service, and develops a depth of knowledge and thinking in its particular areas of expertise.

Notwithstanding this uniqueness, the commonality of certain aspects of their missions provide opportunities for collaboration through the application of distance learning technology. This is a particularly rich opportunity for the use of interactive video conferencing and computer mediated communication. For example, through video teleconferencing each institution could share the lectures of its most notable subject matter experts and make them available to lead discussions. These discussions could simultaneously include seminar groups from each of the colleges. Indeed, permanently aligned seminar groups could interact on a regular basis thereby developing a “virtual” joint environment for learning. Further, the use of computer mediated communication enables collaboration on group projects and presentations. The basic academic organization of the small seminar group coupled with technology, most of which is already available in the Army War college seminar rooms, make this approach realistic and achievable.

The concept of collaboration need not be restricted to sister senior service colleges. The same principles can be applied to other institutions or agencies. For example, interactive lectures and discussions could be organized with distinguished faculty from prestigious universities, corporate executives, state department officials or commanders in the field.

Collaboration in the form described above greatly expands the virtual walls of the classroom. It may also present opportunities for substantial cost saving by sharing specialized faculty among institutions. It is also conceivable that entire courses or sections of courses could be cost effectively contracted with distant institutions.

The application of distance learning technology can also enhance the functions of research and public service. The purpose of research programs in higher education is to create, organize or apply knowledge.³⁸ The purpose of outreach (or public service) programs is to make available to the public the various unique resources and capabilities of the institution for the specific purpose of responding to a community need or solving a community problem.³⁹ In the case of the Army War College, these two are tightly linked. For example, research in the areas of strategy or foreign affairs can have effect only if made available to those working in the field. Traditionally, institutions have met this need through publications and journals. The application of distance learning technology can make this process much more efficient, timely and effective.

Perhaps the most obvious application in this area of research and outreach is to establish an on-line library of the various work products generated by the Army War College faculty and students to allow outside users instantaneous access by way of the Internet. The entire text of these documents could be made available in a format that allows interactive searching and cross referencing through hypertext links. In addition, provision could be made to allow for communication with the authors.

Another possible application is the establishment of an on-line global lecture hall as part of a much needed continuing education program. New research data or subject matter of immediate interest could be introduced and discussed through computer conferencing. Users world-wide could obtain the most recent information on a particular topic, and comment, discuss, question and chat with academic experts on the topic.

Planning, Organization and Management

Earlier sections of this paper focused upon technology and some possible applications at the Army War College. While these aspects are important, there is evidence that planning, organization and management issues are of equal importance in ensuring successful implementation of distance learning systems.

One of the most critical success factors is the conduct of detailed planning before pursuing a particular technology. While planning is essential to making any significant change, it is particular necessary when considering the adoption of new instructional and communication technology such as that which supports distance learning. Typically, communication devices have their impact upon institutions in four sequential stages.⁴⁰ During stage one, adoption of the new technology is to carry out existing functions more effectively. An example is the current plan to convert the Army War College Corresponding Studies program. During stage two the institution changes internally - work rules, organizational structure - to take better advantage of the new efficiencies. In stage three, the institution develops new functions and activities offered by the additional capabilities of technology. An example here would be the development of a global lecture hall for continuing education or collaboration with other senior service colleges and universities. During stage four, the original form of the institution may become obsolete, be displaced, or be radically transformed as new goals dominate the institution's activities. A representative example might be a future War College "without walls" where the resident program as known today ceases to exist, replaced by an institution based upon distance learning.

An important role of institutional strategic planning is to help determine and control how far and how quickly the institution will move along this continuum. A strategic planning process involving the entire institution and its primary constituencies can best accomplish this. Instructional outcomes, not the technology of delivery, should be the focus of the planning effort. Without exception, effective distance education programs begin with careful planning and a focused understanding of course requirements and student needs.⁴¹ Viewing the institution as a total system is often the most efficient means of accomplishing this. A distance education system should be thought of as a network of knowledge sources, processors, managers, communications media and learners. Hardware alone will not lead to good distance education. "The future of distance education depends on new forms of organization that are based on the application of principles of systems management."⁴²

