

**A Survey of
Training Development Officer
Internet Use**

By

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University of Manitoba

A Thesis submitted as partial fulfillment for a Master of Education Degree, Faculty of Education.



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A SURVEY OF TRAINING DEVELOPMENT OFFICER INTERNET USE

BY

DONALD C. MCLEOD

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University
of Manitoba in partial fulfillment of the requirements of the degree**

of

MASTER OF EDUCATION

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List of Abbreviations

AIRCOM	Air Command
ARPANET	Advanced Research Projects Agency Network
ASTD	American Society for Training & Development
ATM	Asynchronous Transfer Mode
AUP	Acceptable Use Policies
BBS	Bulletin Board System
BQC	Basic Qualification Course
CA*net	Canadian Internet network
CBT	Computer Based Training
CD ROM	Compact Disk Read Only Memory
CFITES	Canadian Forces Individual Training & Education System
CFITS	Canadian Forces Individual Training System
CFRETS	Canadian Forces Recruiting, Education & Training System
CFTDC	Canadian Forces Training Development Centre
CIX	Commercial Internet Exchange
DIN	Defence Information Network
DND	Department of National Defense
e-mail	Electronic Mail
EO	Enabling Objective
EPSS	Electronic Performance Support System

FTP	File Transfer Protocol
HTML	HyperText Markup Language
ISP	Internet Service Provider
LAN	Local Area Network
LFC	Land Forces Command
MARCOM	Maritime Command
MOC	Military Occupation Code
NDHQ	National Defense Headquarters
NSFNet	National Science Foundation Network
OJTS	On Job Training Standard
PG	Post Grad
PO	Performance Objective
SALT	Society of Applied Learning Technologies
TCP/IP	Transmission Control Protocol/Internet Protocol
TDO	Training Development Officer
TP	Training Plan
TS	Training Standard
Veronica	Very Easy Rodent-Oriented Net-wide Index to Computerized Archives
WWW	World Wide Web
WYSIWYG	What You See Is What You Get

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Abstract

The internet has exploded onto the general public in recent years. Civilian trainers have developed ways of using this new technology to deliver courses. This purpose of this study was to survey internet use within the Training Development Officer (TDO) occupation in the Canadian Forces (CF) to make recommendations for possible future action. Questionnaires were mailed to each of the 120 TDOs serving in Canada in December of 1996. By March 1997, 105 responses were returned indicating that 85 TDOs had access to the internet.

Findings included:

1. The use of the internet varied according to TDOs age, employment type and setting and educational level. The fact that computers were or were not used during their Basic Qualification Course did not appear to influence TDO internet use after graduation. The data revealed that TDOs under 40 years old accessed the internet at rates between 81% and 87% while those above 40 years of age accessed the internet at rates between 71% and 79%. The TDOs in the Recruiting Education and Training System lead the operational commands with an internet access rate of over 86%. All TDOs working in squadrons or on post grad accessed the internet. All TDOs working on a Masters Degree and over 92% of those with at least one Masters Degree accessed the internet compared to 66% with a Bachelors Degree.
2. Almost 81% of the respondents accessed the internet usually on a weekly basis. The majority had access at work and of those over 88% had to go elsewhere in their building to get access. In over 70% of the cases an internet provider was used to supply the access.
3. Only about a third of the respondents had any internet training. Of those who had training, about 30% had classroom instruction.

4. The internet was used for research by 75% of respondents and 51% used the e-mail feature. In other studies, the e-mail feature proved to be the most popular.

5. Downloading information was the most used activity with surfing Web sites a close second.

The following recommendations came out of the study.

1. The CF should capitalize on the fact that a majority of TDOs is using the internet by making it more accessible to all occupations, schools and headquarters staff.

2. Over seventy percent of the respondents thought that the internet should be used for training in the CF so this methodology should be investigated for possible implementation across Canada.

3. The internet was rated highly valuable for research, distance training and adult education and almost all respondents thought that it should be used for independent and/or individual study. Present and future courses or training events should be developed using internet technologies to assist with their delivery.

4. Internet use appears to decline as the age of the potential user increases and those with higher education levels use the internet more. Each unit in the CF should set up an internet training coordinator who would be a subject matter expert to encourage appropriate internet use.

5. Resources to provide access and to maintain the internet sites should be included in all units annual Business Plans.

6. Many civilian unsolicited alternate service delivery proposals make great claims about the savings of time and money and greater retention through new training technologies such as the internet.

The CF must investigate these claims and develop in-house Centers of Excellence to develop their own training with their own military ethos and ethics.

Chapter I

Introduction

A Survey of Training Development Officer Internet Use

The purpose of the study is to survey internet use within the Training Development Officer (TDO) occupation in the Canadian Forces (CF) with respect to access, use and potential. The data reported in this study was collected via mail out questionnaire, from TDOs across Canada. Oades (1977) surveyed television use in Manitoba schools for her thesis. Her research of teachers reacting to their new technology (TV) stimulated this comparison of TDO's interacting with today's highly proclaimed technology, the Internet. Almost 20 years later, the implications that she noted for teachers in Manitoba schools are the same for TDOs in the Canadian military. She stated that:

All teachers have a responsibility to know the tools of their profession. It is their job to know what is available and how to use it to most advantage. Teachers should be able to convince administrators of the need to provide TV facilities in the schools. (p. 89)

Her work 20 years ago was a motivator for this study. It is the author's view that by replacing the word 'teacher' with 'TDO' and the word 'TV' with 'internet', the same holds true today.

Many references to the internet use the capital "I" to show that it is a unique entity.

Quotes, in this study will use the capital "I", but the author will use the non-capitalized form. It was reasoned that the internet is just another tool much like the television was in Oades study and therefore is a common noun that does not require capitalization. It is believed that the results of the survey will provide information concerning the state of internet use within the military community of TDOs. The data collected may serve as the basis for recommendations for possible future action. Who can forecast the coming technology that will claim to revolutionize the way

we learn and deliver training?

Importance of the Internet

Computer networks such as the internet can deliver information in any form to any place in the world in milliseconds. Video, audio, pictures and text are also available. Sorohan (1994) suggested it is growing rapidly, "because the Internet enables you to do three things better, faster, and cheaper than ever before: communicate, collaborate, and conduct research" (p. 32).

Down the road, [the Internet] will become the major means of communication in the [training and development] profession, as it has for other professions. It's so cheap, easy, and efficient. It's cheaper than writing a letter. (Sorohan, 1994, p. 31)

Passmore (1994) founded an internet news group or 'listserv' specifically for discussing training and development issues. He feels that there are four kinds of interests among its practitioners.

The first interest he called community. "People want to be able to interact with others who have similar functions and interests." The second interest is information. Most of his listserv messages include "requests for information about products, services, and training solutions." The third interest is immediacy. "The Internet is faster than fax, and for the most part it appears to have fewer direct costs." The fourth appeal of the internet is the spirit of equality. "People seem to interact on a pretty much equal basis" (p. 36). It is probable that these interests have influenced others to form discussion groups through out the world. Passmore (1994) wrote:

Much of the Internet's appeal stems from its ability to support quick, global communication. Discussion groups on the Internet have formed around every conceivable topic, including topics of interest to training and development professionals. (p. 35)

Many TDO's today may not access the internet due to a lack of understanding of its possible professional applications. Those in the field of training and development have become increasingly concerned about evaluating the results of various types of instructional programs

employed within the military. Investigation and analysis of results may lead to wiser decisions, the aim being to improve methods of instruction which can facilitate the learning process and maximize the full potential of the internet. TDO's with a knowledge of the internet's capabilities may be in a better position to use this medium to effectively train all military occupations.

Historical Background

In his article, "The Internet: A Network of Networks", Hoffman (1994) suggested that "it is like a library. In a library, each publication has its own structure and its own organization, unrelated to other publications" (p.8). Maddux (1994) utilized the library metaphor by one of his students who suggested "that at first exposure the Internet is almost like walking into the world's largest library and finding no catalog or other inventory, no user instructions of any kind, no titles or author names on books, and no indices or tables of contents on anything" (p. 39).

Owen, Owston & Dickie (1995) developed the internet as a library analogy by saying that the internet was like a "library without walls" (p. 102). This library has five different 'rooms': the card catalog, the reference room, the reading room, the media room, and the (electronic) stacks. The internet has clusters of resources that serve the same purposes as their traditional library counterparts. All libraries have a *card catalog*, whether electronic or paper, for locating specific resources by title, author or subject. On the internet, Veronica and Archie (internet search engines) were used to locate specific items. Libraries have a *reference room* to house their dictionaries, Roget's Thesaurus, encyclopedias and "World Factbooks". The internet has many reference resources that are accessible with a few keystrokes. A library's *reading room* contains newspapers and periodicals. The internet provides a rapidly growing collection of journals that are only available electronically, and digitized versions of commonly available print magazines and

newspapers. Just as a library may have photographs, video, audio and maps, in their *media room*, the internet provides access to sound, photographic and video archives. Stacks of subject oriented resources fill every library. The internet's online databases, Listserv mailing lists, newsgroups, and other Gopher sites provide guides to locate resources so you can keep in touch with the latest developments in your field of study. Owen, Owston and Dickie (1995) provided many addresses of sites that they have visited which fit into each of the five library functions listed above. They will not be listed here as many of them have changed.

This library metaphor and the concept that information (books) can be stored in many places and thus be safe from destruction may have been one of the original motivating reasons for developing the internet. The internet was developed in 1969 initially to serve the interests of the American military. It was, according to a common myth, an information network designed to provide secure, attack-proof communications. The Pentagon often negotiates research projects with various universities and defense contractors. To keep in direct contact with the dispersed researchers and to safeguard this vital, often secret information from falling into the wrong hands, a computer network, known as the ARPANET, (named for its sponsor, the Pentagon's Advanced Research Projects Agency) was set up. It had no obvious heart or key command centre so it would be almost impossible to destroy. The ARPANET was based upon a common set of communication protocols, known as TCP/IP. More than one site was used to assure continuous contact even if enemy or natural actions destroyed more than one of the central sites.

Visualizing Hoffman's library metaphor here is useful in that not all of the books will be destroyed due to their dispersion over many locations. One thinks of the great setback to civilization that must have occurred when the great fire destroyed the ancient library of Alexandria.

As research data from more and more universities and commercial companies and contractors became necessary for U.S. Department of Defense purposes, the network expanded. By the mid-1980's, the National Science Foundation (NSF) began to provide funding for the establishment of research and academic networks throughout the U.S. and began to link those networks into a high speed network known as the NSFNet which also used the TCP/IP protocols. As the NSFNet evolved in the United States, the national research and academic networks, NetNorth and CDNNet, emerged in Canada. They did not use the same internet protocol but did provide a starting point for the emergence of the CA*net in Canada. Similar patterns of smaller networks around the world started to link with other countries. These many networks eventually linked to each other primarily through the NSFNet to create the internet with millions of users. In 1994, Sorohan wrote that "today the Internet is a network of more than 30,000 networks in 69 countries linking business, military, educational, and government resources" (p. 32).

Acceptable Use Policies

Most regional and national networks were created and funded by governmental agencies for the specific purpose of linking educational and research institutions. Their mandate was clear: networking should occur in order to enhance local, regional and national research and development (R&D) (Carroll & Broadhead, 1994, p. 38). The network could be used for education, research or development activities but not for making money or in support of profit-oriented activities. These restrictions came to be known as "Acceptable Use Policies" or AUP's. Even with these AUP's, the network usage began to grow due to two "loopholes". First, commercial organizations were not specifically banned from using the internet so computer vendors began to use the internet to provide technical support to organizations involved with

research and development. Defense contractors communicated with the ARPANET because they were doing work for the Department of Defense so the TCP/IP based networks gained momentum.

Secondly, by the late 1980s, "commercial internet providers" began selling access to the internet for a profit to companies that wanted to use the internet to increase their own profit making potential. With the increased numbers of commercial internet providers, they set-up a Commercial Internet Exchange (CIX) (Carroll & Broadhead, 1994, p. 39). Members of the CIX could communicate among themselves without touching networks with the Acceptable Use Policies so a broad use of the internet for any purpose became available.

On February 8 1996, President Clinton signed into law the Communications Decency Act which was "supposed to squelch online pornography and make the Net safe for children by banning 'indecent' content" (Quittner, 1996, p. 46). In June 1996, a panel of three federal judges, "specially convened in Philadelphia to review the new law, pronounced the government's attempt to regulate online content more closely than print or broadcast media 'unconstitutional on its face' and 'profoundly repugnant'."... The judges went on to declare that the internet was "a medium of historic importance, a profoundly democratic channel for communication that should be nurtured, not stifled" (Quittner, 1996, p. 46). (11 Sep 98, Clinton's sins bared for world to see on internet.)

The Internet in Canada

From 1989, to the current date, use of the internet has exploded. "Canada has the second largest Internet infrastructure in the world," according to Tony Rutkowski the Vice President of Publications for the Internet Society, an organization founded to promote the growth of the internet (p. 40). Smith (1996, p.12) reported the number of people in the USA and Canada with

access to the internet ranges from 9.5 million in a Find/SVP survey to 37 million people in a Nielson Media Research survey, or 17 % of the population over 16 years old. On the other hand, Lewis (1994) suggested the user numbers are grossly exaggerated.

Some experts say the most commonly cited numbers-20 million to 30 million users worldwide-may be many times too high. John S. Quarterman, a highly regarded Internet demographer, believes that a number between two million and three million may be more accurate (p. 1).

Whatever the actual numbers may be, most research suggests that internet use is growing rapidly.

The major internet system in Canada today is CA*net, (short for CA*net Networking Inc.) which was established in the late 1980s to provide global networking capabilities to Canada's education and research communities. CA*net's role is equivalent to the role of the NSFNet in the U.S. (Carroll & Broadhead 1994). CA*net, funded by the National Research Council, is really a coordinating body for 10 regional or provincial networks some of which have Acceptable User Policies. It was originally established to provide networking capabilities to the academic and to the research communities in each province, mostly among universities and colleges.

These links are presently provided with a mixture of 56Kbps lines, up to the equivalent of T1 (1.5Mbps) data speeds. By the end of 1994, CA*net officials expected to complete a migration to T1 capability throughout the country. This upgrade to faster speeds promised users of these systems broader internet capabilities, particularly as some newer internet technologies, such Internet Talk Radio, emerged. Some people are not impressed with this newer, faster technology. Lyall (1994) noted that ham radio operators want to dispel the image of ham radios as dinosaurs. "Despite all the allure of the digital age, many of the 650,000 amateur operators in the U.S. insist that ham radio,...still has a cachet, a mystique and a mission that sets it apart from anything on the Internet." (p. 2). While popular with some enthusiasts, ham radios no longer

have the massive consumer appeal and potential advantages that are afforded the internet today. Stoll (1995) suggested the CB radio and internet share common goals of, "cheap universal access, with neither censorship nor restraint of communications. It supports both commercial and private applications. Heavily used, too" (p. 113).

CA*net is linked to the major American research network, NSFNet via high-speed links to three U.S. universities (Cornell, Princeton and the University of Washington). Through these links, it provides the ten regional Canadian networks with access to the rest of the global internet (Carroll & Broadhead, 1994, p. 42). Funding comes from member fees paid by the ten regional networks, as well as an operating grant from the National Research Council. CA*net is also represented on the Board of Directors of CANARIE Inc., a new initiative with the mission, "to support the development of a communications infrastructure for a knowledge based Canada" (Carroll & Broadhead, 1994, p. 42). CA*net provides a Canadian presence in the international networking community, national network maintenance and administrative services over the CA*net and coordinates the provision of networking services to the regional networks.

Main Internet Uses

Today, scientists, teachers, governments, students, hobbyists, activists, and computer hackers use the internet. Powledge (1994) noted that, "Maryland will become the first U.S. state to offer its residents direct connections to the Internet for free in July 1994. The noncommercial service is called 'Sailor' and is a project of the state library system" (p. A1). With the present proliferation of Internet Service Providers, this free service called 'freenet' is no doubt threatened but further investigation is required. Today free email services such hotmail.com and yahoo.com are available. Web teaching services are provided free at nicenet.net.

Each individual or group may have their own special reasons and their own specific techniques for using this communications network but three main uses have been identified.

Electronic mail, Newsgroups and Research activities will each be discussed.

Electronic Mail (e-mail)

The first usage of the internet is electronic mail or e-mail. E-mail is today a very popular form of communications. Mailing lists (or listservs) are e-mail exchanges between large groups of internet users. Once you have an account on the internet, you can literally send e-mail messages through out the world to friends, businesses and others who may share any of your interests.

ROADMAP is one example of a course-by-listserv. Professor Patrick Crispen at the University of Alabama created and conducted an internet training workshop over the internet. "Over 16,000 people registered (via the internet) from 63 different countries" (Pilichyn, 1994, p. B8). This free course of 20 lessons was e-mailed to each subscriber on a regular basis. Each lesson took from ten to twenty minutes to complete self-paced when one had the time to do them. This ROADMAP workshop has demonstrated the potential to actively involve large numbers of people from diverse geographical locations in rewarding and educational activities.

Nelson (1994) noted that, "the Postal Service has entertained the possibility of joining the E-mail battleground, ... and if first-class mail continues to be unreliable and inefficient, it could become an anachronism" (p. A16). Many e-mail users have described the slow method of delivering regular mail as "snail mail". It trudges in linear fashion along the ground rather than flying at supersonic speeds over worldwide webs of computer networks as does e-mail.

Lewis (June 1994), noticed that:

Political dissidents of all nationalities are discovering a homeland in the worldwide web of computer networks known as cyberspace. Many human

rights activists are exploring the Internet as a way of defying censorship, and human rights organizations have been embracing E-mail as a means of communicating with their members around the world (p. 18).

Newsgroups

Newsgroups form a second use for the internet. Usenet newsgroups are electronic bulletin boards for the exchange of information and ideas. Newsgroups presently exist to discuss topics ranging from university courses to "Barney" the dinosaur and current affairs. Tawa (1994) in Slugs, Not Hugs, for Barney, discussed how, "two Caltech students created the Evil Barney file on the Internet's World Wide Web, and thousands of computer users across the country are logging on" (p. 3). This huggable, purple dinosaur that children love to watch dance and sing songs encouraging love and sharing on TV is attacked by subscribers to this newsgroup and compared to the worst most despicable brainwashing villains of all time. Gunther (1994) examined the way people are "forging emotional ties over computer networks, creating 'virtual communities' of millions of Americans...through commercial networking systems, electronic bulletin boards and e-mail, and the vast Internet" (p. 28).

Information Gathering

The third main use of the internet is to access worldwide databases. The World Wide Web is a multimedia-capable hypertext network that can display video, audio and full colour animations from museums, universities, medical establishments and businesses around the world. This information may be downloaded to your personal computer and examined as required.

