A STUDY OF CORPORATE INTRANETS AND
THEIR IMPACT ON CURRENT AND
FUTURE TRAINING NEEDS

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A Research Paper
Submitted in Partial Fulfillment of the
Requirements for the
Master of Science Degree in
Training and Development

Approved for Completion of 4 Semester Credits
198-750 Field Problem in Training and Development

by

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ABSTRACT

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A Study of Corporate Intranets and Their Impact on
Current and Future Training Needs
(Title)

Training & Development	Professor Joseph Holland	May, 2000	42
(Graduate Major)	(Research Advisor)	(Month/Year)	(No. of Pages)

APA
(Name of the Style Manual Used in this Study)

The purpose of this research was to determine the impact that corporate intranets are having on training and what are future prospects of intranet-based training. The study examines advantages and disadvantages of intranet-based training, the challenges and organization may face while implementing intranet-based training, and the return on investment organizations are seeing from using their intranets for training. The study also discusses emerging trends of intranet-based training and possibilities for the future of intranet-based training.

This research explains how the use of intranets for training is impacting organizations and their training departments. The study addresses the challenges of distance learning and computer-based training and offers training professionals advice for meeting these challenges. Trainers are reminded to keep a strong focus on instructional design and make sure course content meets the needs of the students. The technology allowing intranet-based training is still emerging. Designers are reminded to keep the technology and

technical skills needed to complete the course at the lowest common denominator of their

students. Not all training is transferable to the learning environment offered by an intranet.

Table of Contents

Acknowledgements

As I reflect upon my graduate studies, it is clear that I would never have made it through the process without the love, support and guidance of many people.

Dr. Sheryl Johnson for teaching me research methodologies and to have the persistence to get the information you need. For sharing your knowledge and experience of how to interpret and report my findings.

Joseph Holland, my research advisors, for your guidance in helping me shape this study. Your patience, knowledge, and experience were invaluable in being able to complete my research and this project.

My parents, Harold and Carol Stuckert, for your unyielding support as I pursued my graduate studies. You have always been there for me, allowing me to make my own decisions and mistakes, loving me through it all.

To my sister Brenda Johnson and her family, Steve, Emily, Andrew and Sam. For motivating me to enroll in graduate school and staying on me to make sure I finished. I thank you for support. I dedicate this to you.

Chapter I
Background to Research

The business community has recognized the value of sharing information electronically for years. The term Internet, which was first used in 1982 to refer to the enormous collection of inter-connected networks (SurfCONTROL, 1996), has presented itself as a useful tool for disseminating company information. The term intranet has grown from the same networking that benefited the Internet. Companies can use either the Internet or an intranet for dispersal of information to their employees. When an organization chooses to limit access to proprietary information, an intranet is more appropriate. An intranet can be defined as a network (2 or more computers connected) inside a business entity. Companies have developed security measures known as "fire-walls" to allow only authorized users on their Intranets. These "fire-walls" are what distinguish an intranet from the Internet. An internal web is a convenient way to keep training materials up to date. Training can be delivered in real time and accessed when it is needed. In addition, updates to course material can be made more quickly than updates to paper based or CD-ROM courseware.

Geographically dispersed workforces have made centralized training costly and inconvenient, with as much as 66 percent of training expenses being travel related (Banhazl, 1999). Corporate downsizing of Human Resources and Training Departments has made it difficult for organizations to keep up with training demands. According to Bill Gates, "the real pay-back to the typical business will come from using intranet web sites to give employees the information they need to be more effective"(Gates, 1996).

The training department has as much to gain from the intranet as any service department. The work of the training department could not only be made more efficient with an intranet, but significantly more effective.

Distance learning, at its most basic level, takes place when the learners are separated by physical distance from their instructor. Distance learning programs can be useful in a number of situations; for those located in remote areas, people unable to travel to the program delivery site, "just in time" learning situations or any other reason learners need access to information but are unable to physically be at the site of the instructor.

Distance educators have a wide variety of technological options available to deliver programs to learners. Audio tools include the telephone, audioconferencing and one-way audio tools including tapes and radio. Video images such as slides, film, videotape and videoconferencing are also used for delivery of education programs.

Computers are increasingly used in distance learning. Computers can be used as a self-contained unit to present individual lessons, to organize tasks and track students progress and records, and can be used to facilitate the delivery of instruction through electronic mail (e-mail), World-Wide Web applications, computer conferencing and bulletin boards/web-sites.

Research Problem and Hypotheses/Research Question

What impacts will corporate intranets have on current and future training needs?

Justification for Research

In today's business world, knowledge and technology are changing faster than ever. Computer hardware and software that is state-of -the-art one year may very well be obsolete the following year. Training increasingly needs to be done on a timely basis. Employees are typically becoming more geographically dispersed (especially in sales organizations) and reaching them with new information can be critical. Intranet based training can significantly shorten training time by offering web-based training using a corporate network. Therefore, it is necessary to study these technological advances and how they influence training.

The purpose of this research is to create a better understanding of intranet-based training technologies so they may be fully utilized in organizations using training intranets. This study will identify potential trends and practical applications for use on training intranets. It will analyze current intranet technologies and how they are changing and adapting to meet future training needs.

Methodology

The number of companies that have their own intranet is increasing daily.

Because some of these companies are just beginning a presence on the network, or do not

offer training on their network, they may not be at a point where it would be useful to

analyze them. Companies were chosen based on their willingness to participate in the

research and the fact they are using their intranet for training purposes. Interviews and

subsequent interpretive analysis will be the methodology used to conduct the research.

Outline of Report

Chapter one of this research project will give background to the research covering

how the Internet has developed into intranets and what the applications are for training.

The research problem explores what intranet applications for training are useful. The

justification for research discusses business applications that make training via an intranet

useful. Research methodology details how research data was gathered via interview.