Application of a total system approach may lead to the consideration of dramatic changes in organizational structure that recognize the potential for distance learning technology for all programs and services. Traditionally, the responsibility for distance learning resided in distinct organizational units.⁴³ Typically, these units are periphery of the parent organizations' activities, and such marginality has tended to limit the perspective of those involved in telecommunication based education. As technology is increasingly viewed as adding value to education and improving quality, these entities tend to move toward the center of the organization. As a result, organization tension is building in many organizations among traditional media, communication, computer, instructional training and continuing education functions. "The introduction of telecommunication based education appears to be a programmatic catalyst that is forcing education to raise questions about an apparently

disjointed relationship between functions that now need to be integrated.”⁴⁴ One response to this tension is to assemble an instructional design unit which includes media and audio production, electrical engineering, graphics, computer and software engineering, telecommunications and instructional design.”⁴⁵ The development of an instructional design unit brings a team approach to bear, induces a creative environment and provides a mechanism for greater quality control and coordination while avoiding diverting subject-matter specialists from instruction to design work.⁴⁶

The integration of distance learning technology and concepts throughout the institution can also raise questions about basic organizational design for the conduct of instruction. The traditional approach normally segregates faculty and students engaged in distance learning from resident students through the establishment of a separate organizational unit such as a distance learning department. A departure from this traditional approach is the Australian integrated mode. Under this structure, faculty and courses are allocated a mix of both resident and distant students. Designing programs and courses to serve both populations is then possible. The teaching of all the student is the instructor’s responsibility. The distance learning department then serves primarily an administrative support function.⁴⁷ This approach has the advantage of making a wider selection of courses available to distant students and the potential for improving course quality by applying resources to prepare a single course for both modes.

As can be seen from the above, vigorously incorporating distance learning technology can have profound impact on the organization. Individuals within the organization also feel these impacts. Accordingly, effective development of this approach is a managerial and

leadership problem as well as a programmatic and technical one. A key determinant of success or failure is the attitude of faculty, administrators and support staff involved in the effort. Research indicates that while many faculty members and administrators begin with reservations about distance education, increased experience leads to acceptance.⁴⁸

The primary concerns of faculty are for: the level of control that they will have over the instructional process, the effect of the new format on their use of teaching strategies, and concern about the support necessary to move toward more technologically based instruction. In many cases, instructors can continue to use or adapt most of the instructional strategies common to the traditional classroom to the distance learning context. Indeed, some instructors report that teaching at a distance has improved their traditional teaching by making them more sensitive to student needs, forcing them to become more organized and shaping their ability to plan and design courses.⁴⁹

Faculty, staff and students alike share a lack of knowledge of and anxiety about distance learning technology. Effective training programs can overcome these concerns. The design of these programs should increase both knowledge and familiarity as well as assist faculty in improving instructional skills. The conduct of such programs tends to increase acceptance.⁵⁰ It is important not to overlook the importance of training of students. Hands-on training with the technology of delivery is critical for both teacher and student. Many distance learning programs emphasize the importance of face-to-face training meetings for students to facilitate interpersonal interaction and speed acquisition of computer skills. After initial training, continuing and responsive support is necessary.⁵¹

Conclusion

The thesis of this paper has been that through the application of distance learning technology, all three of the core missions of the Army War College - instruction, research and outreach - can be enhanced to meet the challenges of increasing demand for force wide strategic knowledge, limited resources and changes in the needs of the student population.

It has been demonstrated that the concepts and practices of distance learning have developed and improved dramatically since its early beginnings in the 1900's, and today it represent a credible and high quality alternative to resident instruction. During each stage of its evolution, distance learning has employed the technology available at the time. Most recently, the development of information and telecommunication technologies has begun to erode the barriers of time and distance that previously prevented the essential elements of interaction and feedback from occurring as effectively for distance learners as those in traditional classrooms. These barriers will erode even further with greater distribution of wider bandwidths throughout the nation's communication system. Employing this technology will increasingly enable the deliver of effective teaching and learning world - wide and can be employed to respond to the changing needs of the Army for more effective ways to assure broader understanding of strategic issues at all levels.