Sandberg (1994) noted that Mecklermedia Corp unveiled a much-anticipated on-line service on October 5, 1994 that aims to create an electronic yellow pages for the internet and help companies develop an on-line 'storefront' (p. B9). This Yellow Pages service will literally 'Let

your fingers do the walking' into commercial establishments around the globe. Williams (1994) commented on internet's World Wide Web, as "a network system that lets you jump from document to document or photo, sound bite or video and discussed how it's partner, Internet's Mosaic, a graphical interface that can retrieve and display the linked documents, works with it" (p. 22). Today, Mosaic, has been superceded by Netscape and Internet Explorer.

The preceding pages have given a short overview of the internet and some of its uses. Now let us look at the Training Development Officer (TDO) occupation in the Canadian military to determine if and where the internet may be of use.

History of Training Development Officer Occupation

French (1990) noted that "Two important events occurred in 1980 that changed the look of Training Development within the Canadian Forces" (p. 3). On April 1, 1980, the Canadian Forces School of Instructional Techniques became the Canadian Forces Training Development Centre (CFTDC). Canadian Forces Organization Order CFTDC 5.5.2, gave the centre the added responsibility of conducting development projects and a consulting capacity within the training realm while continuing its original role of preparing CF personnel to instruct and supervise individual training. On July 1, 1980, the Training Development Branch was formed. On this date selected officers from Personnel Development and Personnel Selection were reclassified (occupation transferred) to become Training Development Officers. The Military Occupation Code (MOC) 74A consisted of 60 TDOs that July day. The motto of the CFTDC became NOVA MOLIENTES FOCILARI or "Training Innovators". At the graduation ceremonies for the TDO Basic Qualification Course (BQC) 9501 on May 16, 1996, the Training Development Officer branch adopted their own motto, SEMPER VIAM MELIOREM QUAERENTES or "Always

seeking a better way." It was suggested by our youngest TDO, Remi Tremblay, and selected from a list of 48 other possible motto submissions.

The first TDO Basic Qualification Course serial 8201 ran from 4 January 1982 till 9 July 1982 and graduated ten students. Each year since, eight to twelve TDOs have earned their 74A qualification. What actually are TDOs expected to do in the CF? The TDO classification was formed to help implement the Canadian Forces Individual Training System (CFITS). The CFITS is a systematic approach to training that aspires to train the right person at the right time to do the right job in the most efficient and effective manner possible. It involves quality and quantity control along with resource management. To accomplish this task as effectively and efficiently as possible, a five-phase quality control process involving analysis, design, conduct, evaluation and validation was implemented.

The Analysis phase attempts to identify all of the component tasks that are required to do a job. The skill, knowledge and attitude components are spelled out within this phase and published in a "Job or Occupation Specification" (OS). Performance Objectives (PO) are then derived from these "Specs". These POs include precise statements of what a person does on the job to accomplish assigned tasks, the conditions under which they are expected to perform the job and to what standard (quality, quantity and time) this accomplishment will be measured. These PO statements are listed in another document called the Training Standard (TS). If the training cannot be completed at a school, then normally an On Job Training Standard (OJTS) is written. It outlines the Performance, Conditions, and Standards that will apply to the training at the work unit to determine if the person is qualified to perform the job and earn the Qualification Code associated with the training.

When the analysis is complete, a training agency is tasked to formulate a plan to train selected personnel according to the TS. This Design phase takes the broad statements of the POs and determines smaller training steps or Enabling Objectives (EOs). These EOs are further dissected to develop teaching points, time allocation, teaching sequence, methodology, training aids or support, references, administration and logistical requirements and performance checks to determine successful candidates. The document that contains all of the information as to how the training will be accomplished is called the Training Plan (TP).

When the Analysis and Design phases are complete, training may be conducted. The Conduct phase is the process of carrying out the training as specified in the TP. Each instructor involved with this training is responsible to prepare and deliver lessons using the information in the TP. There are many methods of instruction to present the learning material. Differing degrees of teacher involvement are dictated by each method; for example, seminars, lectures, case studies, tutorials, conferences, reading assignments, self-paced modules and now using Computer Based Training (CBT), the Internet, and teleconferencing. The latter two are just beginning to gain some attention as these technologies become more affordable and more commonly available. As an aside, TDOs were the first CF group to use the Defence Video Teleconferencing system in May of 1994. It was officially opened for general military use on 4 July 1994. During and immediately after the conduct of training, evaluation takes place.

Evaluation is the fourth phase of the CFITS. The training unit is responsible to carry out the necessary evaluation of its own training. This evaluation appraises the student, instructor and the training environment. Written tests and checklists are designed to verify that the trainees have met the objectives expressed in the TS and developed in the TP. The instructor is responsible for

trainee evaluation, remediation, and reassessment as required. An instructor supervisor is responsible for evaluation of instructors, for feedback and remediation as required. Normally each training establishment has a standards section that is responsible for ensuring that the TP has been adhered to as published. Evaluation is an on-going process that requires the cooperation of many participants to ensure that the training objectives are satisfied. Once these first four phases of the CFITS are complete, a graduate should be qualified to perform the job for which they were trained. To confirm this, a validation is performed.

Validation, the fifth CFITS quality process, is the act of verifying with graduates and their supervisors that the training has adequately prepared the graduates to do their job. Six months to a year after training has been completed, graduates should have had a chance to be employed in the job for which they were trained. They should also have had an opportunity to ascertain if the training that they received was adequate or deficient. At some point, six months to a year after their graduation, a questionnaire is sent to the graduate and their supervisor which seeks to discover how well the training has prepared them to perform their job. The Validation Report makes recommendations for improving the next training serial by analyzing all of the data collected through the questionnaires or observations or interviews or a combination of different information gathering techniques. These directions are used to produce an implementation plan that may involve amending the Specifications, Training Standards and/or the Training Plan.

As a result of several Validation Reports and because TDO's are "always seeking a better way", this CFITS model has evolved to include the aspect of education. The recently (1997) adopted Canadian Forces Individual Training and Education System (CFITES) model has added a Development phase to take into account the huge workload involved with developing the

materials required to run a course using new and emerging technologies. A diagram of the CFITES model appears as Figure 1.

With the many pressures to downsize the military and become more productive with less resources, computer technologies are being investigated as a 'force-multiplier'. Can technology such as the internet really help us do more with less?

Statement of the Problem

The purpose of this study was to examine the current state of internet use within the TDO branch of the CF through survey research techniques. More specifically the study surveyed all Training Development Officers serving in Canada during the period of December 1996 and March 1997 to:

1. identify if and how the internet is being accessed;
2. explore training development uses of the internet;
3. discover the perceived potential of this technology;
4. identify the internet features used;
5. identify types of internet training; and
6. discover potential internet access problems.

Significance of the Study

The primary function of the CFITES is to prepare the right number of people at the right time to do the required job in the most efficient and effective manner. To facilitate the learning process, information concerning the more effective use of the internet as an instructional tool would be useful for the improvement of CF training. If the Canadian Forces is to implement the internet into its curriculum, this study may help to make the process more productive and helpful.

It would seem appropriate the money be spent in the most effective and efficient manner to get the "most bang for the buck."

No other surveys have been conducted before this one to determine the use of the internet in the CF among the TDO occupation. Since the Canadian Forces Training Development Centre (CFTDC) motto is "Training Innovators" and the TDO motto is "always seeking a better way", then any new method of making training more effective and efficient should be studied for possible implementation as a recommended methodology. Internet utilization in the CF may be similar to patterns in other government agencies in Canada, the United States and other countries. To this extent, this study was committed to drawing upon such existing literature and research. The final result should be a better appreciation of what the internet is contributing to the CF today. The implications for what it can do are fuel for future consideration beyond this present study. Next is a list of terms that are included in this study.

Definition of Terms

Terms used in this study are defined as follows:

1. Internet is a worldwide collection of communications networks that are interconnected. The internet as a whole reaches around the globe, connects computers from personal computers to supercomputers, and is not administered by any single authority.
2. Information Superhighway is a metaphor referring to the internet.
3. Electronic mail or e-mail is a popular form of communication on the internet as it permits worldwide exchange of private text messages to anyone with an e-mail address.
4. Newsgroups are meeting places for discussions on different topics. Each newsgroup can be either 'moderated' with only postings approved by a moderator publicly posted,

or 'unmoderated' where all messages are distributed to the newsgroup immediately.

5. World Wide Web is a wide-area hypermedia information technology that interconnects information around the world. Clicking on hyperlinks points to documents, including multimedia files, anywhere on the internet.

6. Canadian Forces Training Development Centre (CFTDC) is the home for Training Development Officers where military members are taught how to implement the CFITES.

7. Canadian Forces Individual Training and Education System (CFITES) is a performance oriented systematic approach to training designed to provide the right number of people at the right time to do the right job at minimum cost. A six phase systematic process involving analysis, design, development, conduct, evaluation and validation is employed.

8. Training Development Officers (TDOs) are specially trained to implement the CFITES in the most effective and efficient manner.

9. Job or Occupation Specification identifies all component tasks (skills, knowledge and attitudes) that are required to perform the job.

10. Performance Objectives (POs) are precise statements of what a persons does on the job to accomplish the assigned tasks. The performance, conditions and standards statements of the PO clearly describe what the person does on the job.

11. Enabling Objectives (EOs) are the small steps necessary to attain the ability to perform the assigned tasks listed in the POs of the Training Standard.

12. Training Standard (TS) is the document that lists all of the POs and the administrative and logistical requirements to attain these POs.

13. Training Plan (TP) is a school document listing the EOs, teaching points, time

allocation, teaching sequence and suggested methodology, learning aids, and tests required to assure a competent graduate.

14. Evaluation appraises the student, instructor and the environment using written tests and checklists designed to verify that trainees have met the objectives expressed in the TS and TP.

15. Validation is the process of verifying with graduates and their supervisors if training has adequately prepared the graduates to do their job.

16. Cyberspace is defined (Whittle, 1997) as "1 A fictional, psychic space where minds fuse in a trancelike 'consensual hallucination.' 2 The conceptual world of networked interactions between individuals and their intellectual creations and everything associated with such networks and interactions. 3 the state of mind shared by people communicating using digital representations of language and sensory experience who are separated by time and space but connected by networks of physical access devices" (p. 9).

17. Intranet is an internal internet that is usually limited to a company by secure 'firewall' protection software. Only information posted within the company is available to members via their own web servers and browsers.

Delimitations of the Study

Delimitations are those restrictions that are researcher-selected in order to keep the study to a reasonable size and scope. The following are the delimitations of this study:

1. The study will be delimited to the active TDOs presently serving within Canada.
2. The survey will be delimited to a mail out questionnaire. All responses will be kept anonymous and held in confidence unless respondents authorize quoting their comments by name.

3. No TDOs will be omitted from the survey even though their accessibility to the internet may not be possible.

Limitations of the Study

Limitations are those aspects over which the researcher has no control. The following are the limitations of the study.

1. TDOs will be urged to respond to the questionnaire but a 100 percent response can not be guaranteed. A non-response will be assumed to be random.
2. The success of this survey will depend largely upon the validity and reliability of the data obtained from the questionnaire.
3. It has to be assumed that TDOs offered honest and unbiased answers.
4. It will be assumed that each TDO answered only one questionnaire.

Summary

This chapter presented the framework around which the study was constructed. The use of the internet by TDOs was to be examined. This was followed by an overview of the historical background of the internet, its main uses, and a look at the internet in Canada along with a brief history of the TDO and the CFITES. Next followed a statement of the problem, the significance of the study, definitions of terms and the limitations and delimitations of the study.

Chapter II will present a review of literature related to the subject. Chapter III will outline the procedures for collection and treatment of data. Chapter IV will present an analysis of the data. Chapter V will present a summary of the study, discussion, conclusions, implications and recommendations.

Chapter II

Review of Literature

Hahn and Stout (1994), in their book *The Internet Complete Reference*, called the internet "the most significant achievement in the history of mankind" (p. xix). Jacobson (1994), in "The Coming Revolution, described the promise that, "unlike technological disappointments of the past, such as programmed instruction, educational technology of the 1990s will have a profound effect on the way students learn and the way teachers teach" (p. 26).

Hlynka (1995) noted that, "In the postmodern classroom, the myth of the text as authority has been exploded. Knowledge is appearing so fast that often there is no text...educational technology can and does provide new voices, new ways, new methods" (p. 114). "Educational technology is unique in its ability to deliver content in nonlinear, postmodern ways" (p. 116). Technology such as the Internet, "provides us with more options and more choices and ultimately not one answer, but more potential answers, each of which is right to someone" (p. 117).

Asimov (1991) noted that, "In a few millennia, humans have gone from making pottery to making computers, from the Bronze Age to the Space Age. We can only guess where these revolutions will lead us, but it is clear that technology is propelling history forward as no other force ever has" (p. 121).

This chapter will review literature relevant to the present study. Expanding on the issues of internet access, utilization and potential, five areas that impinge upon the present research will be categorized and reviewed as follows: (a) Effectiveness of the Internet to Educate, (b) Emerging Role of the Internet in Training, (c) Attitudes Towards the Internet, (d) Applications of the Internet, and (e) Contemporary and Future Trends.

Effectiveness of the Internet to Educate

Crossman (1995) set the stage for exploration of the internet as teacher:

Some have argued that the Internet represents the most significant step in refining human communications since the introduction of television in 1939...The Internet is already larger than the largest library and permits the sharing of files as easily with a colleague in Australia as one down the hall. P. 263

Asimov (1991) noted that, "the computer's ability to foster human creativity may well be utilized to its fullest, not because it would be a wonderful thing but because it will serve important social functions" (p. 180). Baxter's research (1997) discovered that, "there were no perceived differences among any of the environmental factors regarding quality or accessibility of graduate programs offered via the Internet." From his survey, Baxter concluded that, "a majority of those faculty responding to the survey were in agreement that graduate courses offered via Internet were of good quality and generally made graduate education more accessible" (p. 2096).

According to Mitchell Kapor, the chairman of the Electronic Frontier Foundation, "Getting information from the Internet is like taking a drink from a fire hydrant" (Cooke & Lehrer, 1993, p.60). When this study was first conceived in 1994, the amount of literature concerning the internet was small and difficult to find. The information was like water dripping from a garden hose. Today, one is likely to find articles about the internet not only in research journals, but in many popular magazines, newspapers, as well as on many television programs. Information concerning the internet has literally exploded onto the general Canadian and world population thus forcing one to learn how to selectively sip from this growing torrent of information.

Microsoft CEO Bill Gates called it the "Internet tidal wave." (Kirkpatrick, 1996, p. 62). Andy Grove, CEO of Intel, suggested, "The Internet is like a 20-foot tidal wave coming

thousands of miles across the Pacific, and we are in kayaks" (Schlender, 1996, p.44). In the same document, Schlender stated that the internet is more than just the latest fad.

Nearly everyone agrees it's the biggest thing to hit computing since the PC. That's why Microsoft has totally rebuilt its strategy around the goal of infusing Internet compatibility into practically every product it makes. And that's why Andy Grove is more obsessed than ever with the possibilities of the PC as a communications device" (p. 50).

Grove (1996) stated that, "the Internet has created new excitement and revealed unrealized potential, and some unexpected new competition too. It has injected new energy almost to the point of too much, but that's what we need. Every year we need to infect another five million people with that excitement" (p. 52). Kirkpatrick, (1996) noted that, "after the initial hype by the popular press it became clear last fall that the Internet's biggest immediate impact would be on the corporate workplace. Internet technology makes it easy to publish and share information with colleagues, whether in the same office or in branches overseas" (p. 62). The internet, the World Wide Web, and intranets give people a window into the world of collaboration across a network. Messmer (1996) proposed and predicted that, "Employees and job seekers must become literate on the Internet to keep pace with businesses that are turning to the Web as a new way of doing business" (p. 24).

Enockson's study (1997) assessed the expanded applications of the Advanced Technological Delivery System (ATDS) at Northern Arizona University. It provided insight into the question, "Is it possible to have the flexibility and responsiveness of modem-based instruction and still meet students' learning requirements and expectations?" (p. 831). He received no negative responses from the 113 of the 141 graduate students who returned the survey.

The following literature review will concentrate on why, where and how the internet is

presently being used for training and will identify some emerging roles associated with the internet and corporate intranets.

Emerging Role of the Internet in Training

Smith (1992), a doctoral student at the University of Pittsburgh, gave a course about the internet over the internet. "He expected 30 to 40 people to participate but was astonished when 864 people registered. A second workshop overwhelmed him with 15,000 participants from over 50 countries" (Gibbs & Smith, 1993). Owen, Owston & Dickie (1995) suggested that the internet was a 'Learning Highway' that could "link students and teachers with interested (and interesting) others - across the country, across the street, and around the world" (p. 164). They reasoned that a sense of purpose and the desire to understand the needs and experiences of others are the keys to learning on the internet. The four key areas to develop this understanding include:

1. **Task and Purpose:** Having a clear sense of task and purpose provides a useful structure and approach to internet-based learning experiences. Three ways to provide purpose are to: incorporate internet experiences into courses; help teachers understand the value of the internet to your work; and create your own projects.
2. **What Your Teachers are Likely to Need:** One thing that unites teachers who may be novices with technology and those who may be experts is the fact that they are teachers. Computer literate students may help teachers with the technology but it is the teacher who is able to link what you want to do with what they have to teach you. The value of the on-line work is in the work more than it is in using the technology.
3. **Focus:** Much of the work you can do using the internet for learning is specific, rather than general. People are drawn together through their interests. The technological link

won't be meaningful if there is nothing to keep you involved.

4. **Learning is Never Far From Home: Learning is something that you do.** The internet won't learn for you. But with the internet, everyone is learning from the experiences of one another. It is the interconnected nature of the internet experiences that gives learning on the internet its active, participatory quality (pp. 165-167).

Pimplapure (1997) suggested that, "collaborative learning and knowledge acquisition based on the needs of the learner have proven to be more effective than traditional learning which focuses on content and follows a rigid format." The above study concluded that an online conferencing system, "allows for the creation of 'virtual spaces' which model the traditional classrooms, seminar rooms and even cafes for social interaction" (p. 1445).

David Letterman's nightly Late Show "Top Ten List" and The Book of Lists by Wallace, Wallace and Wallechinsky (1977 & 1983) have proven appeal and condense much information. It is not a surprise that a list of "Ten Reasons to Use Intranet for Training" (Croft, 1996, p. 28) was compiled. The highlights of this study with accompanying commentary follow.

Why Use the Internet for Training

Reason 1 - Consistency: With an intranet, any employee can view the same training materials. As a result, one does not need to worry about several copies of out-dated information circulating around the office, as may be the case with print-based communication.

Reason 2 - Pull vs. Push Approach: Too often, employees are provided with more information than they can possibly process or retain. An 80-page training manual that we push to employees may be viewed with dread. However, intranets allow one to provide access to as little or as much information as employees wish to pull onto their desktops and process.

Reason 3 - Interactivity: The emergence of Web development tools, such as Java and Shockwave have brought a greater degree of life to Web sites. Even with basic HTML (Hypertext Markup Language), you can create discussion groups, comprehension tests and other two-way communication tools for integration into your training materials. Abernathy (1997) noted that, "it's vital to build interactivity into each distance learning course. The rule of thumb is to add creative and engaging interactive activities every five to seven minutes" (p. 40) Munger (1997) perceived that "unless video is present, such interactions are usually free of race, gender, and age discriminations" (p. 46).