Definition of terms will cover terms associated with intranets, computer-based and

distance learning. Delimitations of scope and key assumptions will help establish focus

and limits of the research.

Definition of Terms

ASTD-American Society for Training and Development.

Bandwidth- Information carrying capacity of a communication channel.

CBT- Computer-Based Training.

Extranet- Outward-bound extension of a company's intranet.

Firewall- A software package used to allow only company employees or designated
visitors access to an internal network.

HyperText Markup Language (HTML)- The code used to create a home page and is used
to access documents over the Internet.

Internet- An internationally linked network of networks to transmit information.

Intranet- A network of computers inside a business entity.

Intranet-based Training: Computer-based training that occurs over an organization's
computer network.

Learning Technologies- Use of electronic technologies to deliver information and
facilitate the development of skills and knowledge (ASTD, 1998).

Search Engine: A web application that allows searching a collected set of web pages by
accessing a stored set of information and addresses.

Virtual Reality Modeling Language(VRML)- Text based language used by application
developers to implement interactive three-dimensional graphics and multimedia content.

Web-based Training- Training that takes place over a network, either the Internet or on
and intranet.

<u>Delimitation's of Scope and Key Assumptions</u>

Information on the company's intranet is proprietary to the organization and therefore will only be discussed in generalities. Content specifics will not be included. Only an overall look at the network, how it was used and perceived for training purposes and recommendations will be discussed. The study will include companies that are currently using their intranet for training purposes. It is assumed that companies have access to equipment and technical support necessary to run an intranet. This study will investigate not whether an intranet improves training or is more effective than traditional training. The interviews conducted are limited to the opinions and insights revealed by the three professionals.

Chapter 2
Review of Literature

Within the context of shifting market conditions and rapid technological change, the workforce is becoming more and more geographically dispersed. The challenge to keep this workforce knowledgeable and educated is being met by distance education programs. These programs are being offered by more and more organizations over their computer network or intranet. It is important for training professionals to understand the use of these networks so they can optimize their use of educating workers via an intranet. The following review of literature will provide an understanding of distance learning, computer-based training and intranet-based training.

Distance Learning

The most important aspect of any distant education program is meeting the instructional need of the student. Additional challenges often pop up because students are often separated from others sharing their backgrounds and interests, and have few opportunities to interact with the instructor. The instructor needs to find additional methods for interacting with their students. Because communication is often inhibited between students and instructors it takes longer for student-instructor rapport to develop.

Students that are new to distance learning may have trouble identifying what the demands of the course are and may lack confidence in their learning ability. What technical knowledge do students need to find the suitable courses and providers? How does the immediate learning environment of the student impact the learning process? What are the differences in structure of classroom learning and distance learning, and do

the differences matter? We need to understand the context of distance learning in order to understand how to optimally use the technologies (Barley, 1999).

The University of Idaho (1995) suggests that adult students and their instructors must face and overcome a number of challenges before learning can take place. Among the challenges noted are the amount of motivation required by distant learners, learners recognizing their strengths, limitations, goals and objectives, and the lack of opportunity for students interact with their peers.

Instructors need to provide timely feedback to learners via e-mail, fax, computer bulletin boards and telephone. Encouraging communication among students along with the aforementioned can help motivate distance learners. Instructors who take on less of an authoritative role and more as that of a facilitator will help give students a sense of ownership in the learning process making it more meaningful for them.

When developing or adapting distance instruction, the core content remains basically unchanged, although its presentation requires new strategies and additional preparation time. Barley (1999), and Moore and Thompson (1990) give the following suggestions for delivering distance courses:

- Study distance education research findings

- Check and review existing materials for content and presentation ideas

- Analyze and understand the strengths and weaknesses of possible delivery systems available

- Hands-on training with the technology of delivery is critical for both teacher and students

- At the start of class initiate a frank discussion to set rules, guidelines, and standards

- Make sure each site is properly equipped with functional and accessible equipment

- If course materials are sent by mail, make sure they are received well before class begins.

- Start off slowly with a manageable number of students and sites

Instructional development gives the process a framework for planning, developing and adapting instruction based on identifiable learner needs and content requirements. Most instructional development models follow the basic ADDIE model. ADDIE stands for assess, design, develop, instruct and evaluate.

In the assessment phase you determine the educational needs of your audience and whether it is a knowledge, skill or attitude deficiency. During the design phase instructional designers need to understand learners and their needs, consider their ages, cultural backgrounds, past experiences, interests and educational levels. Learner's familiarity with various delivery systems and instructional methods should also be considered. Instructional objectives and goals should also be established at this time.

During the development stage the designer should create a content outline based on the answers received from the design stage. The designer should review existing materials and decide if they fit (partially, or not at all), the course. Content with relevant examples and the development of instructional materials and the selection of delivery methods should all be considered during this stage.

The instructional stage is where all of the designer's homework pays off. If the designer has done a thorough job of assessing the learners and what they need to learn, and designing and developing the instruction around these needs, the instruction should cover what needs to be covered in a manner that allows for maximum audience learning.

During the evaluation stage goals and objectives should be reviewed to determine if the instructional methods and materials are meeting them. Evaluations can and should take place both during instruction of the course and following its completion. Evaluating the course as it is in progress can allow you to be responsive to learners needs. Evaluation after instruction is completed can give you a base for course revision and future planning. Revision plans typically are the result of the evaluation process in tandem with feedback from subject matter experts and colleagues. Reflection by the instructor can also prove to be an invaluable tool when revising a course.

Computers, computer networks and software has developed rapidly in recent years. These developments have made the computer a dynamic force in distance education. The computer has provided a new and interactive means of overcoming time and distance to reach learners.