It has also been shown that the array of technologies that can be brought to bear to support distance learning is large, varied and growing. In this environment rich in opportunities, institutions can best meet their educational objectives by first defining what those objectives are and then picking, choosing and combining technologies that best suit the needs of the students and available budgets. There is no "one best answer." This is true for

enhancing the learning of both corresponding studies students and resident students. For distant students, it can enhance learning through interaction, feedback and improved richness of content. This can serve to motivate these students and improve quality, satisfaction and persistence or retention. For traditional resident students, it can enhance learning by broadening perspectives beyond the confines of the seminar room and bringing to the seminar room the resources of other services, institutions, agencies and individuals. Both groups will benefit through collaborative arrangements with other entities and institutions, including other senior service colleges, while the institutions realize the financial benefits of such arrangements. The implementation of distance learning technology within an institution requires careful planning, consideration of organizational structure and astute leadership. The effective introduction of this technology requires viewing the educational enterprise as a total system, often forcing the reconsideration of basic organizational design. Effective management of change requires equipping employees and students alike with the knowledge, skills, and support they need to function in the new environment requires astute leadership.

The Army War College is favorably positioned to successfully implement distance learning technology throughout the organization and across virtually all programs and functions. Strong, top-level support to the process of applying technology is constantly evident. An institution wide strategic planning effort is underway and a strategic action plan developed. Much of the technological skill, knowledge, and hardware is already available and the remainder is readily obtainable.

Numerous similar efforts are underway throughout the Department of Defense and the Department of Army which could serve as an example and offer opportunities for additional efficiencies and cost savings. These include the Force XXI Leader Development Task Force, the total Army Distance Learning Task Force in the Office of the Assistant Secretary of Defense for Reserve Affairs, the Army Wide On Line Training library project and current efforts to develop an Army wide distance learning plan. Finally, much of the groundwork is already being accomplished in the first steps to modernize the corresponding studies program and to establish on line access to selected materials of the Strategic Studies Institute.

All of these factors can contribute to the success of the effort but do not guarantee that it will have the desired results. Ultimately, the steps taken to ensure that technology meets real educational objectives and needs of students, and its constant evaluation to assure its validity, are the keys success. All programs of the institution should be included in this systematic re-evaluation. It should not be assumed that the responsibility resides in only one office, nor that the technology can only be effective in certain types of programs. The effort must be approached with a totally open mind set that recognizes the importance of the educational objectives and institutional vision; the focus must not be on technology. The words of Dr. Michael G. Moore, Executive Director of the American Center for the Study of Distance Education at the Pennsylvania State University applies as much to the Army War College as they do to the nation as a whole:

“The challenge of American distance education is not to produce more technology...the communications industry will take care of that; it is not even to develop techniques for teaching through technology and to train educators in these techniques...though we would be foolish to allow the communications industry to take care of

that. The Challenge is to change our view of distance education, to learn to think big, to change the culture of our institutions regarding the role of the teacher, to learn to give up some fields and to specialize in others, to learn to cooperate with other institutions. In short, our challenge is to learn to make education look more like NASA or United Airlines by turning the development and provision of education into a total system."⁵²

¹ Richard A. Chilcoat, "The 'Fourth' Army War College: Preparing Strategic Leaders for the Next Century." Parameters XXV, 4 (Winter 95 - 96): 15.

² U.S. Army War College, Curriculum Pamphlet 1996 (Carlisle Barracks, PA: U.S. Army War College, 1995), 2.

³ Ibid. i.

⁴ COL. John J. O'Connell, Jr., USAWC Strategic Planner, Interview by author, 9 November 1995.

⁵ Chilcoat. 16.

⁶ Desmond Keegan, Foundations of Distance Education (London and New York: Routledge, 1990), 59.

⁷ Jason Ohler, "Why Distance Education." The Annals of the American Academy of Political and Social Science 514 (March 1991): 24.

⁸ The American Center for the Study of Distance Education, "Broad Sheets in Distance Education, Nov. 1995" 29. TMs [Photocopy].

⁹ Ibid.

¹⁰ Ibid.

¹¹ Robert L. Jacobson, "Extending the Reach of 'Virtual' Classrooms," The Chronicle of Higher Education, 6 July 1994, A19.