Reason 4 - Ease and Low Cost for Updates: Many have experienced the frustration of creating a high-quality print publication, only to have a sudden changes by management render the piece obsolete. With an intranet site, one can easily and inexpensively up-date on-line publications and training materials. You can do so as frequently as needed.

Reason 5 – User-friendly Interface: Intranet applications typically use an interface that's conducive to point-and-click navigation. If employees can easily get to the information they seek, they're much more likely to look for that information.

Reason 6 - Centralization: With an intranet, employees can access information from a central database at any time, and in any number of geographical locations. Self-training can be completed at home, in the office or on the road.

Reason 7 - Simplicity in Creation and Maintenance: Unless your needs are elaborate, intranet sites can be created and maintained with a minimum of programming expertise. Once the basic shell is in place, support staff in your department can easily make most updates to information.

Reason 8 - Keeping Up With Your Workplace: As more and more young employees enter the workforce, keeping up with technology will become increasingly important. Employees will be less willing to receive training information through slides or print because they're used to being intellectually stimulated through electronic media. Kennedy (1993) noted, "Another trend more in evidence today than in our grandparents' time is technology's way of making redundant traditional jobs, replacing them with entirely new systems of production" (p. 331).

Reason 9 - Flexibility: An intranet can be an ongoing work in progress. Of course, one must start with a meaningful foundation or employees will lose interest. But once a site is in place, one can keep building a library of training and reference materials that will increase in value as it evolves.

Reason 10 - Potential: As the evolution of intranet sites continues, more and more features will emerge that expand its functionality. For example, real-time training that combines a live mediator, on-line information and several remote attendees, will soon be practical.

Attitudes Towards the Internet

The Honourable John Manley, (1994) Canadian Minister of Industry, predicted that,

The information highway will stimulate the development of an enormous range of education, training and lifelong learning applications that will provide access to courses, libraries, museums, specialized databases and other people, regardless of location (p. 31).

Training Development Officers in the military, like other professionals, are now facing rapid advances in technology and global competition to train our personnel in the most efficient and effective manner. As Canadian Forces members, we are told that people are our most important asset even as the processes of reorganizing, restructuring and downsizing continue. The TDO occupation recently underwent a review to determine their worth to the CF. It was determined

that our occupation was cost effective even if individuals are not likely to be deployed into operational battle situations. TDOs have survived as an occupation because they are being considered as an investment rather than a cost due to knowledge of and skills with the new training technologies associated with the internet.

Many of our more traditional classroom training methodologies are under pressure to change. Modular training in shorter more flexible courses, just-in-time training, facilitation, apprenticing, partnering, out-sourcing, computer-based training (CBT), video conferencing, CD-ROMs, Distance Education, electronic personnel support systems (EPSS), internets and intranets are all being touted as replacements for our traditional instructor in front of the classroom. Greenberg (1994) noted that, "the information highway is not just a medium for searching and delivering parcels of information. Rather, it is best seen as an extremely rich communications infrastructure that can deliver a broad variety of multimedia-based real time interaction" (p. 161). He further predicted that,

"Just as our culture has evolved a way of using the telephone far beyond its original intent (which was to let one village communicate with another), we should expect our use of the information highway to evolve far beyond the simple idea of information transmission." (p. 164)

Even as far back 1992, Oliva suggested that high schools of the future would require, "improved teaching techniques, including the use of computers and other forms of technology" (p. 351).

Lee (1996) proposed that the integration of technology by faculty members in teaching depended on three conceptual approaches: learner-oriented, institution-oriented, and faculty-oriented. The study discovered that 78% of the university faculty respondents did use the internet but only 30% used it for teaching purposes. The percentages of internet use varied with faculty identifying themselves as innovators (20%), early adopters (29%), early majorities (28%),

skeptics (14%), or resisters (9%). Demographic variables did not show important differences among the five groups. "Results indicated that familiarity with and knowledge of technology were the most important factors in explaining the differences among groups" (p.353).

Munger (1997) wrote that, "Like telephone, microwave, and satellite transmissions, the Internet can bring training -enhanced by other media such as videos, animation, and audio -to a widely dispersed audience, on demand." He further noted that this technique could be used, "when you need to reach Internet-competent trainees that are separated by time, schedule, and location...to deliver CBT and other distance-learning training that does not require much video support" (p. 46). Several presenters at the Society of Applied Learning Technologies (SALT) conference in Orlando 16 - 20 February 1998, are already using hybrid systems that incorporate CD-ROM and/or DVD with the Internet to handle the memory intensive audio and video training files.

Rheingold (1993) noted an invisible and partially ineffable component of Japanese spoken communication, *kansei*, which may turn out to be an important term all over the Net, as an aid to evaluating the advantages and disadvantages of each Net tool in different situations. *Kansei* can be loosely translated as, "an intuitive, partially aesthetic, sense of rightness about the contextual elements in a conversation" (p. 196). CF trainers have a widely dispersed audience of trainees, with varying *kansei*, that are separated by time, schedule and location. They range through five time zones and over 5,000 miles. At Carnegie Mellon University, there is a "fantasy" committee, examining what they have called the "AAAA Initiative." The four A's refer to a speculation about what might happen if a technology were developed that permitted *anyone* to send or receive *anything* electronically to or from *any* place at *any* time. Crossman (1995) figured that, "The

Internet comes very close to realizing that inquiry right now" (p. 265).

Peha (1993) discovered that teaching styles changed with the introduction of the internet in schools. Teachers took on the role of a facilitator and used the internet as a motivational tool. "The benefits of collaborative activities and differing viewpoints were also recognized, inspiring respondents to implement more activities involving student cooperation or contact with students in different surroundings" (p. 34).

Hale (1996), an editor at Wired, suggested that the way we use English will change in the digital age. This new style will celebrate voice.

Not the clear-but-oh-so-conventional voice of standard written English.
Not the data-drowned voice of computer trade journals. And not the pureed voice of mainstream newspapers and newsmagazines. It's the voice of quirky, individual writers that best captures the quirky, individualist spirit of the Net (p. 5).

Hale (1996) also noted that this digiculture has its own language and sublanguages. Wired's dictum is simple: Write the way people talk.

Any literary endeavor must stroke the collective culture of its audience. In the digital age, that audience has been fragmented; we can no longer speak to a homogenous mass audience or to one standard of literacy. Instead we speak to smaller, self-selected groups - neighborhoods, communities of interest, elites (p. 13).

While Hale expounded language changes due to the technology of the internet, Gilster, (1997) in *Digital Literacy*, noted a far greater impact that would reorient our way of thinking. He wrote that, "the Internet offers something fundamentally different by allowing so many people to be connected by this powerful set of tools." On a daily basis, as the Internet grows and connectivity spreads, we are finding out where this is leading us. "But make no mistake about it, this is a different take on communicating, and it calls for a new set of assumptions and a fundamental reorientation in thinking" (p. x). Gilster, (1997) saw the internet, "as a city

struggling to be built, its laws only now being formulated, its notions of social order arising out of the needs of its citizens and the demands of their environment...Technology demands of us... a willingness to adapt our skills to an evocative new medium. And that is the heart of digital literacy" (p. xii). He defines digital literacy as, "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (p. 1). Acquiring digital literacy for internet use requires mastering a set of core competencies which he feels, "are becoming as necessary as a driver's license" (p. 2).

The most essential of these competencies is the ability to make "informed judgements" about what is found on-line. Critical thinking governs how one uses what one finds on-line. Other competencies, which Gilster noted were targeted reading using a hypertext model which supports sequential reading with "nonlinear jumps to alternative idea caches." All will need to learn how to assemble this knowledge and build a "reliable information horde from diverse sources." The final core competency of developing "search skills" is critical so one can use search engines to hunt through millions of pages of information to find the target that one wishes to consider (p. 3). "Convergence is the word of the hour because networked information opens your desktop to a global data bank, challenging old models of distribution" (p. 7).

Foucault (1977) warned that technology is not value-neutral when it allows a small number of people to control a large number of other people. Rheingold (1993) re-enforces Foucault's theme by referring to his own voluntary daily use of the WELL (Whole Earth 'Lectronic Link), a computer conferencing system that enables people around the world to carry on public conversations and exchange electronic mail. He noted that, "You don't need fiber optics to institute a surveillance state - but it sure makes surveillance easier when you invite the

surveillance device into your home" (p. 290).

Woods-Tucker (1997) discovered that, "problems of comprehension, time constraints, access, and inadequate administrative support emerged as barriers to faculty members' use of the Internet" (p.1619). Relating to Foucault's premise, Woods-Tucker also noted that, "some faculty members thought that the Internet was exciting and powerful, while others thought it was frustrating and created a system of 'haves' and 'have-nots'" (p.1619).

To close this discussion on attitudes towards the internet, are selected controversial and contradictory quotes from Neil Postman, Clifford Stoll, Michael Dertouzos and Paul Gilster.

Postman (1993), wrote that,

A new technology does not add or subtract something. It changes everything (p. 18).
... those who have control over the workings of a particular technology accumulate power and inevitably form a kind of conspiracy against those who have no access to the specialized knowledge made available by the technological... the benefits and deficits of a new technology are not distributed equally. There are... winners, and losers (p. 9).

Stoll (1995) was deeply skeptical about the effects of networking on our personal value systems. He postulated that, "Computer networks isolate us from one another, rather than bring us together. We need only deal with one side of an individual over the net. And if we don't like what we see, we just pull the plug. Or flame them. There's no need to tolerate the imperfections of real people" (p. 58).

Dertouzos (1997-1998) looked back at the internet as if it had already become a movement of history. "Because of the widespread changes it will foster, the Information Revolution will earn its place in history as the third socio-economic movement, following the Agrarian and Industrial Revolutions." He, further suggested that, "Maybe then, having understood the plow, the motor and the computer, we'll dare go beyond artifacts and embark

upon the fourth revolution - striving to understand ourselves" (p. 139).

Gilster (1997) is more positive than Stoll about the effects of the internet and sees the Net:

as having the same effect all technology does: It offers new possibilities that have to be considered within the context of an unchanging human nature. In that sense, the Internet is as ordinary, and as powerful, as the telephone. Telephones haven't changed our need to talk to other people; what they've provided is a way to do so over distance, so we can keep in touch with those we love or work with no matter where they live (p. 22).

Attitudes toward the internet vary but sources do concede that it has become a notable force that may change all of our lives. What are some applications of the internet?

Applications of the Internet

The Internet and Intranets.

"The Internet offers people access to data, other users, and a wealth of information at a speed and scope never before possible. Internet use has taken off since 1990, gaining two new users per minute." (Bassi et al, 1996) There appears to be unlimited potential for trainers to use the Internet for professional development. "Newsgroups, listservs, and the World Wide Web offer ways to exchange information and experiences with colleagues around the world" (Bassi et al, 1996).

Whittle (1997) suggested Internet use would enhance many aspects of communication, education, entertainment, convenience and commerce but further concluded that,

the benefits of connecting with others via cyberspace are immeasurable - the lives of those who discover this world are almost invariably changed as they become involved in one online community after another and find information, dialogue, convenience, kindred spirits, and like minds (p. 42).

The internet is providing a connection to many resources as TDOs look outside the Department of National Defence (DND) for development opportunities as Chapter 4 will show.

Electronic performance support systems (EPSS) have been heralded by some TDOs as a component of future CF training and education. Benson (1997) defined EPSS as, "computer-based systems that provide on-demand access to coaching, learning experiences, or tools to enable a user to perform a task quickly and with a minimum of support from other people." Benson (1997) discovered that the most common features of EPSS are "searchable references, explanations, and context-sensitive help" (p. 42). The DND IntraNet (DIN) includes all three of the features that Benson listed above. Stevens and Stevens (1996) noted that an EPSS is "a computer application that can provide, on-demand task-specific skills training, task-specific information access and expert advice needed to solve job-performance problems" (p. 59).

Many companies are developing their own intranets for multiple-site delivery of training and performance support. Pollock and Masters (1997) wrote that, "we hope to reap the rewards of a more efficient training department and happier internal customers through our use of emerging technologies, especially Internet technologies" (p. 31). Schmieder (1995) wanted to make information and training available to everyone in his company and noted that "for employees and salespeople who aren't at headquarters, the IntraNet becomes a valuable source of up-to-date information" (p.70). Just-in-time training, on demand using electronic performance support is easy according to Schmieder (1995) who uses World Wide Web technology on Amdahl's IntraNet because the software is either very inexpensive or absolutely free. On empowerment of American employees, Schmieder (1995) observed, that "we haven't enabled them to do what they're supposedly empowered to do. In order to empower them, you've really got to give them the capability to find out the information" (p.70).

Haehl's Educational Doctoral study (1996) recommended, "designing a curriculum to meet

the needs of the adult students' learning patterns, conducting specific types of evaluations for courses, and allowing students a variety of formats in which to complete assignments" (p.4203). She also noted that, "removing both external and internal barriers for adult students can increase the likelihood of greater enrollments, higher student satisfaction, and increased student retention and persistence" (p.4203).

"Just as Internet is a window to the world, so will DND's Intranet be a window - to the world of DND" (Dorge, 1996, p. 10). She suggested that the Defense IntraNet or DIN will transparently deliver the department's vast information resources to everyone's desktop with minimal cost, time, and effort. "Content will include permanent one-time documents (memos, letters, e-mails, reports) that don't change over time; publications that are updated regularly (orders, regulations, policies, manuals and so on); and organization and Group home pages, accessible to all DIN users" (p.10). The objective is to reduce paper as a means of disseminating and viewing information in the DND. "For every dollar spent producing paper documents, \$60 to \$80 is spent to edit, file, maintain, copy, store and dispose of the document during its lifetime. In contrast, it costs six to eight cents per page to manage the information life cycle of an electronic document" (Dorge, 1996, p. 10).

Using the WWW technology not only reduces paper and printing costs but there are no postage charges. Updates to the training courses or documents can be done instantaneously without recalling obsolete CD-ROMs, diskettes or paper based material. "Courses delivered via the Web are independent of platforms and operating systems, requiring only a modem and Internet access" (Bassi et al, p. 34).

Schroder-Hendrix (1997) investigated Instructional Systems Design (ISD) practice. Her

doctoral internet "survey", of Instructional Designers and developers from educational, corporate, government, and technical environments found that, "when ISD is successfully used, they generally have an accepted model or procedures of conducting ISD which are used to guide the process" (p.385). She discovered the barriers to successful implementation of ISD activities included, "contextual and resource issues such as client and management support, sufficient time, and adequate funding" (p.385).

McArthur and Lewis (1997) compared business and educational uses of the internet and information technology. They noted that most businesses want to train their staff "to become competent in relatively well-defined skills (using word processors, spreadsheets, or more specialized tools and software, for instance); improvements in proficiency in these skills can be easily measured" (p. 74). These clear successes of information technology in education and training are limited in many ways. The well-defined skills of business don't compare with the more-complex skills of education such as collaborative problem solving. They also surmised that internet-based learning is so new there is little demonstrated value as yet. Wilson & Utecht (1995, p. 76) noted that, "E-mail is the most common use, with courses spanning the gamut from business, to foreign language, to science and work experience utilizing the Internet for research"

Applications for internet use vary and are growing. What might the future hold? Next contemporary and future trends of the internet will be discussed.

Contemporary and Future Trends

Jackson (1997) proposed the establishment of an "Internet Innovation Centre" (IIC) to "promote the cooperation, coordination and communication within and between academia, industry and government regarding the development of Internet applications at the University of

Manitoba" (p. 2). How important is this IIC to the University of Manitoba?

It is vital that the University act quickly to stake a claim in the field of Internet development, as policies and alliances are already being formed nationally and internationally. Lack of an organized front may result in the University being passed over on a national level (p. 2).

In keeping with the top ten lists theme, the following selected passages from, The Top Ten Trends (Bassi, Benson, and Cheney, 1996, p. 28 - 42) will illustrate how the CF training problems and possible solutions mirror those of corporate America.

Trend 1 - Skill Requirements Will Continue to Increase in Response to Rapid Technological Change.

The increase in the demand for skills has led to an increase in the need for training. From 1970 through 1990, jobs requiring cognitive skills increased 11 % and those requiring interpersonal skills increased 19 %. The jobs requiring motor skills decreased 4.5 %. The U.S. Bureau of the Census clearly demonstrates the growing demand for computer skills in the workplace. According to *Managing Today's Workplace*, more than 70 % of management positions require computer-literacy skills. An American Society for Training and Development (ASTD) survey of 994 training professionals conducted at their 1996 International Conference revealed that nearly 73 % said that computer skills were essential for employment. Phillips (1996) discovered that each additional year of formal schooling is associated with a five to 15 % increase in total earnings over a lifetime.

Porter (1997) discovered that, "extension educators need to be given more information and training on the use of the Internet. Training inservices need to be top priority. Extension educators using the Internet should be rewarded. Given job announcements, educators need to develop proficiencies using distance education technologies" (p. 1484). The TDO Basic

Qualification Course 9701, was provided laptop computers so each student could develop their required computer and internet search skills.

Trend 2 - The American Workplace Will Be Significantly More Educated and More Diverse.

The demand for training to reach more workers will grow so training practices must become more sophisticated and adaptable to meet the diverse learning needs of the new workforce. The CF is relying more on Reserves to augment the Regular force so the above statement is very applicable to our situation. Many of these Reserves have full or part-time jobs so the training has to be transportable to them rather than having them move to the training source. Recruiting centres are reporting more highly educated personnel from a wider variety of backgrounds applying to join the CF.

Trend 3 - Corporate Restructuring Will Continue to Reshape the Business Environment.

The same forces creating a growing need for training are also making it difficult to provide training. Kovach (1995) reported on a poll that asked 1,000 employees and 1,000 employers to rank morale boosters. The booster that employees gave the highest ranking was "interesting work." In contrast, employers ranked "higher wages" at the top of what employees want. In the 1995 Deloitte and Touche Survey of American Business Leaders, 53 percent of senior executives and 49 percent of HRD executives said that there is no such thing as job security. The CF, in its endeavour to be more business-like with restructuring may be creating similar feelings of reduced morale and lack of job security.

Trend 4 - Corporate Training Departments Will Change Dramatically in Size and Composition.

According to the document, *Rethinking Human Resources: A Research Report* (the Conference Board, New York, 1995), 58 % of large U.S. corporations have downsized their HRD departments. Among the 50 member companies of ASTD's Benchmarking Forum, the number of training staff declined in 1995 by 50 % and the number of employees served by each training staff member increased from 169 to 186. The CF's recent review of the TDO occupation appears to have gone against this trend to reduce training professionals and even appears to have created a demand to increase the numbers.

Trend 5 - Advances in Technology Will Revolutionize the Way Training Is Delivered.