There are many advantages of using computers in distance learning. Computers can facilitate self-paced learning by individualizing learning while giving immediate reinforcement and feedback. Computers are a multimedia tool with integrated graphic, print, audio and video capabilities effectively linking various technologies. CD-ROM technologies are often incorporated in computer-based instructional units. Computers are interactive with various software packages being extremely flexible that maximizes learner control. Computers also allow for increased access through local, regional and

national networks that link people and resources. Finally, computer technology is rapidly advancing while related costs drop.

While there are many advantages with using computers in distance learning, there are also limitations. Computer networks are costly to develop. Although computer software and hardware and individual computers are relatively inexpensive, development of instructional networks and the software to run them is still costly (University of Idaho, 1995). Many people are still computer illiterate. Much of the potential student population has never had access to a computer or computer network. The students in computer-based distance learning programs must be highly motivated and proficient in computer operation before they can be successful in this environment.

Distance learning courses tend to have high dropout rates and requires that students are motivated and disciplined in the use of their time (Franz, Hassen, Major, 1997). These are not the only pitfalls of training over a corporate intranet. A training group that puts instruction on the corporate intranet may suddenly find themselves being contacted by a trainee at all different hours. Factors such as the size of the user base and how critical the training is might require a 24-hour help desk or developing a Web site trainees can turn to for troubleshooting (Strauss, 1998).

The Internet is the largest, most powerful computer network in the world encompassing millions of computers and millions more computer users in countries all over the world. As the Internet infiltrates more and more schools, companies and homes, more possibilities are opened for distance educators to overcome time and distance to reach students.

There are many instructional possibilities of the Internet including using e-mail for informal one-to-one correspondence. E-mail allows for timely feedback between instructor and student and allows the student to store and retrieve messages when necessary. Establishing a classroom bulletin board on the web can encourage student interaction and allow students access to questions or comments to the class, schedule or curriculum modifications along with tests and test answers (University of Idaho, 1995).

When incorporating the Internet into a distance delivered course all students must have access to ensure equal opportunities for computer feedback and interaction. Convenient access to the Internet may also be a factor in a student's success in the course. Varying levels of computer skills are sure to be a factor in most classes. Students trying to master new computer skills as well as course content will surely struggle more than students that already possess these skills will. Some students may not feel comfortable sharing in an electronic format so encouragement and even mandating use of this format may be necessary.

Technology will never completely replace instructional designers and trainers. Technology brings additional teamwork and collaboration demands among a diverse group of workers. Some team members are instructional designer (analyzes and designs instructional tasks), instructional developer (writes course materials and develops auxiliary materials), technology supporter (helps choose and support the technology), facilities supporter (makes sure distance sites are up and running), trainer (assists with course development, how to use technology and trains), materials supporter (produces training materials, distance-site facilitator (coordinates all distant site setup) and management sponsor (works to remove organizational barriers)(Abernathy, 1998).

While each job may not be present in every situation, all of the duties handled by these various titles will need to be considered.

Researchers have examined the purposes and situations for which distance education is best suited. Research has typically been focused in five following areas:

1. Distance vs. Traditional Education

2. Why are Students Successful?

3. Why is Instruction Successful?

4. How Important is Interaction?

5. Cost vs. Benefits

Research indicates that as long as the delivery method is appropriate to the content being offered and all participants have access to the same technology, the instructional format itself has little effect on student achievement.

Distance education students bring various characteristics to their learning experience that effect their success. Students that have post-secondary education goals with expectations for higher grades (Schlosser and Anderson, 1994), are highly motivated and self-disciplined and tend to be older.

Good distance teaching practices are fundamentally the same as those in traditional classroom settings. These factors include extensive preparation, well-designed presentation outlines and syllabus and instructors being properly trained in the use of equipment and techniques proven effective in a distance learning environment.

Many distant learners require support and guidance to make the most of their distance learning experience (University of Idaho, 1995). Research indicates learners value timely feedback, benefit significantly from their involvement in small learning groups, are more

motivated if they have frequent contact with the instructor and have an on-site facilitator available.

Several cost components factor into the design of a distance education program. Personnel, technology, support, production, infrastructure, maintenance, and transmission are all cost factors. Though costs for distance education programs may be high, they are often more than offset by the benefits. Despite its potential, distance learning has a way to go. It may return significant value if used in the proper context. Like all technologies, it's likely to disappoint used beyond its current capabilities (Kreitzberg, C. 1998).

Ultimately for learning to become more meaningful for distance students, the students and the instructor need to share responsibility for developing learning goals and objectives. Interacting with class members, relating new information to examples that make sense to the learners, promoting reflection on experience and evaluation of what is being learned can all lead to a positive distance learning experience.

Computer-based Training

Schaff (1997) states that computer-based training is an attractive option for many companies in maintaining a knowledgeable workforce. He stated that CBT is cheaper and more manageable than classes or seminars, offers increased scheduling flexibility, can reduce costs of training and can serve as a reference and source for refresher material. CBT may cost more to develop than traditional training, but training is less expensive to deliver due to elimination of traveling expenses and a reduction in training time. The instructional design of CBT allows participants to focus on material they have not already learned, reducing training time 40 to 60 percent.

Correspondence courses, videotapes and satellite instruction have been around for years but have often been better known for their limitations than their capabilities (Greengard, 1998). Student interaction, one of the key ingredients for successful learning, was missing. Computer-based training allows organizations distribute materials consistently and can track and identify employee skills. Unique advantages of CBT include the ability to ensure consistent delivery, simulate complex processes and allow for self-paced instruction.

In the early days of CBT, bandwidth limitations and other technical concerns kept computers from being a viable learning alternative for many organizations. Technology is now providing learning tools that combine the benefits of both classrooms and computers. Computer-based training products have become easier to develop and customize to fit an organization's specific needs (Giles, 1997). Sutton (1996) states that low-cost, high-performance software authoring tools make specific applications and courses far easier and faster to develop. Computer hardware costs are also dropping, meaning better quality graphics and lower courseware production costs. However, Sutton warns, the quality of the course is not determined by the power of the authoring tool. Course quality depends upon the competency and creativeness of the designer and developer. Students are also far more autonomous, relying on an instructor for leadership, guidance, coaching and facilitation.