¹² Charles J. Dede, "Emerging Technologies: Impacts on Distance Learning," The Annals of the American Academy of Political and Social Science 514 (March 1991): 146.

¹³ Ibid.

¹⁴ Ohler, 25.

¹⁵ M. G. Moore and M. M. Thompson, The Effects of Distance Learning (University Park, PA.: The Pennsylvania State University, American Center for the Study of Distance Education, 1990),

¹⁶ J. R. Verduin and T. A. Clark, Distance Education: The Foundations of Effective Practice (San Francisco: Jossey - Bass Publishers, 1991),

¹⁷ University of Idaho, College of Engineering, Engineering Outreach, Distance Education at a Glance (Moscow, ID.: University of Idaho, 1994), 1.

¹⁸ Ibid., 1.

¹⁹ Ibid., 6.

²⁰ Ibid., 5.

²¹ Woodrow J. Wilson and Kenneth S. S. Montgomery, "Combining Multiple Mediums and Multimedia, the ACSC Approach to Distance Learning" TD [photocopy], p. 4, Air Command and Staff College, Maxwell AFB, Alabama, 1995.

²² Ibid., 2.

²³ Rosalie Wells, Computer-Mediated Communication for Distance Education (University Park, PA: American Center for the Study of Distance Education, The Pennsylvania State University, 1992).

²⁴ Peter M. Sange, The Fifth Discipline (New York: Currency Doubleday, 1990) 5 -6

²⁵ The American Center for the Study of Distance Education, 1.

²⁶ Distance Education at a Glance. 2.

²⁷ Duning, 24.

²⁸ Distance Education at a Glance. 2.

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- ²⁹ Freek Gastkemper and Ger van Enkevort "Learning Process and the Selection of Media", in Distance Higher Education and the Adult Learner eds. Ger van Enkevort, Keith Harry, Pierre Morin, Hans Schutze (Heerlin, Netherlands: Dutch Open University, 1986) 186. ____
- ³⁰ The American Center for the Study of Distance Education, 1.
- ³¹ U. S. Army War College, Curriculum Pamphlet, Academic Year 1995, (Carlisle Barracks, PA: U.S. Army War College, 1994), 3.
- ³² U. S. Army War College, Curriculum Pamphlet, Corresponding Studies Course, Class of 1997, (Carlisle Barracks, PA: U. S. Army War College, 1994), 3.
- ³³ Woodrow J. Wilson and Kenneth Montgomery, "Combining Multiple Medium and Multimedia, the ACSC Approach to Distance Learning" TD [photocopy], (Air Command and Staff College, Maxwell AFB, AL, 1995) 2.
- ³⁴ Wells, 2.
- ³⁵ Ibid. 2.
- ³⁶ H. A. Hahn and others, "Distributed Training for the Reserve Component, Research Report 1581. U. S. Army Research Institute for the Social Sciences, Jan 1991.
- ³⁷ Robert L. Jacobson, "Extending the Reach of Virtual Classrooms," The Chronicle of Higher Education , 6 July 1994, A19 - A20."
- ³⁸ Douglas T. Collier, Program Classification Structure (Technical Report 106). (Boulder, CO: National Center for Higher Education Management Systems, 1978) 23.
- ³⁹ Ibid., 27.
- ⁴⁰ Dede, 157.
- ⁴¹ Broadsheets in Distance Education, 1.
- ⁴² Michael G. Moore "Is Teaching Like Flying?, A Total Systems View of Distance Education," The American Journal of Distance Education vol. 7, no.1 (1993): 1 - 10.
- ⁴³ Duning, 33.
- ⁴⁴ Ibid., 172.
- ⁴⁵ Ibid., 184.
- ⁴⁶ Ibid., 182.
- ⁴⁷ Keegan, 137 - 138.
- ⁴⁸ Broadsheets in Distance Education, 1.
- ⁴⁹ Broadsheets in Distance Education. 15.
- ⁵⁰ Broadsheets in Distance Education, 1.
- ⁵¹ Wells, 26.
- ⁵² Moore. "Is Teaching Like Flying" 10.