Traditional classroom delivery of training still predominates the CF but the use of technology-based delivery will undoubtedly increase immensely. The reasons for changing the CF delivery strategy mirror those cited by Bassi, Benson and Cheney (1996). The CF, also are facing "shorter product cycle times, less employee travel to cut costs and time away from work for training, and the need to keep employees updated on changing skill requirements" (p. 33).

The Air Command TDO section is liaising more-and-more with the people in the Information Services and Systems departments to develop electronic support systems and deliver training via computer networks. As training professionals, TDOs have pushed the idea of using technology in training. With the many recent improvements in the quality of off-the-shelf CBT packages, and faster hardware to run multimedia, animation and video, clients are gaining confidence to use such technology.

Galagan (1997) discovered that "Today, consulting companies and others that trade in what they know are investing millions in major strategy initiatives to manage knowledge as a competitive advantage" (p. 23). She noted "A service, Infolink, delivers more than 60 newspapers and magazines to all 23,000 U.S. employees via their computers" (p. 23). Shoemaker (1997) showed that, "in the state of Michigan, 11.1% of elementary buildings, 13.2% of middle schools, and 18.7% of high schools are using the Internet" (p. 835). Some school systems appear to be giving their students a head start with information technologies.

Trend 6 - Training Departments Will Find New Ways to Deliver Services.

Like other organizations, the CF training departments have to cope with the growing demand for quality instruction by creating structures to support networks of internal and external training providers. TDO's are often required to act as a broker of learning services. Unsolicited proposals to provide specific training services must be evaluated and benchmarked against strategic business plans to determine where the most, "bang for the buck" can be gained. The CFTDC in Borden has developed many train-the-trainer programs after determining that it is more cost effective and better for the corporate culture to provide this training in-house rather than outsourcing.

Outsourcing

The ASTD Benchmarking Forum has found that outsourcing is widespread but not dominant among the world's most successful companies. "In Forum firms, contract workers make up on average 23 percent of the training design and development staff and 30 percent of instructors" (Bassi et al, 1996, p. 35).

At the Annual TDO Professional Development Seminar 97 in Winnipeg, April 2 & 3, 1997, much discussion centered on a need to develop TDO expertise in managing suppliers. One must know how to select qualified suppliers and how to assure that they provide on-target services in the most efficient and effective manner. Company mission and culture must be imparted to suppliers so they are able to design goods and services that fit work requirements.

Partnerships

The American Association of Community and Junior Colleges based in Washington, D.C., estimates that 90 % of its member colleges are in the business of training workers at companies, instead of just teaching subjects or trades. Allerton (1998) noted that "About 15,000 companies across the United States have their own corporate universities-many with separate facilities that constitute on-site campuses" (p. 8).

A Consortium for Supplier Training (Bayer, Chrysler, Eastman Kodak, Motorola, Texas Instruments and Xerox) has established formal ties with six community colleges and one university to provide training to the member companies' network of suppliers. The Consortium chooses the training courses, trains and certifies the colleges to provide the training, and makes the training available to the suppliers. Likewise, the CF has developed ties with the Canadian Community College Network to provide training for their aircraft maintainers and to accredit the CF training that it provides so a common industrial standard is recognized.

Trend 7 - Training Professionals Will Focus More on Interventions in Performance Improvement.

A survey of training professionals at ASTD's 1996 International Conference, noted "almost 89 % "strongly agreed" or "agreed" that a shift from training to performance

improvement is one of the most important trends in the field” (Bassi et al, 1996, p. 36). The CFITS has always been performance oriented. Recently, in 1997, TDO's recognized that education is also an important element in the area of personal professional development and so renamed the training system to the Canadian Forces Individual Training and Education System (CFITES). It now includes six phases in its quality control process, namely, Analysis, Design, Development, Conduct, Evaluation and Validation.

Changing Competencies and Skill Requirements.

ASTD Models for Human Performance Improvement: Roles, Competencies, and Outputs by William Rothwell (1996) described 15 essential competencies for the roles and steps in human performance improvement (Bassi et al, 1996, p. 40). They are as follows:

- a. Industry or corporation awareness. By understanding the mission and vision of the CF, TDO's can develop business plans that link human performance interventions to organizational goals. These can be communicated to all via our intranet.
- b. Leadership skills. Communication (a valuable leadership skill) via the internet may help to achieve desired work results by keeping all personnel informed of expected outputs or deliverables.
- c. Interpersonal-relationship skills. My teenage son is presently using the internet to communicate with his sister who is in Japan on a Rotary Student Exchange. Their relationship has never gone as smoothly as it is now. They both seem to take more time to think about what they are going to say before they type to each other.
- d. Technological literacy. We must use and understand existing and new technology and different types of software and hardware and performance support systems to address the

gaps between actual and desired performance in the work place.

e. **Problem-solving skills.** Sharing ideas over the internet, may help TDO's identify common or specific problem areas which can be solved in a synergistic and iterative manner to close current and future performance gaps. The rapid retrieval of information from various databases permits the formulation of a variety of possible solutions and the ability to have many human inputs allows the selection of the best solution to implement.

f. **Problem-definition skills.** Sharing a variety of views of a perceived problem via a DND IntraNet may find a specific definition of a problem so that it may be more easily resolved.

g. **Systems thinking and understanding.** One should realize how one intervention may affect many parts of an organization and take the necessary steps to address these side affects of human performance improvement interventions. The use of the internet and/or DIN is a current intervention that may affect the way CF business/training is facilitated in the future.

h. **Performance understanding.** When a gap in performance is noted, it must be addressed. The internet may be useful in providing information on how to close the performance gap. The volumes of performance related information on the internet can be more readily collected and catalogued for specific applications.

i. **Knowledge of interventions.** The potential of the internet to provide electronic performance support systems (EPSS) via either software or tutorials must be used to close existing or anticipated performance gaps. Filipczak (1994) noted that, "corporate trainers are also utilizing the Internet, using listservs, newsgroups, and on-line courses" p. 43.

Many versions of software were used during this study. Most recently, while using Microsoft Word 97, the cheerful electronic dog online helper, "Power Pup" ran to get the printer

and put in the paper when the print command was used. This built-in EPSS is easy and fun to use and provides just-in-time, one-on-one personal instruction when required.

j. **Business understanding.** In a downsizing and restructured environment, one must be able to predict the economic impact of business decisions. One has to know the functions of a business and how they relate to each other.

k. **Organization understanding.** By seeing the organization as dynamic, political, economic, and social systems with multiple goals, one can influence positive change. A Forces wide Defense IntraNet (DIN) is presently under construction which will provide current, accurate DND information to potentially every desktop computer. With a little training, all CF members will be able to rapidly retrieve their specific information without searching for then wading through volumes of paper-based texts.

l. **Contracting skills.** More frequently, TDO's are required to organize, prepare, oversee and evaluate work performed by suppliers and outsourcing agents. The internet is often an information rich source to find these needed skills and contractual requirements.

m. **Buy-in and advocacy skills.** It is important to secure buy-in from as many internal functions as possible to ensure the ongoing maintenance and upgrade of any planned new technology such as the internet or the intranet.

n. **Coping skills.** Knowing how to deal with ambiguity and how to handle stress resulting from change and multiple meanings and possibilities as a result of the vast amounts of information on the internet is a necessary skill.

o. **Ability to see the big picture.** The internet may help one look beyond their own small concerns and details to see the over-arching goals and results of the bigger whole.

Trend 8 - Integrated High-Performance Work Systems Will Proliferate.

The new emphasis will be on functions, departments, and people and on how to create measurable results. High-performance work systems require ongoing and arduous effort.

"Companies that utilize high-performance work practices provide more training than those that don't engage in such practices. Just-in-time and just-what's-needed training will become more common, as will trainers with well-developed performance consulting skills" (Gephardt & Van Buren, 1996, p. 22). The CF has adopted both of these concepts in their attempt to be more effective and efficient with their training.

A Systems Approach.

"All high-performance work systems emphasize a systems perspective" (Bassi et al, 1996, p.38). The CF has adapted a systematic approach to its training and employs TDO's to advise on this approach. As the CF continues to re-engineer, reorganize and downsize towards a more effective and efficient organization, it has become more cognizant of the need to align strategy, mission, and vision with beliefs, values, management and leadership practices so human resources, training, development and compensation mesh with its technology and organization-wide communications. Hussey, (1995) stated that, "clients will have computers, CD-ROMs and the Information Highway working together for them when they need it, where they need it, and in the format that best fits their particular learning style." Coates & Jarratt (1993) pointed out that, "to a significant degree, telecommunications and electronic technologies are making it possible for most people to work almost anywhere, and at any time" (p. 1).

Shoemaker's (1997) recommendations for districts attempting to implement internet technology were to:

- (1) develop a long range plan for both the use and management of the Internet;
- (2) appoint a district technology director to oversee the long-range planning;
- (3) allocate adequate funding for teacher training;
- (4) consider the use of a consultant; and
- (5) make the implementation of the technology a district-wide goal and support the teachers and other staff members serving as change agents in their buildings (p. 835).

Trend 9 - Companies Will Transform Into Learning Organizations.

As more organizations become knowledge-based, it's essential that they promote and capture learning at the individual, team, and organizational levels, thus fuelling the concept of the learning organization. Training professionals must develop ways to capture and share knowledge systematically, as work occurs and changes. Learning is the daily responsibility of line managers and work teams; the work itself becomes the primary learning process. Since Senge's book, *The Fifth Discipline* (1990) about learning organizations, many books and works on that topic have proliferated. Both learning organizations and the internet feed on information that is converted to knowledge by individuals.

According to Bassi et al, (1996) a learning organization includes (but is not limited to) these characteristics:

- a. a belief that systems thinking is fundamental;
- b. a climate that encourages, rewards, and enhances individual and collective learning;
- c. a view that surprises, mistakes, and failures are learning opportunities;
- d. widely available access to information and resources;
- e. a desire for continuous improvement and renewal;

- f. learning integrated with work; and
- g. opportunities for open dialogue and inquiry (p. 40).

If it is more than just a coincidence that learning organizations and the internet became popular at about the same time, let us review the above characteristics as if we were discussing the internet. Characteristics of the internet include (but are not limited to) the following:

- a. cross computer operating systems platforms is fundamental;
- b. individuals and teams are encouraged to explore the net and are rewarded for their efforts;
- c. mistakes, and failures lead to learning opportunities and a folder of bookmarks for quick, easy access to your next net search;
- d. the internet provides widely available access to information and resources;
- e. new internet skills and knowledge fuel a desire for continuous improvement to gain more internet skills and knowledge;
- f. many companies integrate use of the Internet into their daily work; and
- g. the potential for communication on the internet provides opportunities for open dialogue and inquiry.

It appears that the development and characteristics of learning organizations parallel or are closely aligned with the development and characteristics of the internet.

Trend 10 - Organizational Emphasis on Human Performance Management Will

Accelerate.

Norman (1993) observed that "technology has decided that machines have certain needs and that humans are required to fulfill them... We tailor our jobs to meet the needs of machines" (p. 223). Many organizations state that people are their most important assets. Systematic management of the skills and knowledge of these assets is increasingly important. Training professionals will need to hone their skills in such areas as job analysis, task analysis, instructional development, evaluation, and validation of training methodologies and compensation. Mohrman & Mohrman (1995) define performance management as "a broad term for the practices through which work is defined and reviewed, through which capabilities are developed, and through which rewards are distributed in an organization" (Bassi et al, 1996, p. 41). The internet may provide a forum to discuss and resolve some of these issues. If knowledge is power then those who possess the information gathering skills will also be gathering the power.

Conclusion

The ten trends most likely to affect our work in the near future, as outlined by Bassi, Benson and Cheney (1996), were not intended to be all-inclusive but they could "provide you with a compass for charting your course" (p. 42).

Whittle (1997) believed that, "the quality of life for any individual is a function of the choices he or she makes in five dimensions: physical, emotional, social, intellectual, and spiritual" (p. 204). He noted that even though cyberspace is a nonphysical place, it reduces the physical separations between family, friends, coworkers, and even strangers as communications occur more regularly than ever before. "Every range of human emotion can and does find its way into

messages and exchanges that can enrage, sadden, cheer, or inspire readers. Cyberspace is a great place to find affirmation, consolation, and understanding" (p. 207). Whittle wrote that the social significance of online communications is staggering. You may have more acquaintances online but diminished quality of friendships due to the limited range of interaction possible over the Net as compared to physical interaction. "Most students nowadays are assigned an Internet account and ID when they enter college" (p. 209). This extends their intellectual capabilities by increasing the number of those involved in the sharing and in the quality of their knowledge and experience. In certain contexts, such as private e-mail exchanges, support groups and tight-knit online communities, Whittle discovered that, "spirituality can indeed be enhanced by the more focused communications often possible using the written word, even among strangers" (p. 210).

Whittle (1997) concludes this section on contemporary and future internet trends:

It is likely that cyberspace will facilitate the achievement of social objectives by offering communications and information that take advantage of the primary benefits of cyberspace communication technologies: a savings of time and money, increased effectiveness, increased efficiency, increased convenience, enhanced currency, and a reduced possibility of errors" (p. 273).

Chapter III will provide a detailed description of the general procedures used to develop, distribute and collect the survey, "Training Development Officer Internet Use".

Chapter III

Methodology for Collection and Treatment of Data

This chapter sets forth a detailed description of the general procedures of the study. The first section describes the methodology used to collect the data. The second section describes the questionnaire. The third section outlines the selection of the population. The fourth section gives the procedures for the treatment of the data.

Methodology

Procedures for the collection of data

The intent of the questionnaire was to ascertain the general accessibility, utilization practices and perceived potential of the internet by Training Development Officers (TDO) actively serving in the Canadian Forces (CF) between December 1996 and March 1997 and to document obstacles or non-use factors. A 1977 survey by Oades at the University of Manitoba was adapted and used as a model for this study. Oades questionnaire was altered to gain different information that was specifically relevant to TDOs in the military environment across Canada.

Pilot Study

The original 18-item questionnaire was developed and trialed one-on-one with a fellow TDO in Halifax in November of 1996. This procedure determined:

- a. the time required to complete the questionnaire;
- b. the appropriateness of the demographic groupings;
- c. the usefulness of information received from each section of the questionnaire;
- d. what questions were liked/disliked; and
- e. areas of confusion with individual questions.

Procedures

Research by Royle (1996) has suggested that the internet provides the perfect venue for private lessons that also allow easy access to expert information. She stated that Net-learning is worth exploring because "it is cost-effective..., easily updated..., can be delivered asynchronously..., learned at students own pace... and allows information from other sources to be married to the core curriculum via hot-links" (p.13). Using a survey approach, this study has investigated how TDOs use the internet today and what they consider to be its future potential for improving the delivery of training in the CF.

Focus

There are three main foci in this study: (1) to discover how TDOs access the internet (2) to learn the present use of the internet by TDOs; and (3) to seek opinions as to the potential of the internet as a tool for TDOs. A survey or questionnaire, rather than personal interviews, was chosen as the main data gathering methodology for several reasons. Surveys can be:

- (1) inexpensively administered to a large population;
- (2) returned anonymously by all respondents;
- (3) used with literate samples (such as TDOs);
- (4) used to get standardization of responses; and
- (5) sent and returned via mail in a timely manner.

The military mail system proved to be very efficient.

Questionnaire

Developing the Questionnaire

Based on the foregoing discussion, four types of information were sought.

The questionnaire was divided into four categories. It is attached at appendix 3. Each was made to fit four 8 1/2 by 11 inch single sided sheets of white paper. The four question types centered

- on:
- a. Demographics;
 - b. Access to Internet;
 - c. Use of Internet; and
 - d. Potential of Internet.

A set of questions was developed for each section and reviewed both by a group of peers and experts in survey design. These reviews lead to many changes designed to make the questionnaire easier to complete and to increase the usefulness of the information obtained.

For question #2, "Year of completing TDO course", the original six groupings were reduced to two since computers were first introduced into the TDO course in 1990. This question would then discriminate between those who had been taught using some aspects of computers and those that had no training with computers on their TDO Basic Qualification Course (BQC). Question #9 was altered to a column format with identical response choices in each to avoid confusion and provide like data for the home and the work environment. Question #16 was altered to include a five point 'Likert' attitude scale, ranging from "No value" to "Average" to "Great value" when rating specified internet activities. Question #17 was reworded to draw out TDO opinion as to whether the CF should use the internet for training or not and why or why not. The revised questionnaire was then piloted on a small group of TDOs in Winnipeg. Some minor changes were made, after taking into account feedback from each of the small group participants.

In order to obtain qualitative data, an optional "comments" section was provided after most questions. Since the researcher was not conducting personal interviews, this approach allowed each

TDO to make additional comments and clarify their responses if they so wished. The questionnaire provided spaces for each respondent to either check or circle their appropriate responses using pencil or pen. Computer answer sheets were not considered appropriate as each mail out package would require folding and the results were to be manually entered into a database for analysis. All of the questions except #1 to #6 and #16 also permitted respondents to add explanations to further amplify pertinent information.

The Demographic questions #1 to #5 were designed to test the relationship of the following:

1. TDO's age;
2. Years of TDO experience;
3. Setting of TDO employment;
4. Type of employment; and
5. Present educational level.

The age categories in question #1 were divided into five year intervals beginning at age 25 and ending at age 55. This spread was perceived to include all serving members and provide some anonymity for the respondents. The original five - three year intervals for question #2 "Year of completing TDO course" were changed to just two choices when analysis determined that from BQC 8201 to 8901 no computers were used during their training and between BQC 9001 and 9601, students were involved with computers as part of their training.

There are three operational commands: Maritime Command (MARCOM), Land Forces Command (LFC) and Air Command (AIRCOM), a training system called the Canadian Forces Recruiting Education and Training System (CFRETS) and a National Defense Headquarters (NDHQ), that employ TDOs in the CF. Question #3 provided five choices to determine where each respondent

was employed. Since employment opportunities vary within each area of employment, it was determined to ask which type of employment was practiced. The five types of employment categories included:

- a. Headquarters;
- b. School;
- c. Squadron;
- d. Post Grad; and
- e. Project Management.

The final Demographics question sought to determine the present general educational level by asking which one of three statements applied to their situation. Since all candidates require a Bachelors Degree to be accepted into the TDO branch, it was determined to find out whether having a Masters Degree or working on a Masters Degree affected internet use. No special effort was made to determine the gender of each respondent. Of the 120 TDOs who were sent a survey, only 16 were female. Their anonymity would have been easily compromised if they were asked to identify themselves by gender. Since the CF background training and educational requirements for all TDOs are the same regardless of gender, this discrimination data was not deemed to be a necessary factor for this study.

The Access to Internet section of the questionnaire, composed of six questions from #6 to #11, sought to discover if, how, where, and how often TDOs gained access to the internet. Question #6, "Do you have access to the Internet?", No or Yes, was designed to divide the respondents into two distinct groups. If they answered No, they were instructed to go directly to question #14 to continue the survey. Question #14 asked if they planned to get an internet account and if so, where. Those who

answered Yes, were instructed to continue with the rest of the survey.