Intranet-Based Training

All training available today in industry, academia, or the military can be categorized as written documents, computer-based programs or lecture/seminars (Reid, 1997). There are a number appealing and well documented advantages of using the Web

for delivery of training. These include use of existing networks with no special hardware requirements, access when and where end users want "just in time training", easy updating of instructional content, and elimination of costly printed material or CD-ROMs becoming outdated (Snydar, 1997).

With the phenomenal growth of the World Wide Web, many companies are installing their own company webs. These networks are called intranets, because they look like the Web but are accessible only to users within the company (Strauss, 1998). The training department needs to be a key player in the development of these intranets. Information-systems departments focus on functional and technical issues, the design and usability of the system are just as important as the technical configurations (Strauss, 1998). Employee involvement and feedback on what they want, need and expect in the design of the intranet is very important. Knowledge management and information sharing which can lead to collaboration and teamwork between departments are areas where intranets can play a dominant role. In one case invisible barriers between departments started falling as information sharing gained acceptance (Finegan, 1997). Other issues of implementing intranet-based training include determining what classes to offer, how to handle records and protect test banks, selecting what platform to use, and deciding whether Web-delivered courses should be offered as an alternative or replace all traditional classes.

One area where great growth is expected is intranet-based training (IBT). IBT offering all the benefits of computer-based training, including reduced travel time and cost savings compared to instructor-led training, IBT lets authors make courses immediately available and update them when needed, a tremendous advantage over

courses delivered on CD-ROMs (Canterucci, 1998). Bandwidth limitations of certain systems may limit the amount of graphics you can deliver over an intranet. Software and bandwidth requirements must be set at the least common denominator level (Franz, Hassen, Major, 1997).

Intranets are capable of delivering CBT (depending on network bandwidth) and therefore inherit the benefits of that medium: self pacing, flexible timing, reduced training time, no travel time or costs, instructors aren't necessary to deliver Web courses and tests, records from the courses and tests are handled electronically eliminating manual input and hard-copy processing, and greater retention. Extra benefits to be obtained by delivering CBT over an intranet include having training delivered just-in-time, easily updated and centrally located training materials and fitting the training around normal work tasks (Shepherd, 1998). Intranets also allow people to get together more efficiently without geographic limits, reduce reliance on support staff by giving users direct access to information and give the ability to customize the training based on your needs.

Intranets are becoming full-service productivity centers for employees. Over one-half of large and nearly one-third of medium-size U.S. organizations have corporate intranets being used mainly for document management, information publishing and sharing, e-mail, electronic forms and directories. Currently, training on most dedicated networks is in the form of static information. Moving forward there will be more interactive, real-time training on intranets. The technology is available for these applications and we can expect organizations to start using them to cut training costs (Abernathy, 1999).

Although intranets are already saving more than a few dollars for many companies, the savings could be huge if the nets are used for such big-ticket expenses as corporate training. Organizations that have had on-line training programs have always suspected that there are financial benefits, but there was no historical data to prove their case. Now that training on the Web has been around for several years, the benefits are much more quantifiable (Berry, 1999). The benefits of face-to-face interaction that the classroom provides versus the lower costs and flexibility of online training are the decisions employers are weighing (McKegney, 1997). Intel corporation estimates that they have reduced the eight to 12 hours of classroom training necessary for mastering a new software program with one to two hours needed to complete the training modules via their intranet. They estimated saving a day of the users' time. In addition the users benefit from having the training elements available at their desktop, and can access these tools whenever necessary.

One management and operations contractor working for the United States Government reported great return-on-investment numbers from using the organization's intranet to deliver selected qualification tests and coursework. The project produced total gross savings of $1,690,519, while the cost of implementation was $178,867, giving net savings of $1,511,652. A 1:9.45 return-on-investment ratio for the project (Schriver and Giles, 1999).

Franchisers must train a geographically dispersed workforce with a cost-effective program that yields productive, skilled and motivated workforce. The challenge is to create a standard set of customer service standards across its chain of operations. Creating and delivering paper-based training documentation is very expensive and

lacking in ways to accurately certify and monitor employee knowledge retention. The

main training challenges facing franchisers are to maintain consistency, control costs,

ensure quality standards are upheld, keep information updated in the field, control

liability, and help franchisees deal with a challenging workforce. Providing instant

availability and audit capability to certify the training can lead to better franchise

performance (Banhazl, 1999).

Online tools for international workers are also fast becoming a necessity.

Programs that range from safety concerns to detailed tips on attitudes, customs and,

business culture are offered to employees. Because the programs are computer-based, the

content doesn't vary, meaning the message doesn't get filtered through one's experiences

or biases (Greengard, 1999).

Web-based training programs range from simple text and graphics courses

to multimedia courses featuring interactive testing and learning features. Issues that

matter most to successful learning include content, instructional design, interactivity,

navigation, aesthetics, tone of the program, motivational components, use of media,

record keeping and evaluation. Authoring tools specifically designed for building

training programs will do the job better than using the same tools used to build a Web site

(Hall, Sprenger, 1997). It is anticipated that Virtual Reality Modeling Language

(VRML) will open the door to new on-line training domains. VRML offers the promise

of a level of interactivity for trainees previously available in simulated or on-the-job

environments right at their desktop. Dow Chemical is now creating training applications

unique to their environment. The company uses software that allows subject matter

experts who are not familiar with Web pages or HTML to create classes that can

deployed almost immediately by creating Word documents or Power Point slides (Hanner, 1999). Not all lessons can be adequately converted to IBT. The content of the lesson should be the primary consideration when weighing the factors for converting a lesson.