BIBLIOGRAPHY

- Bates, A.W., ed., *The Role of Technology in Distance Education* (New York: ST. Martin's Press, 1984)
- Bramble, William J. and Barbara L. Martin. "The Florida Teletraining Project: Military Training via Two Way Compressed Video," The American Journal of Distance Education (1995) 6 - 25.
- Chilcoat, Richard A. "The 'Fourth' Army War College: Preparing Strategic Leaders for the Next Century." Parameters vol. XXV. no 4 (Winter 95 - 96) 3 - 17.
- Collier, Douglas J. Program Classification Structure (Technical Report 106). Boulder, CO: National Center for Higher Education Management Systems, 1978.
- Dede, Christopher J. "Emerging Technologies: Impacts on Distance Learning." The Annals 514 (March, 1991): 146 - 158.
- Duning, Becky S., Marvin J. Van Kerix, Leon M. Zaborowski, Reaching Learners Through Telecommunications (San Francisco: Jossey - Bass Publishers, 1993).
- Educational Data Systems. "Army War College Department of Corresponding Studies Technical Analysis." EDS, 1995. Photocopied.
- Gastkemper, Freek and Ger van Enkevort "Learning Process and the Selection of Media." In Distance Higher Education and the Adult Learner," eds. Ger van Enkevort, Keith Haru, Pierre Morin, Hans Schutze, 167 - 219. (Heerlin, Netherlands: Dutch Open University, 1986).
- Hahn, H. A., R. L. Ashworth, R. H. Phelps, R. A. Wells, R. E. Richards, K. A. Davalene. "Distributed Training for the Reserve Component, Research Report 1581." U. S. Army Research Institute for the Behavioral and Social Sciences, January 1991.
- Jacobson, Robert L. "Extending the Reach of 'Virtual' Classrooms." The Chronicle of Higher Education, 6 July 1994, A-19 - A20.
- Keegan, Desmond, Foundations of Distance Education (London and New York: Routledge, 1990).
- Moore, Michael G. "American Distance Education." Edited by Fred Lockwood. Open and Distance Education. New York: Routledge., 1995.
- Moore, Michael G. "Is Teaching Like Flying?, A Total Systems View of Distance Education," The American Journal of Distance Education vol. 7, no.1 (1993): 1 - 10.
- Moore, M. G., and M. M. Thompson, The Effects of Distance Learning. University Park, PA.: The Pennsylvania State University, American Center for the Study of Distance Education, 1990.
- Nadeau, Michael. "Reach Out and Teach Someone," Personnel Journal (May 1995) 120 - 24.
- O'Connel, John J., Jr., Strategic Planner, U. S. Army War College, Carlisle Barracks, PA., interview by author, 9 Nov 1995.
- Ohler, Jason. "Why Distance Education," The Annals of the American Academy of Political and Social Science, 514 (March 1991): 22 - 34.
- Pennsylvania State University, Task Force on Distance Education, The Report of the Task Force on Distance Education (University Park, PA: Penn State University, 1994).

Rossman, Parker. The Emerging Worldwide Electronic University Westport, CT: Greenwood Press, 1992.

Senge, Peter M. The Fifth Discipline. New York: Currency Doubleday, 1990. 5 - 6.

The American Center for the Study of Distance Education, "Broad Sheets in Distance Education, Nov 1995" Tms [photocopy].

University of Idaho, College of Engineering, Engineering Outreach. Distance Education at a Glance. Moscow, ID: University of Idaho, 1994.

U. S. Army War College. Curriculum Pamphlet, Academic Year 1995. Carlisle Barracks, PA: U. S. Army War College, 1995.

U. S. Army War College. Curriculum Pamphlet, Corresponding Studies Course, Class of 1997. Carlisle Barracks, PA: U. S. Army War College, 1995.

Verduin, J. R. and T. A. Clark. Distance Education: The Foundations of Effective Practice. San Francisco: Jossey - Bass Publishers, 1991.

Wells, Rosalie, Computer Mediated Communication for Distance Education. University Park, PA: American Center for the Study of Distance Education, The Pennsylvania State University, 1992.

Wilson, Woodrow J. and Kenneth S. S. Montgomery. "Combining Multiple Medium and Multimedia, The ACSC Approach to Distance Learning" TD [photocopy], U. S. Air Force, Air Command and Staff College, Maxwell AFB, Alabama.