To determine where they accessed the internet, question #7 provided the following four choices; at work, at home, at university and other, with a space to explain where, if other. It was determined that if they accessed the internet at work, TDOs would either have their access point on their desktop or elsewhere in the same building due to firewall security measures. If these two choices did not capture their situation, question #8 offered a third choice, Other, and provided an opportunity to explain where their access point was located.

Question #9 sought to find out how TDOs get on-line to the internet. Two identical columns, one for "At Work", and one for "At Home", offered three choices, "Internet Provider, On-line Service, and Freenet" plus Other, with a space to describe how, if other. This researcher's first exposure to the internet was at the University of Manitoba in 1994, as part of a Post Grad course in Curriculum Development. Each student was given an internet account and had to use it to communicate with the professor and with the other students. Students were taught some basic internet search techniques and were encouraged to complete an on-line internet course called "ROADMAP". The initial apprehension was relieved once each had the chance to practice what they had learned. In discussions with other TDOs, it was discovered that internet skills varied widely. It was perceived that it might be related to the training or lack of training that they had received prior to using the internet. Question #10 asked if they had received internet training or not. If yes, they were given five choices, which were: "Classroom instruction, Seminar, On-line training, a Friend and Other", with a space to explain, if Other. The final "Access to Internet" question dealt with how often TDOs accessed the internet. The choices were: "Daily, Weekly, Monthly and Other", with a space to elaborate, if Other was their response.

The questionnaire section entitled, Use of Internet, sought to reveal which features of the

internet and what activities were employed. Preliminary research showed that the most commonly used features of the internet were: E-mail, Newsgroups, Listservs, and Research. These four choices plus Other were the basis for question #12. The internet activities most often written and talked about included: "Talk/Chat, File Transfer Protocol (FTP), Surfing Web Sites, Down load information, Provide information, and Buy/Sell". These activities, plus Other, became the main choices permitted in question #13.

Question #14 was designed to allow those who responded, No, they did not have access to the internet in question #6 to reveal if they had plans to get an internet account in the future and if so, where. This question was also designed to confirm if those who had answered in the affirmative to question #6 had plans to get another account at another location. Once again, if the appropriate choices were not provided, "Other", was included with the accompanying space to explain their answer.

The final section of the questionnaire was entitled, Potential of Internet. This section was included to permit all respondents, whether they had access to the internet or not, to express an opinion as to their perceived potential of the internet to be used as a training vehicle and as an education tool for the CF. Question #15 asked, "Would you use the Internet for any of the following?" - No or Yes - and offered 12 statements. Those choices included: "Introduce a course, Develop body of lesson, Review topics, Add current data to lessons, Independent and/or individual study, Remedial work, Random searches, Team building, General Purpose Training, Professional Development, Military Occupational Classification Training, and Language Training" along with Other and an opportunity to explain. These statements were derived from discussions with various CF trainers and from personal experience.

To add variety to this questionnaire and to determine respondents' feelings on five current issues facing our TDO branch, a Likert attitude scale was chosen for question #16. Each respondent was asked to rate the value (on a five point scale) of the internet to the following activities: "Research, Communication with colleagues, Validation of training, Distance training, and Adult education". If they felt that the internet provided no value to do Research, they were instructed to circle the "1". If they felt that the internet provided Great value to do Research, they would circle the "5". If an average value was perceived then they would circle the "3".

Question #17 was designed to provoke an opinion on the part of the respondents and also to gain some qualitative data concerning why they felt the way that they did. Each TDO was asked, "In your opinion, should the CF use the Internet for training?" - No or Yes - then explain Why Not or Why. At the time of developing the questionnaire, this question was perceived to be one of the most important to tie all of the other responses together. If they were pro or con towards the internet, this question would provide a place to discuss their reasons.

The last question sought to discover the obstacles preventing respondents from using the internet in their Training Development activities. The five choices provided included: "Lack of Access, Lack of training, Time to develop materials, Resources to maintain Web site, and Security Problems". The ever present selection, "Other", was offered with an opportunity to explain their additional information.

With the questionnaire now finalized, a covering letter was written to potential participants outlining the purpose of this study and requesting their voluntary support. The letter and questionnaire were combined in order to simulate actual mailing conditions. This package (letter & questionnaire) gained approval from the University of Manitoba Ethics Committee in late November 1996 and was

mailed soon after on the 29th. The CF mailing system was used to deliver each survey package to each TDO serving in Canada. The five TDOs who were at various universities on Post Grad received their package by regular mail and were provided a stamped, and addressed return envelope. A total of 120 questionnaires were mailed to each TDO presently serving in Canada or on Post Grad. Their addresses were obtained from the 1996/1997 Training Development Officer (MOC 74) Directory effective 18 Nov 96. Addressed, but otherwise unmarked, return envelopes were provided with each survey so respondents were only minimally inconvenienced and their identities were not compromised. The survey appears as Appendix 3.

Originally, the CF email system was considered for distributing the survey and receiving the returns. This method would have likely been faster and would have not required so much manual input and analysis but it would not have permitted confidential returns as each return would have had the address of the sender attached. The idea of using the internet to complete this study was also abandoned as it would have excluded a large portion of the TDO population who did not have access to the internet and again would not have provided the anonymity that the Ethics Committee insisted on.

The covering letter instructed each TDO to try to return their completed questionnaires by December 16, 1996. On the advice of survey development experts, a reminder letter was sent to each potential participant on December 11, 1996. Copies of each letter are attached as Appendix 1 and Appendix 2.

Selection of the Population

Subjects and Setting

Training Development Officers in the Canadian Forces are mandated to be "Training Innovators". Oades (1977) suggested that teachers in Manitoba had a responsibility to know the

tools of their profession; in her study television was the current tool. Today, the internet may be the tool of choice for many educators. TDOs are employed in groups of varying numbers in each of the Command headquarters in Ottawa, ON, Winnipeg, MB, Halifax, NS, Borden, ON and Kingston, ON. They are also employed individually in military schools or squadrons in every province except Prince Edward Island and Newfoundland. All TDOs require an under graduate degree as a pre-requisite to joining this military occupation. Many have earned Masters' degrees in the field of education.

All of the TDOs serving in Canada were selected as the unit of analysis for this study because all are responsible for the implementation of the CFITES. It should systematically assure that CF training is completed in the most effective and efficient manner. The TDO classification when compared with most of the other CF occupations is quite small. It is possible for a TDO to know all of the other members of this branch. Networking among TDOs is encouraged so all may learn the best practices from each other's experiences. A qualitative study was considered. Interviewing four TDOs, (one from each area of employment) who were known users of the internet was feasible. With more research on the topic of the internet, it was determined that a cross-sectional survey or census of all TDOs would be the more valuable for our branch. By discovering the present state or 'snap-shot' of TDO internet use, one could determine what was needed to be even more effective and efficient with our CF training.

At the time of this study, two TDOs were on long term assignment out-of-country. It was determined not to include them in this survey due to the uncertainty of mail service. Their jobs were also unique so the data gained from their responses would not be useful for determining recommendations within the CF.

Of the 120 questionnaires sent out on 29 November 1996, 105 returned were returned by 17 March 1997. This represents a response rate of 87.5 %. This was considered to be an above average response rate. Babbie (1973) cited the following response rates: "50 percent - adequate, 60 percent - good, 70 percent or more - very good" (p. 165). The response rate may be due the following factors:

- a. the topic was of current interest;
- b. the survey was short;
- c. it was simple to complete;
- d. it had the support of our Branch Advisor;
- e. the timing, just prior to Christmas Leave; and
- f. the reminder letter two weeks after initial mailing.

Procedures for Treatment of the Data

As each survey was received, a number and the date of return was written on the front page of the questionnaire to track the progress. A database was then developed into which all of the returned data was entered. Originally, the database was created in Microsoft Access version 2.0 for Windows. It later was migrated to Access 7.0 for Windows 95 and after some user training and software conversions at work it came to rest in the Access version included with the Microsoft Office 97 suite. Throughout each conversion, only minor changes in format were noticed. A separate database table was designed for each of the four sections of the survey. As each survey was received, the data from each was entered into each of the four tables. Of the 105 responses received, six did not offer their opinion as to the potential of the internet. Their Demographic information was complete and they did complete other aspects of the survey so they were included in the total. Two of the responses from members on Post Grad included typed elaborations to specific questions that highlighted work that

they were researching. These comments were bulleted on the database form. Frequency of responses and more complex query analysis were used to determine trends that were employed to support recommendations for future use of the internet within the TDO classification. On the surveys, internet users were asked to answer all of the questions. Non-users were asked to answer specific sections. Table 2 illustrates the number who responded to each section.

Table 2

Delineation of Returns According to Response to Questionnaire

<u>Questionnaire Items</u>	<u>N</u>	<u>Category of Response</u>
1 - 5	105	Demographics
6 - 11	85	Access to Internet
12 - 14	85	Use of Internet
15 - 18	97	Potential of Internet

Of the 105 usable questionnaires that were returned, 85 respondents or 81 % indicated that they had access to the internet either at home or at work or at university. That is, they replied "yes" to question 6, "Do you have access to the Internet?" For the same question, 20 respondents or 19 % answered "no" to indicate that they did not have access to the internet. Table 3 illustrates the raw data.

Table 3

Delineation of Returns According to Access

and Non-access to the Internet

<u>Raw Score</u>	<u>Access %</u>	<u>Raw Score</u>	<u>Non-Access</u>
85	(80.95)	20	(19.05)
(% of score)			

Each of the completed questionnaires was returned by mail to the researcher's work address. The results were entered into four tables in an Access database created by the researcher. Simple queries within each individual table were used to reveal the total responses for each question. More complex queries among the four tables were used in the treatment of data to reveal a variety of relationships between those who used the internet and those who did not use the internet. It should be noted that, due to the sophistication of the TDO population at creating surveys and their high literacy skills, the negative response was always presented first as opposed to the usual positive response to assure that each question would be read carefully before answering. (Copies of the written comments are available from the author upon request.)

Summary

This chapter summarized the procedures for the collection and the treatment of data.

Chapter IV will present the results of the data analysis.

Chapter IV

Data Analysis

This chapter reports the results from the data collected. The purpose of this study was to determine internet use among TDOs presently serving in Canada. No hypotheses were stated as this study sought to produce a snapshot survey of internet use in the CF among TDOs as of January 1997. A corollary of this study will determine if age, education, year of completing their BQC, place of employment and setting of employment had any effect on internet use.

First, the data from each question will be summarized in percentages. Next, an analysis of data will highlight the demographic relationships affect on access to the internet. A further analysis will determine the potential for the CF to utilize the internet in their training programs. The most popular uses of the internet will be discussed. Lastly, the findings of the survey will be discussed.

Data Summary

Of the 120 surveys sent out in November 1996, 105 were returned by March 1997. The overall return rate was 87.5 %. The data was divided into four categories, namely: "Demographics, Access to Internet, Use of Internet and Potential of Internet". Demographics information broke down as follows.

Demographics

All 105 respondents answered all five questions in the "Demographics" section. Question one solicited age information. The six age categories of five year intervals returned as follows: a. 25-29: 1 for .95%; b. 30-34: 26 for 24.76%; c. 35-39: 23 for 21.9%; d. 40-44: 29 for 27.62%; e. 45-49: 19 for 18.1%; and f. 50-55: 7 for 6.67%. Figure 2 illustrates the Age Distribution among TDOs.

Question two sought to reveal which groups of graduates had computer training on their TDO Basic Qualification Course. Two categories were offered. Basic Qualification Courses between 1982 and 1989 (48 for 45.71%) did not use computers while the subsequent courses 1990 to 1996 (50 for 47.61%) did use computers. A third group (7 for 6.67%) who did not take the BQC was unexpectedly revealed. These people became TDOs when the branch first formed before the BQC was developed. When they are placed into the non-computer use group the total percentage is 52.38% (55 of 105).

Question three divided the respondents into five employment settings as follows: a. MARCOM 18 for 17.14%; b. LFC 7 for 6.67%; c. AIRCOM 13 for 12.38%; d. CFRETS 36 for 34.29%; and e. NDHQ 31 representing 29.52%. See Figure 3. The present type of TDO employment asked for in question four broke down as follows: a. Headquarters 43 for 40.95%; b. School 41 for 39.04%; c. Squadron 2 for 1.90%; d. Post Grad 5 for 4.76%; and e. Project Management 14 for 13.33%. Figure 4 shows the high percentage of TDOs employed in Headquarters and Schools.

Question five divided the respondents into those with at least one Masters degree (40 for 38.09%); those who are working on a Masters degree (15 for 14.29%) and those who have at least one Bachelors degree (50 for 47.62%). Figure 5 illustrates that over half of the TDOs soon will have a Masters" Degree.

Access to Internet

Those with access to the internet numbered 85 (80.95%) while those without access to the internet numbered 20 (19.05%). Of the 85 who responded to question seven, "Where is your Internet access?", 72 (84.71%) connected at work, 40 (47.06%) from home and 10 (11.76%) accessed the internet at university. At work only seven (9.21%) had internet access at their desk while 67 (88.16%) had to go elsewhere in the same building to gain internet access. Two (2.63%) TDOs accessed the

internet at another unidentified source.

Question nine probed how TDOs accessed the internet from home and/or at work. Internet providers were the most popular source to gain internet access. At home, 31 (73.81%) and at work 47 (70.15%) used an internet provider. An On-line service connected six (14.29%) from home and seven (10.45%) at work. The Freenet allowed two (4.76%) to connect from home and one (1.49%) to connect from work. Other connection sources permitted three (7.14%) to gain internet access from home and 12 (17.91%) from work.

Internet training had been provided to 30 (35.29%) TDOs but 55 (64.71%) had no internet training. Classroom instruction was the most popular source of training at 30%; seminars helped 13.33%; on-line training was used by 6.67% and 10% had a friend assist with their internet training.

Question 11 asked, "How often do you access the Internet?". Daily access was reported by 24 (28.24%) while 33 (38.82%) reported weekly access, 15 (17.65%) only accessed the internet monthly and 13 (15.29%) chose other.

Use of Internet

The internet was used by 64 (75.29%) for research while 43 (50.59%) used the email feature and 15 (17.65%) used listservs and newsgroups. See Figure 6. Downloading information proved to be the most popular activity with 59 (69.41%) responding to this choice. Surfing the Web attracted 53 (62.35%) while providing information was popular with 26 (30.59%) respondents. File Transfer Protocol activities attracted 13 (15.29%). The talk or chat activity was used by nine (10.59%) and using the internet to buy or sell things was reported by three (3.53%). Figure 7 illustrates the popularity of downloading information.

Only 14 (13.33%) did not plan to get an internet account. No reasons were offered. Of the 40

(38.1%) who planned to get a personal internet account, 29 (27.62%) wanted their account at home and 20 (19.05%) were getting an account at work.

Potential of Internet

This section elicited feedback as to the perceived potential of the internet for a variety of CF training activities. Only six TDOs did not respond at all to question 15 which listed the following 12 activities with a No or Yes answer option. "Would you use the Internet for any of the following?"

- a. Introduce a course - 57 of 82 for 69.51%;
- b. Develop body of lesson - 40 of 76 for 52.63%;
- c. Review topics - 76 of 87 for 87.36%;
- d. Add current data to lessons - 68 of 89 for 76.4%;
- e. Independent / individual study - 92 of 95 for 96.84%;
- f. Remedial work - 47 of 81 for 58.02%;
- g. Random searches - 89 of 96 for 92.71%;
- h. Team building - 15 of 73 for 20.55%;
- i. General Purpose Training - 52 of 84 for 61.9%;
- j. Professional Development - 83 of 92 for 90.22%;
- k. Military Occupational Classification Training - 33 of 77 for 42.86%; and
- l. Language Training - 26 of 74 for 35.14%.

Figure 8 graphs the mainly positive perceived potential of the internet.

Question 16 was a five-point Likert attitudinal scale to determine the perceived value of the internet for Research, Communication with colleagues, Validation of training, Distance training and Adult education. "No value" was "1" and "5" was "Great value" with "3" being an "average value". Of the 97 who responded to the value of research, 55.67% felt the internet had 5. Great value; 29.9% chose 4.; 13.4% chose 3. Average; and only 1.03% chose 2.. No one cited 1. "No value" for the internet to be used for research. The 96 responses to using the internet to communicate with colleagues broke down as follows: 1. "No value" 5 for 5.21%, 2. 7 for 7.29%, 3. "Average" had the most at 34 for 35.42%, 4. received 22 for 22.92% and 5. "Great value" had 28 for 29.17%. Only 77 responded to using the internet for validating training. Their percentages were 16.88% "No value",

28.57% chose 2.; 23.38% thought it had "Average" value; 23.38% also chose 4.; while only 7.79% thought the internet had "Great value" for validating training. Of the 95 who responded to the distance training value of the internet 3.16% thought that it had "No value", 5.26% chose 2.; 18.95% thought it had "Average" value, the majority (48.42%) selected 4. and 24.21% chose 5. "Great value". The adult education issue elicited 96 returns. Only 2.01% thought the internet had "No value", 10.42% selected 2; 23.76% thought it had "Average" value; again the majority (41.67%) selected 4. and 21.88% thought the internet had "Great value to educate adults. Figure 9 combines the above data to illustrate the rated value of the internet.

Almost two thirds thought that the internet should be used by the CF for training in question 17. The "Yes" option was selected by 71.11% while the "No" option received 28.89% from the 90 responses.

The final question sought to discover what obstacles might prevent TDOs from using the internet for their training activities. Sixteen of the 105 did not respond at all to this question. Lack of access garnered 70.79% of the returns. Lack of training was a perceived obstacle for 51.68%. Time to develop materials for the internet was cited by 52.81%. The resources to maintain Web sites were a concern for 39.33%. Finally, the issue of security was chosen by 43.82%. Figure 10 shows the total percentage breakdown of obstacles to using the internet. The Harvard Graphics software divided the totals from each response group into percentages for illustration purposes. The percentages used in this paragraph compared the total responses within each category to show the percentages.

Access Related to Demographics

Age appears to be a factor to gaining access to the internet. The one TDO in the 25-29 age group had an active involvement with the internet. In the 30-34 age group, 21 of 26 or 80.77% had

access. Twenty of the 23 TDOs in the 35-39 age group or 86.96% had internet access. In the 40-44 year age group, 23 of 29 or 79.31% had access to the internet. Fifteen of the nineteen 45-49 year olds or 78.95% had internet access. In the 50-55 year age group 5 of 7 or 71.43% had internet access. The sample size is too small to be used as a predictor but a trend appears to show that the internet is accessed more by the younger TDOs and less by the older TDOs.

The use of computers during the BQC did not appear to affect the percentages of those having internet access now. The courses graduating between 1982 and 1989 with no computers as part of their basic training had an 81.25% access rate. Those graduating between 1990 and 1996 who had used computers on their BQC accessed the internet at a rate of 80%. Six of the seven (85.71%) who did not receive a basic course also had access to the internet.