One area where the concept of training over an intranet has taken hold is the sales field. People on the road and using a laptop in a hotel room to connect to a computer network can especially make good use of asynchronous training packages (McKegney, 1997). Web-based training (WBT) is well suited for training where people spend most of their time on the road. Sales personnel often spend much of their time in the field, and selling is a key ingredient to their success, WBT here has an immediate impact on the bottom line. Armed with this tool, sales reps can obtain training without leaving the field – a proposition most companies with representatives on the road can be happy with (Strauss, 1998).

Presentation of training is only one possible use of an on-line learning system. Interaction with other trainees and subject matter experts can greatly benefit learners. A web site on an intranet dedicated to those involved in training could include information about courses offered, a directory containing details of who's in the course, news (dates, completions, changes, etc.), on-line training modules, papers submitted by subject matter experts or trainees for review, discussion forums where topics from the course can be debated, e-mail links to subject matter experts, links to related Web sites, book lists, feedback surveys and assessments (Shepherd, 1998). The Forum for Technology in Training reports the "undoubted benefits" of using an intranet for training are savings of distribution costs, easy updating of course so the latest version is always available,

training being available at the workstation, availability of on-line peer and tutor support and true just-in-time training. However, prior to receiving company wide buy in, training over an intranet must show demonstrated business value to receive management sponsorship (Frankel, 1997).

Like other training delivery systems, Web-based training is not the cure-all delivery system for all training. Because Web-based training is available does not mean it should replace other forms of instruction. Hall and Sprenger (1997) state that a successful training strategy is likely to use a combination of live instruction, internal development and online courses.

Chapter 3

Methodology

The qualitative methodology used to conduct research about corporate intranets and their effect on training was interviews. Qualitative data gathering is the most appropriate technique for gaining an understanding about training intranets. This methodology is well suited for discovering participants' perceptions of what are strengths and weaknesses of how a program operates (Denzin, 1989).

Interview questions were designed in a standardized open-ended format to minimize interviewer effects and interviewer judgement during the interview. Interview questions were open-ended to solicit authentic perceptions, attitudes and perspectives of the participants. The open-ended approach gives the opportunity to learn the unexpected and does not limit answers to that only thought of by the researcher (Bickman & Rog, 1998). The first few questions focused on the impact and advantages and disadvantages of training intranets in the participant's organization. Later questions were intended to solicit participant's thoughts on what role intranets would play in future training programs. All participants were asked the same ten questions, in the same order.

At the suggestion of an instructor, contact was made with a large Midwestern banking supply company that was known to be using their intranet for training. After initial conversations about possible research projects, because of personnel changes, it was determined such a project was not feasible at that time. Through the local chapter of The American Society for Training and Development, I was able to locate organizations that were using their intranet for training. Again, an attempt was made to complete a

research project within a single organization. Time constraints within the organizations prevented an extended study within a single organization. Two of these organizations indicated a willingness to participate in the subsequent interviews, while giving a referral for third interview.

The three training professionals were chosen to participate in the research because of their expertise and experience with training intranets. The three participants were contacted by telephone to ask for their participation in the research and to set dates and times for the interviews. Interviews were conducted and recorded using a portable cassette recorder.

The first person interviewed was the Data Manager for a major plastic manufacturer in the upper Midwest. The Web Integration Manager for a large law firm located in a major Midwestern city was the second person interviewed. The third person interviewed was Information Systems Manager for a regional Clinic/Hospital in Wisconsin. All three of the participants have been involved with the implementation and design of their company's training intranets.

The specific questions asked of interview participants were as follows:

1. What are advantages and disadvantages of training delivered over an intranet?

2. What is the value of training over an intranet?

3. In what areas of training do you feel intranet-based training can have the biggest impact?

4. In what areas of training do you see intranet-based training being most effective and least effective?

5. What challenges did you face while implementing intranet-based training in your organization?

6. How important is it for training personnel to be involved in the company intranet from its initiation?

7. What are your thoughts on the future of intranet-based training?

8. What effect will intranets being able to handle activities that are more interactive have on training?

9. What are emerging trends in intranet based training and what impact will they have on training?

10. What type of return on investment are you seeing from your intranet-based training programs?

Verbatim transcripts of each interview were transcribed from the cassette-taped interviews and printed by the researcher. Printed transcripts were then analyzed and coded to determine common thoughts, themes and patterns of the responses among the three participants. Denzin's (1989) methodology for analyzing qualitative data was followed when examining the information gathered from the interviews. Data from each interview was first summarized individually and later categorized and combined by its prominent themes.

Once all of the data gathered had been analyzed and categorized, findings were documented with detailed quotes from the participant's interviews. The researcher's goal was to report the gathered data in the form of a story. After combining the interview results in writing, the researcher forwarded copies of the final research to the participants for validation purposes.

Chapter 4
Results

The first person to be interviewed was the Data Manager for a large, multi-site

plastics manufacturing firm in the Midwest. The Web Technologies Manager for a major

Midwestern law firm was the second participant. Finally, Information Systems Manager

for a Midwestern medical center was interviewed. Chapter four will summarize the data

gathered from the three interviews between the individual participants and the researcher.

Participant comments are organized according to common themes as they relate to

current and future uses of training intranets.

Advantages of Intranet-Based Training

Advantages of intranet-based training are widely thought to be the money it can

save an organization on training related expenses and that it allows users to train when

they need and when they have time. Study participants agreed that the main advantages

of intranet-based training are flexibility and the time and money saving opportunity it

provides. Subject Two explains advantages to a company here.