The employment settings appeared to have an influence on internet access. The TDOs in MARCOM accessed the internet at a rate of 72.22%; LFC had a rate of 71.43%; AIRCOM topped the operational commands with an access rate of 84.62%; while CFRETS logged an internet access rate of 86.11% and NDHQ TDOs had a 77.42% rate of access. It would be interesting to discover if these figures have remained constant over the year since this data was gathered.

The type of employment showed some interesting differences in internet access rates. Those employed in a headquarters or in a school logged onto the internet at rate of 79.07% and 78.05% respectively. The two TDOs working at a squadron and the five on full-time post grad all (100%) had access to the internet. Those performing project management functions had an access rate of 85.71%. A further study may be able to identify the reasons for these differences.

The present education levels show a noticeable difference in internet access. Those TDOs with at least one Masters Degree accessed the internet at a rate of 92.5% while all 100% of those working

on a Masters Degree accessed the internet. Those TDOs with at least one Bachelors Degree only logged onto the internet at a 66% rate. Have those with Masters level experience been forced to use the internet as part of their education or are there other factors at work?

CF Training Via the Internet

Now that the affects of demographics on internet access have been noted, the factor of those with access who think that the CF should use the internet for their training will be examined. A comparison of age and internet access to those who feel that the internet should be used for CF training will also be sought. In the 30-34 age division, 65.38% with access to the internet thought the CF should use the internet for training. The 35-39 year old group with internet access suggested that the CF use the internet for training at a rate of 60.87%.. The 40-44 and 45-49 year age groups with internet access perceived the internet should be used in CF training at rates of 44.83% and 47.37% respectively. Only one of the seven 50-55 year old group or 14.29% thought the internet should be used for CF training purposes. This comparison again illustrates the propensity of the younger age groups to use the internet for CF training and education.

TDOs, with internet access, who did not complete a BQC and those who completed the basic course between 1982 and 1989 felt that it should be used for CF training at rates of 42.86% and 45.83% respectively. Those with access, who completed their BQC between 1990 and 1996 thought the CF should use the internet for training at a rate of 58%. It appears that the more recent TDO graduates feel that the internet has a future in CF training.

The employment settings produced a wide variance of feelings toward the use of the internet for CF training. Land Forces Command (LFC) had a rate of only 28.57%. Air Command and NDHQ were close with 38.46% and 38.71% respectively while Maritime Command had 55.56% and CFRETS

had 66.67% in favour of using the internet for their Canadian Forces training.

None of the two TDOs employed in squadrons felt that the internet should be used for CF training. Of those on post grad, only 40% were in favour. Those employed on project management were close to the post grads with 42.86%. Headquarters personnel with access to the internet were almost evenly split with 48.84% responding that the internet should be used for CF training. Those employed in schools were most supportive with 60.98% thinking that the internet should be used for CF training.

The educational level produced the widest variance on the query relating those with access to the internet to those thinking that the internet should be used for CF training. Those with a Bachelors Degree had a return rate of 42%. Those with at least one Masters Degree had a return rate of 55%. The TDOs that were working towards a Masters Degree had a strong 73.33% return rate. It appears that their current exposure to the internet has made them respond more favourably to the idea of using it for CF training.

Internet Features and Activities Used

The internet was most often used for "Research" (75.29%) with "Email" second at 50.59%. Listservs and newsgroups were tied with 17.65% of the TDOs using these features of the internet. The internet activities that stood out as being most popular were downloading info (69.41%) and surfing web sites (62.35%). Providing information was an activity of 30.59%. The File Transfer Protocol was used by 15.29% while the talk or chat activity attracted 10.59%. Only 3.53% used the internet to buy or sell products or services.

Potential Internet Uses

Of the 12 categories of choice for potential internet use, only three produced a positive return rate of over ninety percent. Independent or individual study was selected by 96.84% of respondents. Random searches were the choice of 92.71% while 90.22% responded that professional development was a potential use of the internet. Teambuilding held the least potential with only 20.55% responding in favour.

The individual rated values of the internet have been listed above. When the two greatest value columns (4 and 5) are combined, the results still indicate a strong value (85.57%) of using the internet for research activities. Distance learning was second at 72.63% and adult education was third at 63.54%. Over half (52.08%) felt that the internet had value for communicating with colleagues. The idea of using the internet for validating CF training produced the widest distribution of responses but only 24.74% thought that it was of value for this activity. The internet appears to be a topic of great interest to Training Development Officers (TDO) as 105 of the 120 questionnaires were completed and returned. The most surprising outcome of this study was the discovery that 85 out of the 105 TDOs responding to this survey questionnaire actually had access to the internet either at home, at work, or at university or in combinations of the above. This was very encouraging as access to the internet is vital if TDOs are to use it for CF training.

A majority of respondents (70.79%) were of the opinion that the Canadian Forces (CF) should use the internet for training. Research, random searches and professional development were considered to have the highest potential for internet use in CF training. The use of the internet to help build teams was not considered appropriate. Validation of CF training via the internet was not considered to hold much value. It is interesting to note that Air Command has developed an

automated validation system that utilizes the Defense Information Network (DIN). At the time of writing, it has been tested and appears to hold great promise to increase the number of completed Validation Studies each year. Finally, it was interesting to discover that even though 85 TDOs had access to the internet, 63 felt that the main obstacle for using the internet in their training development activities was a lack of access.

Summary

This chapter has summarized, in percentages, the data from each survey question. Relationships between demographic factors and access to the internet were highlighted. The demographic and access factors were related to the perceived potential to use the internet for CF training. The most popular uses of the internet were discussed. Chapter V will summarize the findings. A discussion of the results and their interpretation will be included. Conclusions, recommendations and implications will be presented.

Chapter V

Summary, Conclusions and Recommendations

The purpose of this final chapter is to focus upon the following six considerations. First, a summary of the findings will be presented. Second, the results of the major areas and descriptive data will be discussed. Third, the significance of the study will be proposed. Fourth, overall conclusions of the study will be formulated. Fifth, recommendations will be made and finally, implications for further research and Training Development Officers will be suggested.

Summary of the Findings

The chief goal of the study was to examine the current state of internet use among TDOs in the CF across Canada and to identify factors related to their utilization practices. The data collected from a mail out survey to 120 active TDOs during December 1996, revealed the following findings:

1. The use of the internet varied according to TDOs age, employment type and setting and educational level. The fact that computers were or were not used during their Basic Qualification Course did not appear to influence TDO internet use after graduation. The data revealed that TDOs under 40 years old accessed the internet at rates between 81% and 87% while those above 40 years of age accessed the internet at rates between 71% and 79%. The TDOs in the Recruiting Education and Training System lead the operational commands with an internet access rate of over 86%. All TDOs working in squadrons or on post grad accessed the internet. All TDOs working on a Masters Degree and over 92% of those with at least one Masters Degree accessed the internet.

2. Almost 81% of the respondents accessed the internet usually on a weekly basis. The majority had access at work and of those over 88% had to go elsewhere in their building to get access. In over 70% of the cases an internet provider was used to supply the access.

3. Only about a third of the respondents had any internet training. Of those who had training, about 30% had classroom instruction.

4. The internet was used for research by 75% of respondents and 51% used the e-mail feature. In other studies, the e-mail feature proved to be the most popular.

5. The downloading of information was the most chosen activity with surfing Web sites a close second.

Discussion

This section will discuss the findings of the survey. Suggested reasons for the results will be offered.

How is Internet Accessed?

Partially in response to the internet becoming a popular news item, the CF instituted many Technical Information Systems. Often these systems were located at headquarters so commanders could communicate quickly, cheaply and with security. As knowledge of these stand-alone internet access points became known, demand for admittance increased. Much of the CF activity is centered upon training. New approaches are constantly being investigated to improve the effectiveness and efficiency of this training. Most of the training is controlled from a headquarters. From these two sources stems the reason why access to the internet is greatest among TDOs employed in schools or headquarters.

Training Development Uses of the Internet

Many of the studies reviewed for this thesis revealed that e-mail was the most popular use of the internet. TDOs', by comparison, most often used the internet for research and downloading information as part of their mandate to always seek a better way. The fact that 85% accessed the

internet at work as opposed to 47% at home shows that TDOs are using the internet for professional rather than personal reasons.

Perceived Potential of the Internet

Over 96% of respondents perceived independent or individual study as a potential use of the internet. Random searches and professional development were internet uses cited by over 92% of the TDO respondents. Reviewing topics was perceived by 87% to be a useful way to employ the internet. Seventy-six percent would use the internet to add current data to lessons followed by 69% who would introduce a course via the internet. Team building, language training, and military occupational classification training were negatively perceived for internet use with only 20%, 35% and 42% responding positively to these choices.

Internet Features Used

Newsgroups and listservs were internet features used by only 17% of TDO respondents. Unlike other studies (Crossman 1995, Peha 1993, Owen et al 1995, Pimplapure 1996, Sorohan 1994, Wilson & Utecht 1995) which found email to be the most used feature of the internet, only 50% of TDOs used email regularly compared to 75% who used the internet for research.

Types of Internet Training

Only 35% of the respondents had any internet training. Formal classroom training served 30% of those while 13% went to a seminar and 10% were taught to use the internet by a friend. Only seven percent used on-line internet training programs.

Internet Access Problems

Ironically, the obstacle thought to prevent most TDOs from using the internet was lack of access. Over 70% picked lack of access even though 81% of the respondents had access to the

internet. Time to develop internet materials and lack of training were also cited as obstacles by 53% and 52% respectively while only 44% thought that security would prevent internet use. Thirty nine percent figured that resources to maintain Web sites would be an obstacle.

A variety of write-in comments listed other obstacles such as slow log in and download times, low bandwidth for accessing video, lack of hardware, too many Department of National Defence (DND) rules and regulations, and no time to play with the internet to understand how it could be used for TDO activities.

Significance of the Study

To date and to the best of the author's knowledge, this is the first and only study of internet use within the Canadian military as a whole and the TDO occupation in particular. As discussed in Chapter I, Training Development Officers are specialists who have mandates to implement the Canadian Forces Individual Training and Education System (CFITES) and to assure that military training is completed by the most effective and efficient means. The internet may have great future potential to facilitate these mandates. In order to capture this growing potential, it is necessary to understand what the internet has to offer the military trainer.

Enockson (1997) found no negative responses in his research to provide insight into the question, "Is it possible to have the flexibility and responsiveness of modern-based instruction and still meet students' learning requirements and expectations?" (p. 831). The Defence Information Network (DIN) is fast compared to the modem-based instruction that Enockson used in his study so TDOs have an even greater potential to meet their learners' needs and expectations.

Pimplapure's (1996) research discovered that, "Collaborative learning and knowledge acquisition based on the needs of the learner have proven to be more effective than traditional learning

which focuses on content and follows a rigid format" (p. 1445). While content is still of the utmost importance in military training, the use of collaborative learning techniques in a less rigid format via distance learning technology has the potential to save the CF much time and money by reducing travel and accommodation expenses.

This study clearly indicated that the use of the internet increased as the level of education increased. Those with or seeking a Masters' Degree accessed the internet more often than those with a Bachelors' Degree. Lee's (1996) study of faculty perceptions and attitudes about technology-mediated instruction similarly indicated that, "familiarity with and knowledge of technology were the most important factors in explaining the differences among groups" (p. 353). The authors first hands on exposure to the internet occurred during this Masters study. Others TDOs on post grad appear to have had similar experiences.

This study surveyed internet use within the TDO occupation in the CF and attempted to discover obstacles to internet use (remember 88% had to go elsewhere in the same building to access the internet). The Woods-Tucker (1997) study described the educational experiences of a group of faculty members who had direct and unrestricted access to the internet from their office computers. His research showed that, "problems of comprehension, time constraints, access, and inadequate administrative support emerged as barriers to faculty members' use of the Internet" (p. 1619). Schroder-Hendrix (1997) used esurvey methodology to allow her respondents to indicate that, "the barriers to successful implementation of the (Instructional Systems Design) ISD activities included contextual and resource issues such as client and management support, sufficient time and adequate funding" (p. 385). The barriers noted in the above two studies are similar to the obstacles surfacing in this study and emphasizes the need to address the potential problems associated with lack of support in

the form of funding, time, access and training.

Conclusions

The data collected in this survey support the following conclusions concerning the use of the internet by Training Development Officers in the Canadian Forces as of March 1997.

1. (a) The internet was being accessed by 81% of the TDOs in the CF.
(b) Use of the internet varied from once a day (28%) to once a month (18%) with most getting access weekly (39%).
2. Use of the internet varied with age. Eighty seven percent of the 35 to 39 year old group accessed the internet. Each of the older age groups accessed at continuously declining rates.
3. Use of the internet varied according to employment setting and type. A majority of TDOs are employed in schools or headquarters. They accessed the internet at rates of close to 80% while TDOs in operational commands had access rates that varied from 71% and 72% for LFC and MARCOM respectively to 85% for AIRCOM.
3. Education levels showed the greatest variance in the use of the internet. All 15 TDOs who were working on a Masters' Degree and 92% of those with a Masters' Degree accessed the internet while only 66% of those with a Bachelors Degree accessed the internet.
4. Training did not apparently influence use of the internet. Only about a third of the responding TDOs had any internet training. Classroom training was the most popular form of internet training with 30% using this methodology.
5. Research was the most used feature of the internet. Three quarters of the respondents reported using the internet for research and half used the email feature.
6. Downloading information and web surfing were activities used by over 62% of respondents.

7. Use of the internet for independent and/or individual study was favoured by 97% of respondents with random searches and professional development also getting over 90% response rates.
8. Teambuilding via the internet showed the least potential with only 21% reporting this use.
9. The rated value of the internet was greatest for research (86%) followed by distance training (73%), adult education (64%), communication with colleagues (52%) and validation of training (25%).
10. Over 71% thought that the CF should use the internet for training while only 29% opposed this methodology.
11. The following obstacles may prevent use of the internet. Lack of access appeared to be the biggest obstacle (71%) followed closely by time to develop materials (53%) and lack of training (52%). Security problems (44%) and lack of resources to maintain web sites (39% rounded out the obstacles to internet use.

Recommendations

1. The CF should capitalize on the fact that a great majority of TDOs are using the internet by making it more accessible to all occupations, schools and headquarters staff.
2. Over 70 % of the respondents thought that the internet should be used for training in the CF so this methodology should be investigated for possible implementation across Canada.
3. The internet was rated highly valuable for research, distance training and adult education and almost all respondents thought that it should be used for independent and/or individual study. Present and future courses or training events should be developed using internet technologies to assist with their delivery.
4. Internet use appears to decline as the age of the potential user increases and those with higher education levels use the internet more. Each unit in the CF should set up an internet training

coordinator who would be a subject matter expert to encourage appropriate internet use.

5. Resources to provide access and to maintain the internet sites should be included in all units annual Business Plans.

6. Many unsolicited civilian alternate service delivery proposals make great claims about the savings of time and money and greater retention through new training technologies such as the internet.

The CF must investigate these claims and develop in-house Centers of Excellence to develop their own training with their own military ethos and ethics.

Implications

The following implications arising from this study are directed toward (a) further research, and (b) Training Development Officers.

Implications for Further Research

1. This study could serve as the beginning for follow-up research to seek further internet information. A further study could determine the cost-effectiveness of CF produced training materials as compared to off-the-shelf materials. A study to discover and to catalogue the ever-growing availability of internet training material could prove useful.

2. This study could serve as the basis for similar studies comparing use of the Defence Information Network and the internet by TDOs and other military occupations.

3. A comparison might be made of those TDOs who use the internet as opposed to those who do not to reveal specific TDO characteristics.

4. The internet is not static so continuous research is necessary to understand this moving target so we can take advantage of newly developed features and characteristics. Harnessing this new technology could potentially save CF resources.

Implications for Training Development Officers

All Training Development Officers have a responsibility to know the tools of their profession. It is their job to know what is available and how to use it to most advantage. Training Development Officers should become proactive in convincing senior personnel of the need to provide internet facilities in all training units. Courses should be developed to demonstrate the potential savings of time and money gained through the effective and efficient use of the internet.

TDOs must continually add value to the Canadian Forces by being training innovators and by always seeking a better way.

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Appendix 1

First Letter to TDOs

Air Command headquarters
PO Box 17000 Stn Forces
Westwin, MB
R3J 3Y5
Attn: Capt McLeod/SO TD 6

29 November 1996

Fellow Training Development Officer,

You have been identified in our most recent Training Development Officer (TDO) Directory to participate in this study designed to assess the use of the Internet by all TDOs within the Canadian Forces (CF). This survey is being done as part of my M.Ed thesis in the department of Curriculum: Mathematics and Natural Sciences in the faculty of Education at the University of Manitoba. It has the full support of our Branch Advisor. As military personnel, you are considered by the University of Manitoba Ethics Committee as, "captive or dependent populations" who must provide consent to providing information for this study. If you consent to providing information for this study, indicate by returning your completed questionnaire in the provided envelope by **18 Dec 96**. If you do not consent to providing information for this study or wish to withdraw at any time without penalty, do not return this survey. Your responses will be kept anonymous.

If you chose to participate, it is important that you complete the questionnaire no matter how frequently or infrequently you may use the Internet. Ultimately the study will assist TDOs by indicating their needs and feelings toward the Internet as a training tool. The major findings will be published in our TSO Newsletter. Additional information may be requested from the undersigned at (204) 833-2500 Ex 6730 or from my faculty advisor Prof Denis Hlynka at (204) 474-9062.

I estimate that it may take approximately 15 minutes to answer this survey. When unsure of your answer, please give the best response you can as 'close' or 'probable' answers are more useful than missing information.

Since a high response rate is necessary for me to analyze the TDO use of the Internet in the CF your cooperation would be greatly appreciated. Please return your completed survey in the pre-addressed envelope provided. Thanking you in anticipation for your assistance with this project.

Yours truly,

Donald C. McLeod
Graduate Student

Appendix 2

Reminder Letter to TDOs

Air Command Headquarters
PO Box 17000 Stn Forces
Westwin, MB
R3J 3Y5
Attn: Capt McLeod/SO TD 6

December 11, 1996

Fellow TDO,

On Monday December 2, I sent out 120 surveys designed to assess our TDO Internet use as part of the requirements for a Masters of Education degree from the University of Manitoba. By Wednesday December 4, I had some returns from Borden and Ottawa. By Friday December 6, some Halifax responses had reached Winterpeg. The first reply from outside our military postal system appeared today. The 'snail mail' exceeded my expectations for speed. Total responses are already at 58.

To all of you who have responded so quickly, thank you very much. I really appreciate the time and the thought that you put into your responses.

For all who intended to respond but have lost or misplaced their survey, please give me a call (avn 257-6730) and I will replace your copy. For those who have forgotten to reply, please take this as a friendly reminder to put your survey in the mail by 18 December.

If you have decided not to respond, thank you for at least taking the time to make that choice.

Wishing you all a very Merry Christmas and hoping to see you all here for a Happy New Year at our TDO Conference.

Thank you so much for your support!

Don McLeod

Appendix 3

QUESTIONNAIRE**TDO INTERNET USE QUESTIONNAIRE**

This survey attempts to assess Training Development Officers' professional use of the Internet (Information Highway, World Wide Web) to facilitate training in the Canadian Forces.