> The advantages are primarily cost and being able to provide training to an
>
> audience sort of on their own terms. A lot of companies spend a great deal of
>
> money in training. It requires people, if you have a company that has several
>
> offices within a larger region, it can be very expensive to train those folks if you
>
> have to travel individually to each of those offices. Web-based training allows the
>
> audience to have access to the training materials basically from any location; from
>
> work, from home, or from on the road. That's a huge benefit for trainers. The

other nice thing about web-based training is because it is sort of client/server

based; you can change the training content on the server and every body looking

at it on the web, regardless of where they are, will see the new content.

Subject three states that,

Staffing can be used more effectively. We can divert a lot of the beginning level

coursework over to the Web. Our users have told us in surveys we have taken

that they would prefer to use the Web if they can, simply because it's easier.

Staffing challenges require that everyone stay in their rooms or their offices as

much as possible. So from the advantage standpoint you would have greater

flexibility. You tap into those people who already have computer skills and rather

like that environment, they have the ability to go at their own pace, they can

customize the training to match their timeframe.

Currently there are several areas of training that are better suited for web-based

training. Subject three explained,

Anything that does not require hands-on, if it is computer-based training, if it's

safety training, if it's orientation training. All of those could be applied on a web-based

tool. Wherever they need to touch something, maybe web-based training could be a part

of the overall package, but it certainly couldn't compete with hands on.

Subject Two agreed that certain types of training are currently better suited for

web based tools and he explained his viewpoint toward web-based training,

It is particularly good for training people on company policies and procedures. I

think it is better for a sort of text based learning, reading-type learning,

interactive, doing tests, getting feedback. It would be pretty hard to teach

someone auto mechanics over the web. Psychomotor type of training where you are learning to use an instrument or learning to work heavy equipment, the web probably is not the way to go. But in terms of learning information or retaining information or learning rules or learning procedures, I think the web has real value there.

Disadvantages of Intranet-Based Training

As with any new technology, there are also disadvantages of intranet-based training. Courses need to be delivered at the lowest common denominator of students and equipment. Not all students are comfortable in a web-based environment and not all equipment is able to handle the interaction and animation in some lessons. Bandwidth issues allow only certain types of training to be put on a network. The learning environment can also be a distraction for students that are no longer in a classroom. Subject One expanded on learning environment problems,

Adult learners have different motivations in being able to do teaching and training. This relies on a lot of independent problem solving. Independent, being able to read and understand, and sometimes people do better in a classroom environment where there is some interaction going on. Sometimes they do better in a one-on-one environment with more a tutor type of approach, and sometimes they do well in independent study where they can just look it up and work at their discretion…or when it is convenient to them rather than be structured to a schedule.

Subject Three pointed out that"…you need to make sure everybody has access and bandwidth problems are going to be an issue." Subject two added, "…you can't

really use video, you can't really use a lot of animation in multi media in the same way you can do it on a CD-ROM based material."

Challenges of Implementing Intranet-Based Training

While there appears to be many advantages of implementing intranet-based training, there are also significant challenges. Inexperience in a web-based learning environment is a challenge for the student, the instructor, and the designer. Proper course design is still essential for the training to be successful. The people needed to create and maintain such a system may also be more than the organization originally thought.

The biggest challenge is that it is so new that the companies that are doing it…don't know what to ask for. They don't know what type of staff they need to actually create the training. It is such a brand new technology that a lot of people are being attracted to it from a lot of different professions. Right now a lot of instructional designers and people that were traditionally involved in interactive software and educational software are moving into the web-based training arena. The other challenge is really a technology challenge. Being able to create the type of technology that will track people through the web system and measure their responses so that when they do take a test on-line that their results are recorded. And finally, one of the biggest challenges is managing the content that is on the web system. If you have a very large web site with a lot of training material you will find that you'll need actually a full-time staff person just to manage the content on that site.

Subject One agreed that the newness of intranet-based training has led to some unique problems. Observing that,

Not a lot of people know where it is or what it is and how to find it. How it really

relates to them. One of my challenges is to educate the user community on how

the intranet is going to be beneficial to them in being able to find what they are

looking for and what other things can be beneficial to them out there. It is like

having a library. If you don't know how to use indexing and where different

pieces of information are, it is just going to sit there on the shelf.

<u>Bandwidth Issues</u>

Currently many networks are not able to handle interactivity and animation. This

severely limits the type of training you are able to put on a network. Bandwidth issues

are becoming less of a problem as high-speed modems and cable allow networks to carry

more sophisticated data. Participants agree that as computers and computer networks are

able to handle more bandwidth that training over a network will change significantly.

Subject Two states that,

It will allow for… full motion video. To receive full motion, full screen video on

the Web you would have to have bandwidth that is capable of handling 40

megabytes of information per second. That's a lot of bandwidth. I don't think you

will ever be able to have the same quality of video that you are now getting off

your TV, that really broadcast quality video, but you will be able to have

something very close to that. You will be able to have sophisticated animation,

you will be able to have much more interactivity so that the interfaces are very

closely based on preferences of the learner. I think there won't be any obstacles to

moving training to an intranet, there will only be advantages.

Subject Two agrees with this philosophy adding,

I think it's going to increase its popularity tremendously. Once it's so easy and it captures as much of the classroom environment as possible. Granted, the instant feedback that they wouldn't get in a web-based environment would be lacking, however…once we accomplish the bandwidth issues we will have a lot of people excited about it because then we can move to the next level of product. Right now we are on a product without audio or video. When we solve the bandwidth issue, then we migrate to the next product, which includes audio and video.

Involvement of Training Personnel when Implementing Intranet-Based Training

As a network is developed, it is important that the training staff be involved in developing that network. Without the proper hardware and software selection to run the needed training, and without a design that is user friendly, the network can be rendered useless for training. Participants agree that training personnel need to work with the staff implementing an intranet in order for training to be delivered effectively over that intranet. Subject One believes that the training department is only one part of a necessary team. He maintains,

I kind of think business practices today dictate that you work in a cross functional team and have a cross functional team environment, and training needs to be part of that cross functional team so they can participate with the different audiences. It isn't an IT driven thing, it isn't a user driven thing, it isn't a training thing. It is a consortium of all of these individuals that are coming up with a system or tool that works for them. It is really important. It's got to be a cross-functional approach.