Please answer the following questions on these sheets by checking the appropriate response line. Use specified number of answers per question. If you wish to offer any further information, please do so in the space provided at the end of this survey.

DEMOGRAPHICS

1. Your age (Check one group)
 - a. 25 - 29 ___1
 - b. 30 - 34 ___26
 - c. 35 - 39 ___23
 - d. 40 - 44 ___29
 - e. 45 - 49 ___19
 - f. 50 - 55 ___7

2. Year of completing TDO course (Check one)
 - a. 82 - 89 ___48
 - b. 90 - 96 ___50
 - c. Prior ___7

3. Setting of present TDO employment (Check one)
 - a. Marcom ___18
 - b. LFC ___7
 - c. Aircom ___13
 - d. CFRETS ___36
 - e. NDHQ ___31

4. Type of present TDO employment (Check one)
 - a. Headquarters ___43
 - b. School ___41
 - c. Squadron ___2
 - d. Post Grad ___5
 - e. Project Management ___14

5. Statement describing present educational level (check one)
 - a. Have at least one Masters Degree ___;40
 - b. Working on a Masters Degree ___; or 15
 - c. Have at least one Bachelors Degree ___50

ACCESS TO INTERNET

6. Do you have access to the Internet? (Check all that apply)

- a. No___ if No, go directly to #14 **20**
 b. Yes___ if Yes, continue with survey questions **85**

7. Where is your Internet access? (Check all that apply)

- a. At work___**72**
 b. At Home___**40**
 c. At University___**10**

8. If you access the Internet at work, where is the connection located?

- a. At your desk___**7**
 b. Elsewhere in same building___**67**
 c. Other___**2**
 If other, Explain _____

9. How do you get on-line to the Internet?

- | <u>AT HOME</u> | <u>AT WORK</u> |
|-----------------------------------|-----------------------------------|
| a. Internet Provider___ 31 | a. Internet Provider___ 47 |
| b. On-Line Service___ 6 | b. On-Line Service___ 7 |
| c. Freenet___ 2 | c. Freenet___ 1 |
| d. Other___ 3 | d. Other___ 12 |
- If other, Explain how you get on-line _____

10. Have you had Internet training?

- a. No___**55**
 b. Yes___**30**
 If Yes, How?
 (i). Classroom instruction___**9**
 (ii). Seminar___**4**
 (iii). On-line trg___**2**
 (iv). Friend___**3**
 (v). If other, Explain _____

11. How often do you access the Internet?

- a. Daily___**24**
 b. Weekly___**33**
 c. Monthly___**15**
 d. Other___**13**
 If other, Explain _____

USE OF INTERNET

12. What Internet features do you use for TDO business? (Check all that apply)

- a. E-mail__43
 - b. Newsgroups__15
 - c. Listserves__15
 - d. Research__64
 - e. Other__
- If other, Explain_____

13. What TDO activities do you use the Internet for? (Check all that apply)

- a. Talk/Chat__9
 - b. File Transfer Protocol__13
 - c. Surfing Web Sites__53
 - d. Down load Info__59
 - e. Provide Info__26
 - f. Buy/Sell__3
 - g. Other__
- If other, Explain_____

14. Do you plan to get an Internet account?

- a. No__14
 - b. Yes__40
- If b, Where?
- (i). At Home__29
 - (ii). At work__20
 - (iii). Other__41 Have accounts
- If other, Explain_____

POTENTIAL OF INTERNET

15. Would you use the Internet for any of the following?

	NO	YES
a. Introduce a course.....	_25	_57
b. Develop body of lesson.....	_36	_40
c. Review topics.....	_11	_76
d. Add current data to lessons.....	_21	_68
e. Independent and/or individual study.....	_3	_92
f. Remedial work.....	_34	_47
g. Random searches.....	_7	_89
h. Team building.....	_58	_15
i. General Purpose Training.....	_32	_52
j. Professional Development.....	_9	_83
k. Military Occupational Classification Training.....	_44	_33
l. Language Training.....	_48	_26
m. OTHER__		

If other, Explain_____

16. Rate the value of the Internet to the following activities? (Circle most appropriate response)

	No value		Average		Great value.
a. Research	1-0	2-1	3-13	4-29	5-54
b. Communication with colleagues	1-5	2-7	3-34	4-22	5-28
c. Validation of training	1-13	2-22	3-18	4-18	5-6
d. Distance training	1-3	2-5	3-18	4-46	5-23
e. Adult education	1-2	2-10	3-23	4-40	5-21

17. In your opinion, should the CF use the Internet for training? (Check one)

- a. NO ___ 26
- b. YES ___ 64

Why Not /

Why _____

18. What are the main obstacles, if any, preventing you from using the Internet in your Training Development activities? (Check all that apply)

- a. Lack of Access ___ 63
- b. Lack of training ___ 46
- c. Time to develop materials ___ 47
- d. Resources to maintain Web site ___ 35
- e. Security Problems ___ 39
- f. Other ___

Explain _____

Thank you very much for taking the time to assist with this project.
Your support is greatly appreciated!

Appendix 4

Figures

Figure 1. CFTES Model

The CFTES Quality Control System



Figure 2. Age Distribution (n = 105)

Age Distribution (n=105)

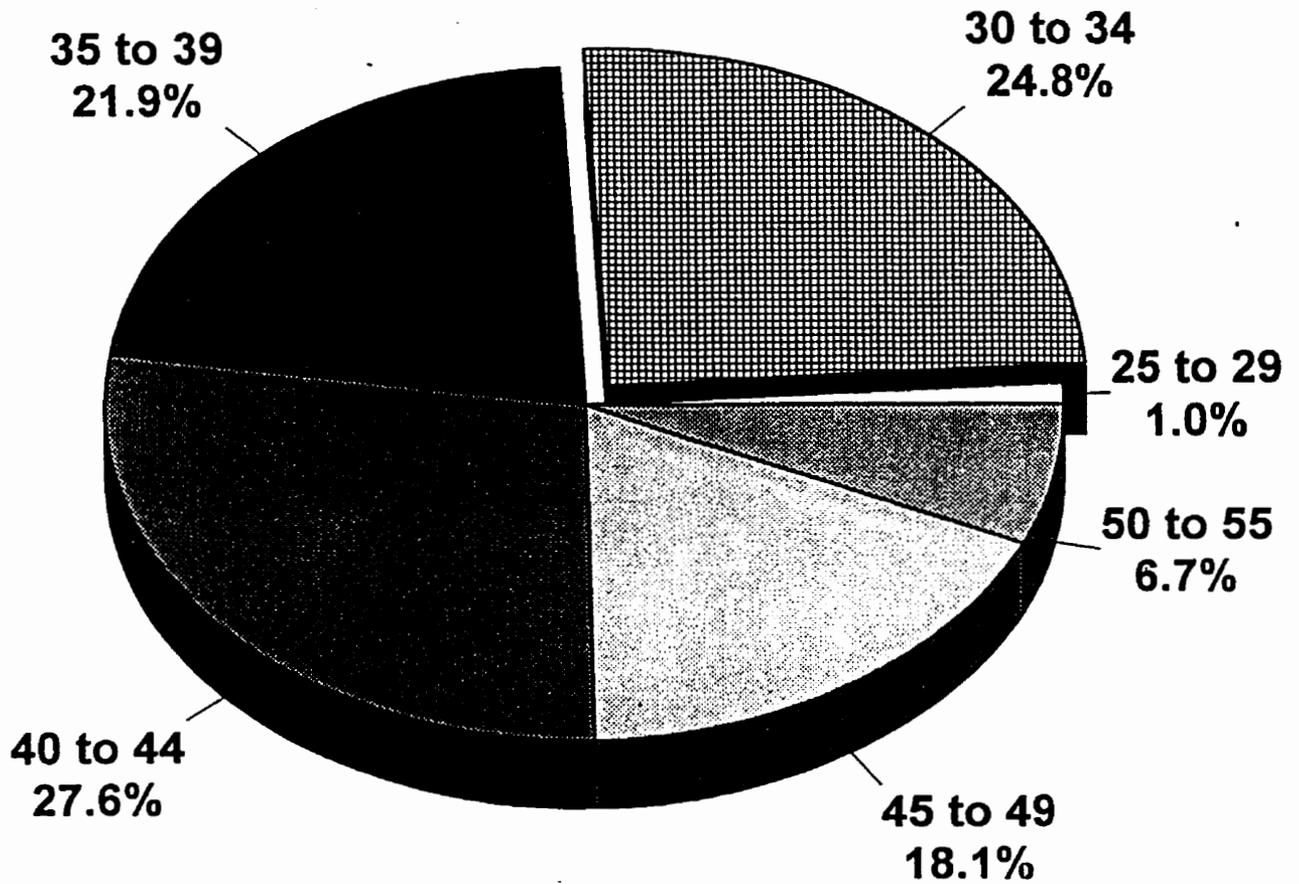


Figure 3. Employment Settings

Employment Settings

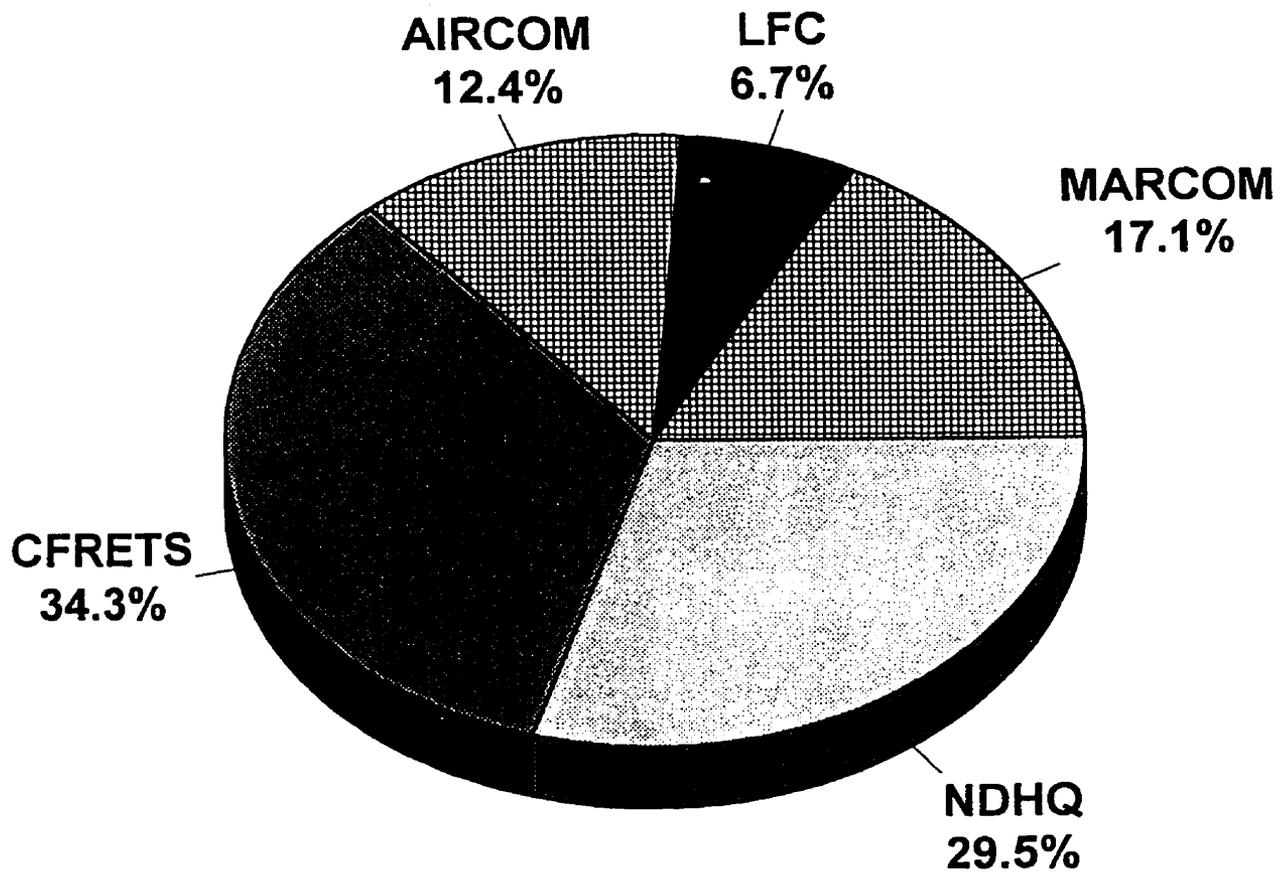


Figure 4. Type of Employment

Type of Employment

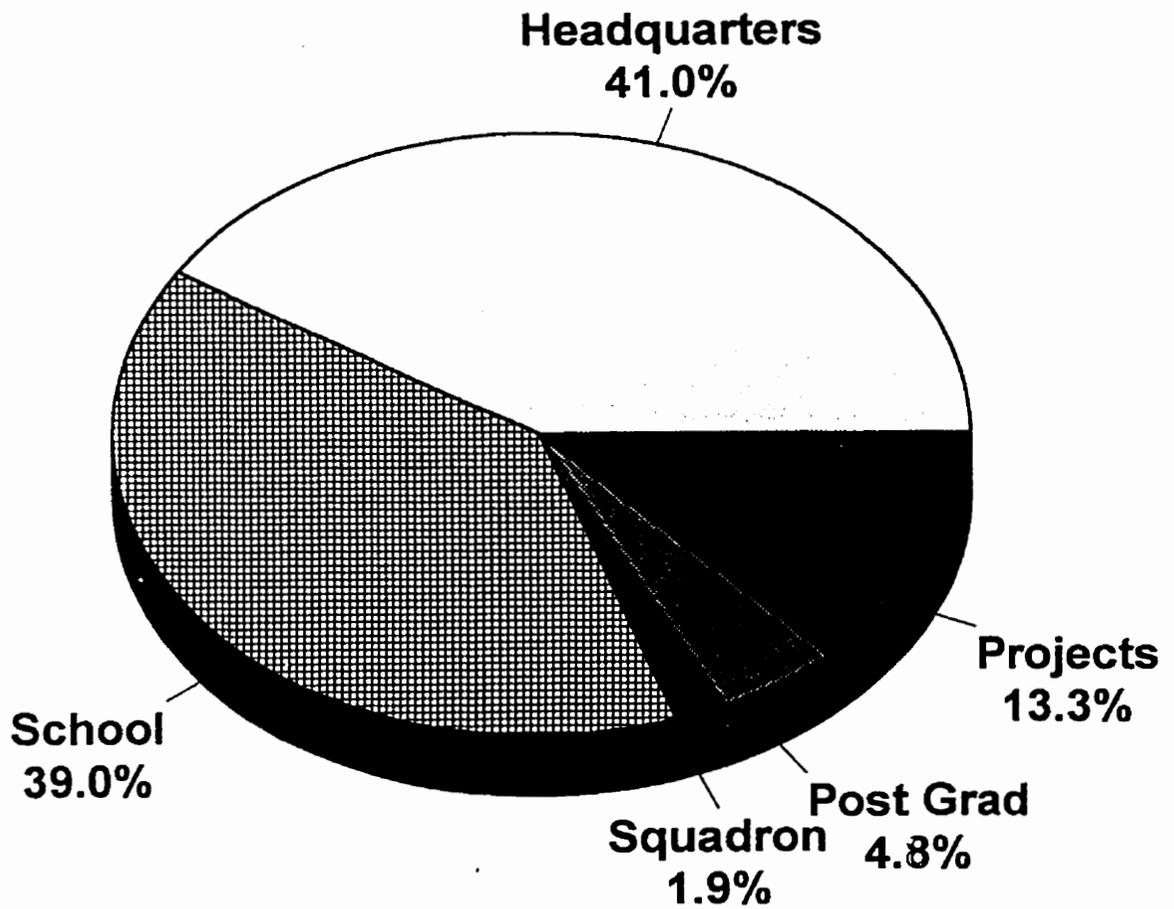


Figure 5. Education Levels

Education Levels

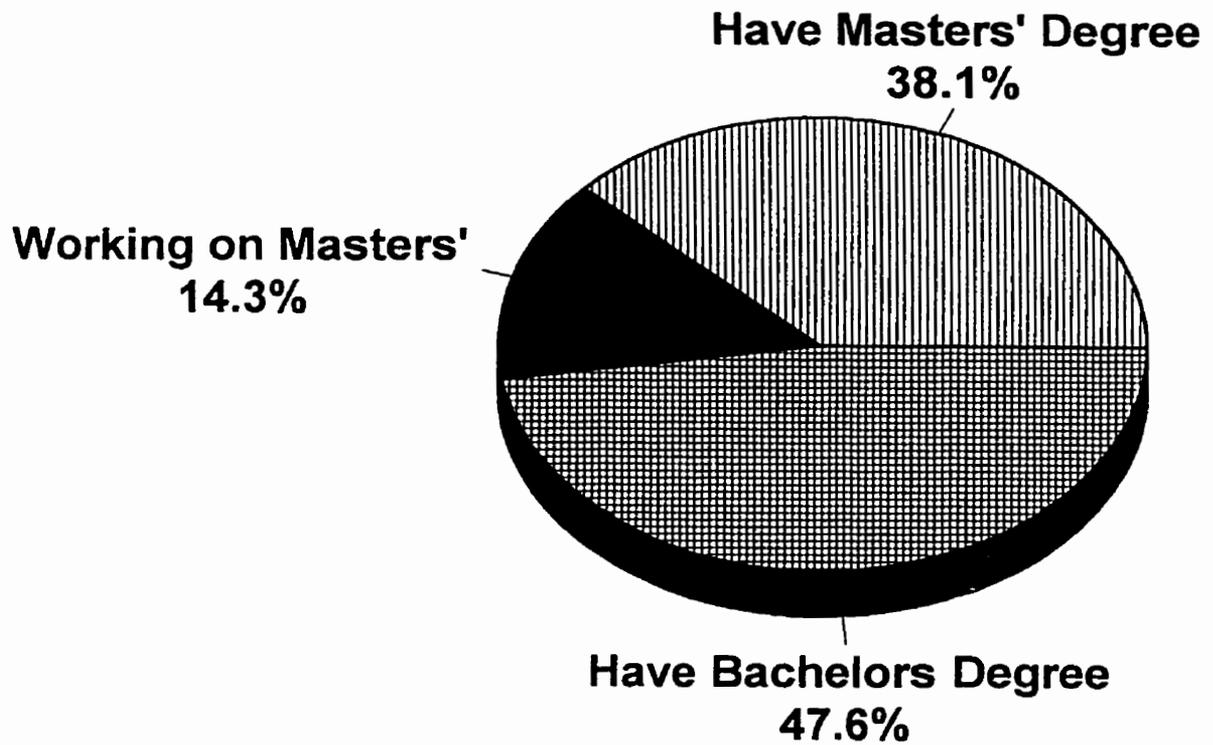


Figure 6. Internet Features Used

Internet Features Used

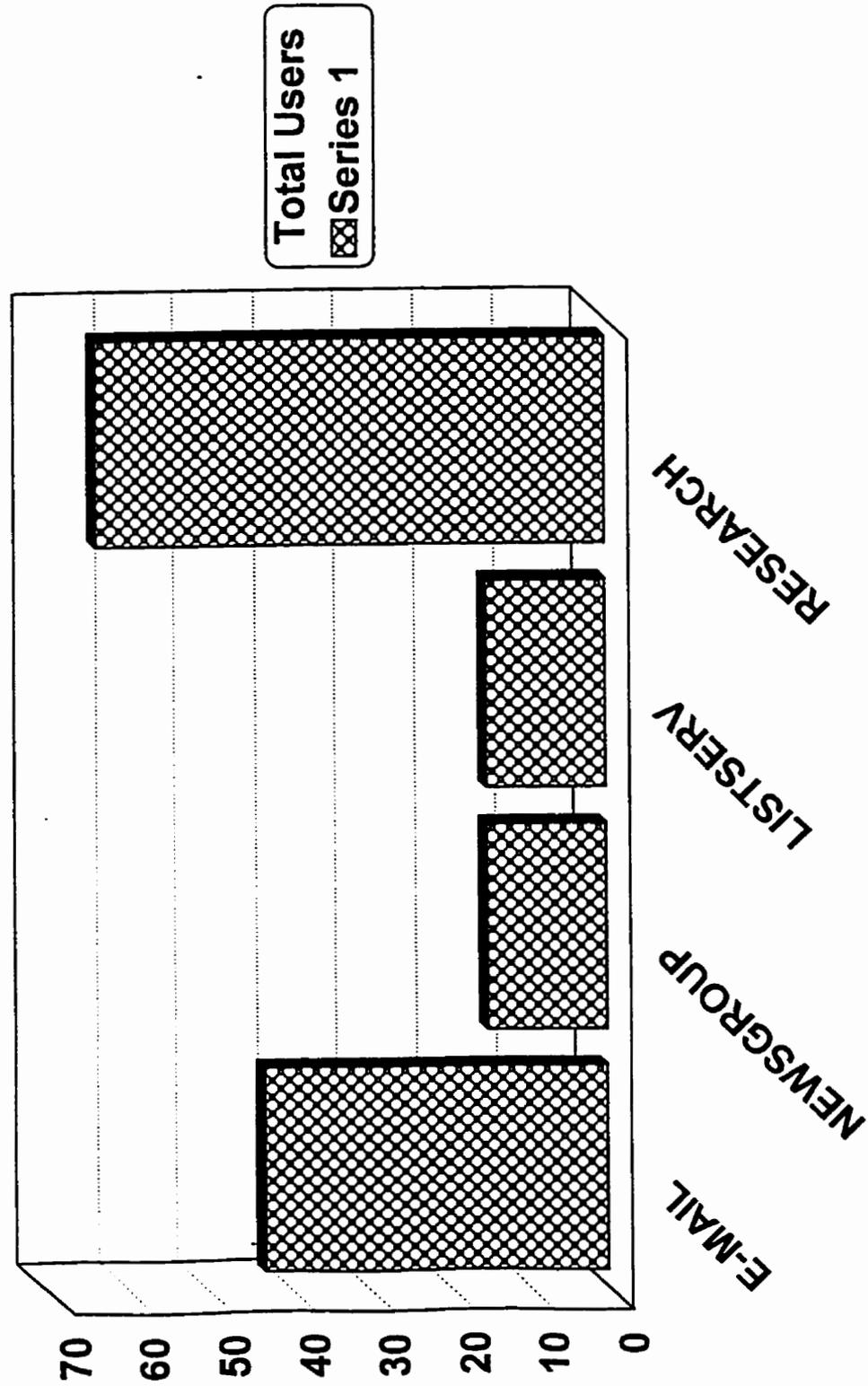


Figure 7. Internet Activities Used

Internet Activities Used

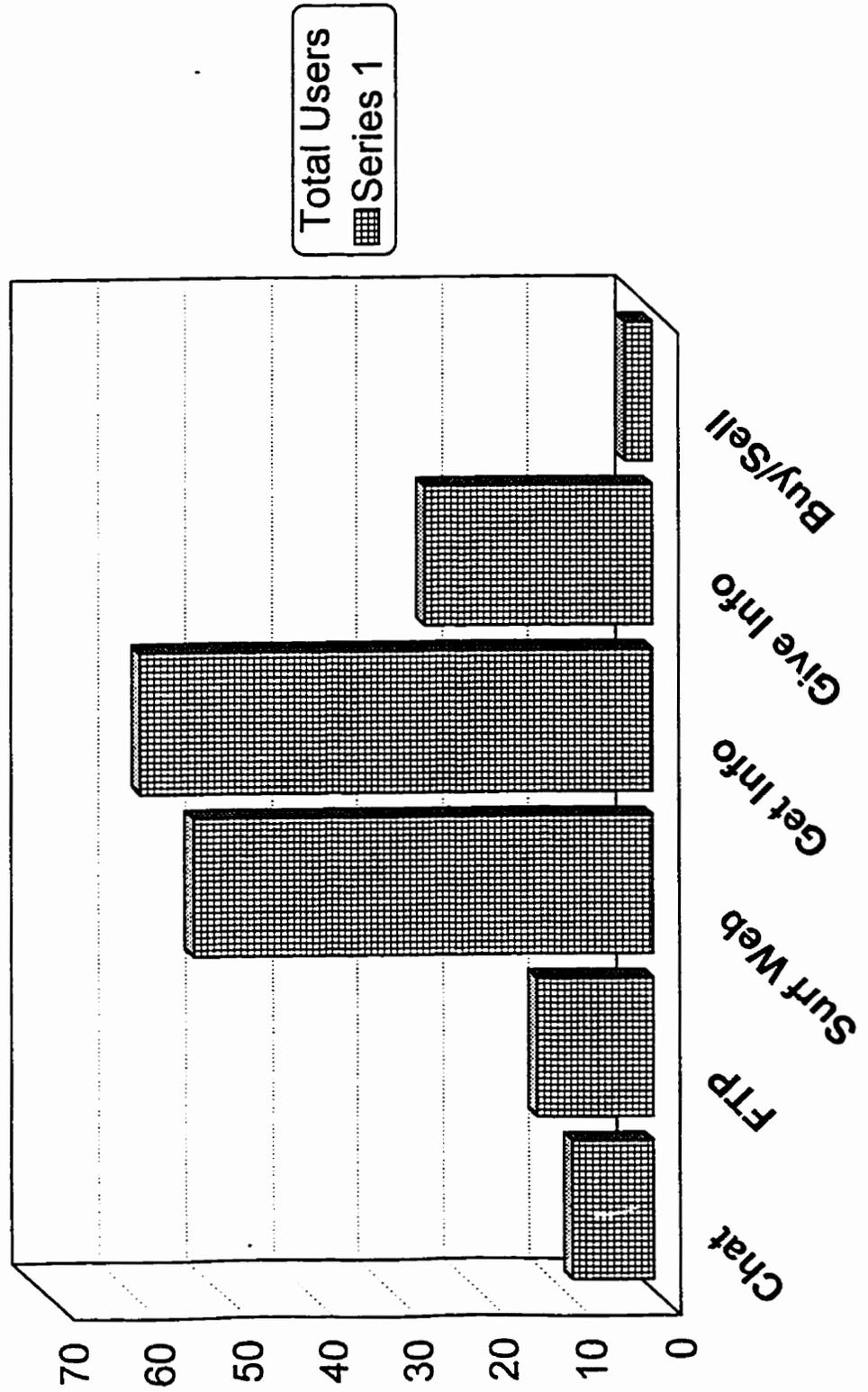


Figure 8. Potential Internet Uses

Potential Internet Uses



Figure 9. Rated Value of Internet

Rated Value of Internet

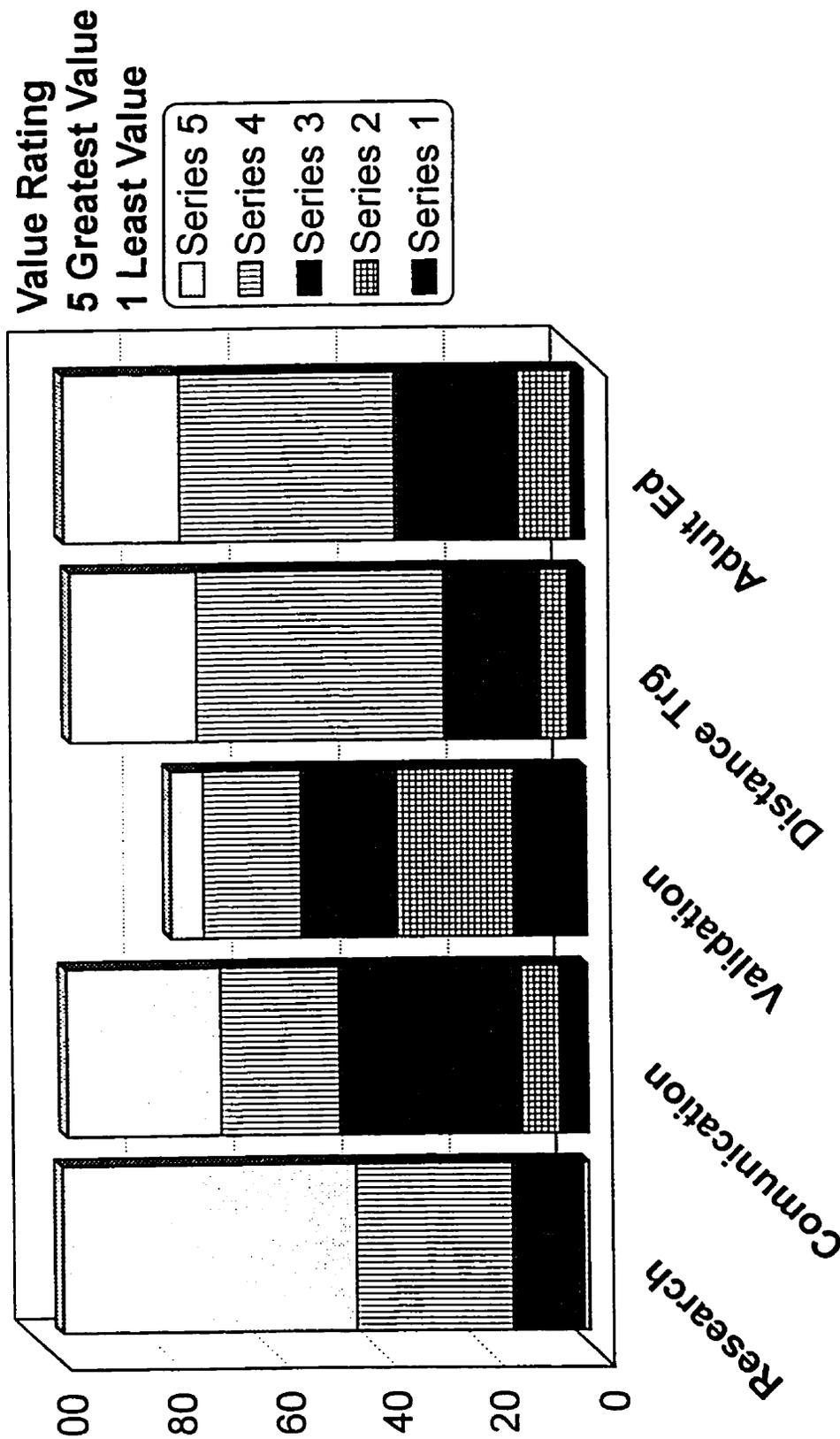


Figure 10. Obstacles to Using the Internet

Obstacles to Using the Internet

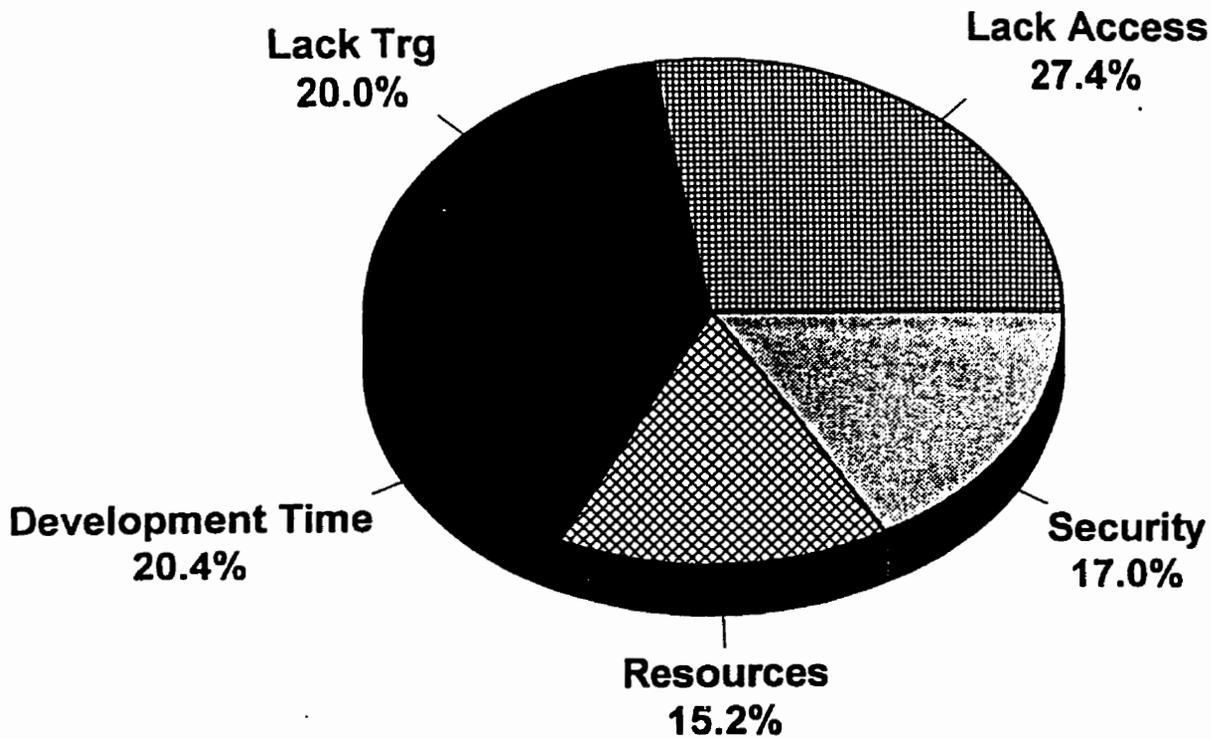
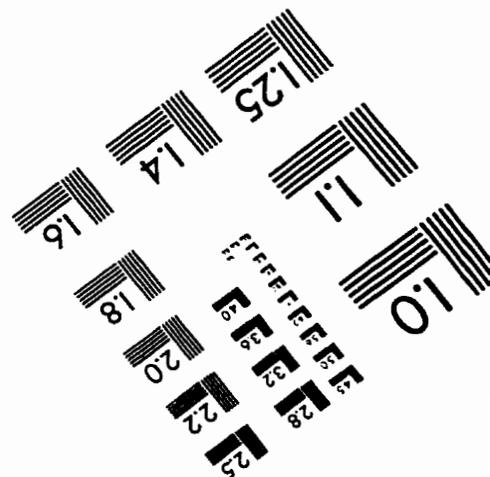
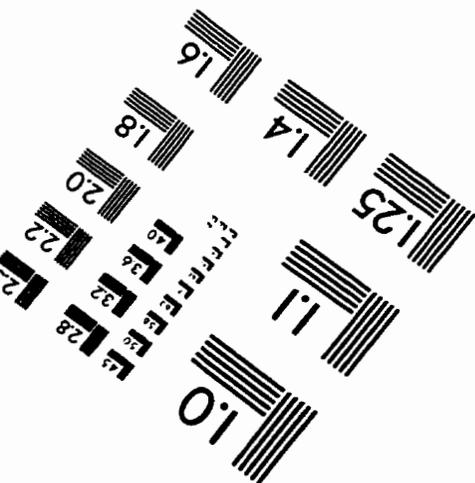
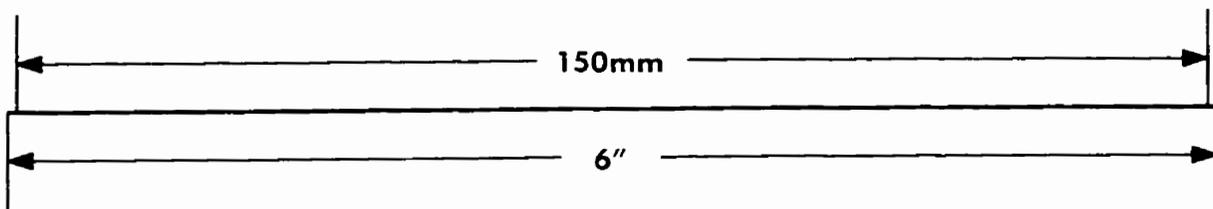
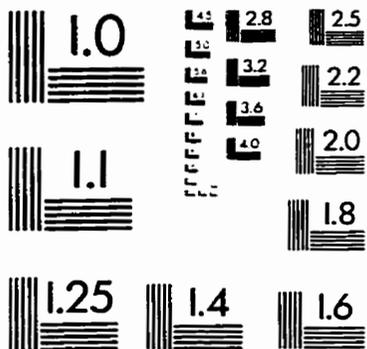
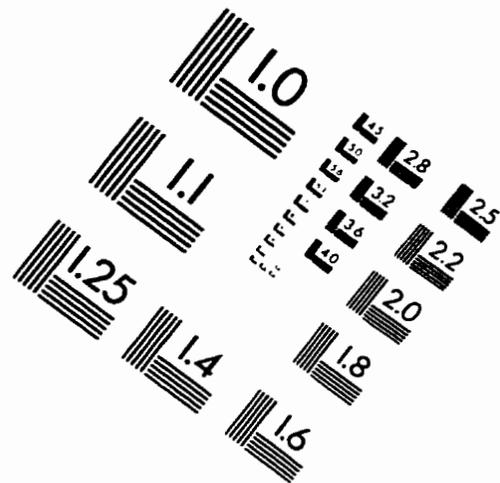
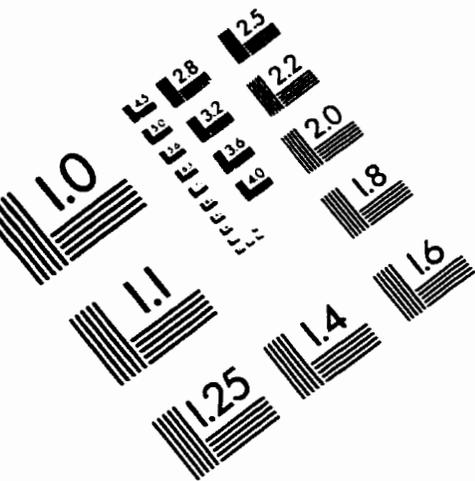


IMAGE EVALUATION TEST TARGET (QA-3)



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