Subject two states,

It is extremely important for the training department to get involved from the initial stage because the selection of hardware and software greatly depends upon how you are going to use it. If you plan to use training on an intranet environment, you need to make sure that you have the right hardware and software. If you come into it late, you may be forced to make compromises and those compromises might negatively effect your ability to create high quality training materials on the web.

Subject Three has been involved with his current organization's intranet from its inception and states,

I had the privilege of actually being on board from the beginning when we created our intranet web site and I think the greatest input I gave them was on design and ease of use. Because I was always picturing myself as how am I going to train non-computer users to access this site. So, the design and flow, although a lot of it was dictated by the vendor, I told them make this font larger or people are going to get lost through the trail of HTML links here. Can you change that? Also, understanding what drives people to a web site, I helped them influence what kind of material they had on there.

Value of Intranet-Based Training

There is definite value associated with intranet-based training. The flexibility offered allows people to train at their convenience and when they need the instruction. There can be tremendous cost savings to an organization, particularly if that organization has more than one location. All three participants agreed that a key value to intranet-

based training is reaching people at various locations throughout an organization.

Subject three offered,

> I guess the true value is extending beyond the four walls of our organization. We
> have nine locations. We would much rather project it over the network if we
> could. It also affords the ability of our second and third shift people to train when
> they want to. I don't have to adapt to their work schedule and they don't have to
> come in early, or stay late, so the real value is flexibility of time and eliminating
> the distance.

> Subject One adds the discussion of cost factors to his thoughts. Declaring,

> There are definitely cost factors. By sending people out to different sites, we are
> paying for mileage and their meals per day, plus it's a person we are using that
> could be doing other things. There are lots of different training packages coming
> out in CBT form that we could possibly make use of, such as a Word package or
> whatever. And then maybe, if our training group was able to develop what I
> would consider our view of how we wish to use these packages, we could add
> onto these CBT packages.

> Subject Two comments on tailoring your web site to your constituents. He states,

> It's the ability to reach out to a vast audience, literally all over the world, and
> provide them with an interactive training experience that heretofore was really
> unavailable. There is no other medium that could actually accomplish this. You
> can actually track the user through the web site and you can tailor make the web
> site based on the needs of the end user so when they log onto the web site, what

they see is content that has been specifically designed for them. It has many

values.

<u>Return on Investment</u>

The return on investment that training intranets can offer an organization can

be substantial. Organizations are able to spread costs over more people, limit travel-

related expenses, and allow people to work on other projects. The larger and more

dispersed the organization, the greater the potential return on investment. Subject Three

explains how organizations can save money by training over their intranet,

> Ultimately cost is cheaper, because not only are you not taking them out of their
>
> office, which means staffing issues are resolved, but you can spread those costs
>
> over more people and do much more training in a shorter time frame than in a
>
> typical classroom. And you do not have the added expense of training labs,
>
> providing manuals and of course the instructor's salaries.

Subject One tells his company's views on how their intranet is returning their

investment.

> It is definitely going to make a difference, because hopefully we will be able to
>
> keep people from traveling. We will also be able to use these people who have
>
> been traveling to do other things. That is where return on investment would really
>
> be. Hopefully, it will save us sending people off site for some of these courses. It
>
> is hard to quantify the benefit of training. Some of it is short-term and some of it
>
> is long-term. We are talking about short-term paybacks by avoiding certain costs
>
> or investments through utilizing the tools, but there is also a long-term benefit. If
>
> It is more convenient for people and they can get at it more readily, they don't

have to schedule three months in advance. There are no budget limitations that

restrict them from doing things.

Subject Two gave a specific example of how organizations can see major returns

on their intranet investment,

I was involved in a very large medical training project a few years ago. This was

a company growing very fast, opening up medical clinics all over the country.

They had, like 60 days to open a clinic and get everyone trained and start

receiving patients. So there was this tremendous training need to bring doctors,

nurses, and other staff in and get them up to speed on how to deal with day-to-day

patient doctor issues. This company was, before the Web, literally flying people

all over the country, renting hotel space, having lecturers coming out and give

traditional training. The Web allowed them to save literally millions of dollars.

So in the area of return on investment, training offers the highest return on

investment. Particularly if a company has a large staff and that staff is located in

several offices over a large regional area. That's where the Web is extremely

valuable. If you have a small company where everyone is working under the

same roof, then maybe web-based training is not going to give you the same

return on investment. So it depends on the size of the company and the number of

offices and where those offices are located.

Emerging Trends of Intranet-Based Training

Participants agree that the main emerging trend of intranet-based training is the

flexibility it affords organizations with respect toward their training. People are able to

train "just in time" or train at their convenience, rather than that of the trainer. People

who were previously unable to access training are now able to access it at their convenience. Subject Two believes that "the ability to receive higher education over the Web" is the real emerging trend. "Being able to provide access to people who would not normally have access" is a definite trend.

"Computer-based training program are coming out that you are able to load on your intranet, and people can run these programs any time they want," states Subject One. "Work instructions that are developed by the standards groups might be something that we load on our intranet. Those are training documents and information that will help us go forward."

Subject Three sees the technology going a step farther.

The most recent trends are the inclusion of videoconferencing screens within the training. You have a lot of companies that are now scheduling a Word application class, say at 1 o'clock. Everybody will punch in at their PC at 1 o'clock, put on their headphones, they will have video cameras on top of their PC's and they will actually connect with the instructor on-line. So the instructor might have 30 people scattered throughout the organization dialing in, he will know who is in, and then he/she will use white board technology on screen, along with the video simulation and the product simulation. That instructor will be able to track everything and also interact instantaneously with everyone. So it is a videoconference but it is distributed throughout the site.

Future of Intranet-Based Training

There is huge potential for the future of intranet-based training. Being able to handle sophisticated audio and video will allow organizations to put much more of their

training program into a web-based environment. Subject Three believes intranet-based training will be a large part of companies training programs.

I think any company that would be mid-sized and above is going to see the handwriting on the wall and they are going to have intranet. For some, it's a money issue. For others it's an upkeep issue. Someone has got to be dedicated to manning it, so I think the future is very bright. I think intranet-based training is going to eventually pass classroom-based training. I think you are going to see probably a 60/40 percent ratio. Sixty percent CBT and 40% classroom. I think the bandwidth issue is going to be solved in the future with cable. Digital forms of transmission instead of through the phone lines. We have got to solve that issue, because if we can't tap into audio and video inside the training context, there are parts of the brain we are not getting to. Retention is not going to be as good.

Subject Two agrees. Stating,

I think it is absolutely a huge market. There have been studies coming out on a regular basis that are saying that companies are going to spend tens of billions of dollars on intranet-based training. As the Internet becomes more sophisticated and as bandwidth increases and the technology becomes more sophisticated you are going to be able to create the same type of learning environment that you now see with CD-ROMS and videos. The type of media you use is going to expand over time and I think it is going to be very exciting.

Chapter 5
Summary, Conclusions and Recommendations

Summary

The purpose of this research was to examine organizations' intranets and determine their impact on training. The interviews and the review of literature revealed that organizations are currently using their intranets for training purposes, and that trend will continue. The technologies being used to deliver intranet-based training are still emerging. Current training offered on a network tends to be more of the generic health, safety, leadership, and software training. Software and hardware innovations are allowing organizations to customize programs to meet their needs. There are now programs available that allow you to input PowerPoint or Word programs that are automatically generated into a training program. Bandwidth issues are currently the main limitation when training over a network. Organizations are not able to offer all of the training they would like on their network because the network cannot sufficiently handle the amount of data necessary to transfer the training to that learning environment. As technology moves toward addressing these issues, the opportunity for web-based training to have an impact will only increase. Management expectations of intranet-based training will be high. Investment in the hardware and software, people with the skills required to start and maintain the network, and staying current with the ever-changing technology will be costly. The return-on-investment (ROI) organizations see from these networks should equal and surpass these investments and expectations. Initial ROI numbers for organizations involved in intranet-based training already show that the networks more than pay for themselves, usually within the first year. As the twenty-first

century progresses, more companies will be using their intranets for training. The levels of interaction and sophistication of this training will increase dramatically, and so will the ROI.

<u>Conclusions and Recommendations</u>

Intranets are currently being used for training and this trend will continue to increase in the future. The interviews and literature review results indicate that intranet-based training is in its infancy. Though training on a network may be a new delivery method, course content should still be based on sound instructional design principles.

As with any new technology, there are challenges that organizations face while implementing intranet-based training. The very newness of training on a network can pose problems for people unfamiliar with computers, let alone using a network to access and browse through the training materials. If users are unable to find and access the information they need, the technology can be rendered useless. The staff needed to create such user-friendly technology needs to be sensitive to course content and ease of use. This often calls for increased teamwork between Trainers, Instructional Designers, and Information Technology employees. Involving the training staff in the development of an organization's intranet can be a critical factor in the success of using the network for training. Developing and selecting hardware and software is as important as having functional and accessible equipment available to students and teachers who are trained in the use of the equipment.

Much of the value of training over a network is just coming into focus. Intranets can provide organizations the flexibility to have employees train on their own schedule, not that of the trainer. Accessibility to training allows employees to train "just in time".

Training can be completed as people need particular knowledge, allowing that knowledge to be fresh while using their new skills on the job, promoting a higher transfer of training.

While networks can be expensive to develop and maintain, the ROI that training over an intranet brings can be substantial. A large east coast-based consulting firm estimates that web training costs one-sixth of what classroom delivery runs. A major east coast bank estimate is that they can save up to 100 percent providing generic software training over their web compared to the classroom (Berry, 1999). A major United States chemical producer expects to save $20 million over three years from training on their network versus traditional methods (Schriver and Giles, 1999). Organizations with more than one location can particularly benefit from using their intranet for training. Limiting training related travel will allow people to work on other projects and also save money on related travel expenses. The time saved can be used to develop new training, ultimately saving substantial money in all areas of the organization. Intangible benefits of freed up space, classes avoided, classes being available at any time and employees being able to complete training when it is least disruptive to production only add to the value of intranet-based training

Intranet-based training is still in its infancy. Support from management is critical for training on a dedicated network to reach its potential. Without management backing, organization-wide buy-in may not take place. The return-on-investment that intranet-based training will provide will likely spur its continued development. Over fifty percent of an organization's training may well be network based.

This study was limited to organizations that are currently using their intranets for training purposes and who were willing to participate in the study. Cost-related factors

led to the participating organizations being within a three-hour drive.   Organizations in the study may be at various points in developing their networks and addressing technological needs. Not all of the organizations may have the same training needs that they could transfer to their intranet. Future research may concentrate on how these needs have or are being addressed and the affect this has on training, what type of training is successful or not successful in a web-based environment, how organizations are moving forward with their training network, and what type of ROI companies are realizing from transferring training to their network.

Training intranets will not be the answer to all training problems. There are certain learning environments and skills that simply do not transfer well to a computer-based learning environment. Complicated and precise technical movements are often difficult in a virtual environment. Interpersonal and sales skills often transfer better in an environment where there is interaction between people. As networks become more sophisticated, they will be able to duplicate the learning environment that is currently the domain of CD-ROMs and video. The use of a dedicated network for training will greatly increase for years to come in the twenty-first century.

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