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The Effect of Informal Training on Performance Support System Utilization

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THE EFFECT OF INFORMAL TRAINING ON
PERFORMANCE SUPPORT SYSTEM UTILIZATION

A Research Paper Presented to the Graduate Faculty
Of the Department of Occupational and Technical Studies at Old Dominion University

In Partial Fulfillment of the Requirements for
The Degree of Master of Science in Occupational and Technical Studies

By

Floyd Graham

August 1999
This research paper was prepared by Floyd Graham under the direction of John M. Ritz in OTED 636, Problems in Occupational and Technical Studies. This paper was submitted to the Graduate Program Director as partial fulfillment of the requirements for the degree of Master of Science in Occupational and Technical Studies.

Approved by: ________________________________  8-10-99

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Graduate Program Director

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Old Dominion University
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CHAPTER I

INTRODUCTION

Seventy percent of what employees know about their job, they learned informally from co-workers. This leaves formal training programs accounting for 30 percent or less of employee job related knowledge (Stack, 1998, p. 41). In 1997, 55 companies spent $1,956 dollars per employee for training, equal to 4.4 percent of their total payroll costs. (Bassi & van Buren, 1999, p. 23). While many of these training dollars support computer skills training, it pales beside what companies spend each year on computers, computer related equipment, and software. However, even with these training, hardware, and software expenditures, the rate of employee productivity is declining (author, 1998, p. 3). This data suggests a case for the use of a Performance Support System (PSS) or a PSS used in conjunction with informal training to support computer skills training.

If a PSS or a PSS used in conjunction with informal training can be effective in supporting software skills training, it should be possible to decrease the cost of software application training. An increase in computer software skills should result in improved productivity. Normally, as indicated by the lack of references, informal training is not considered when discussing the use of PSS's. However, informal training on software applications can make employees more aware of the tools embedded in their software applications. Once they are aware of a software capability, they can access a PSS to show them how to employ that capability. An awareness of what capabilities they have access to, coupled with a PSS to show them how to use that capability, should increase employee productivity.
To examine this theory, a research study was conducted to determine the effectiveness of informal training provided in conjunction with a simple performance support system. The population for this experiment were employees of a service industry company that provides engineering support services to government agencies. The computer skills of these personnel ranged from novice to programmers. The one factor all employees of this organization had in common was the use of e-mail on a daily basis. Although the company had recently changed their e-mail system from WordPerfect Office to Microsoft Outlook '97, no training was provided in support of the change. This environment provided a real-world training situation in which the study was conducted.

STATEMENT OF THE PROBLEM

The problem of this study was to determine if a Performance Support System is as effective as a Performance Support System used in conjunction with informal training in increasing the use of the number of features found in Microsoft Outlook '97, an e-mail and knowledge management application.

HYPOTHESIS

H1: Employees who have access to a software application's Performance Support System and who receive informal training on the application will use more of its advanced features than those employees who have access to the same information from a Performance Support System but have not attended training.
H2: Employees who receive informal training will reference the Performance Support System more frequently than those employees that do not attend training.

BACKGROUND AND SIGNIFICANCE

The researcher was a training analyst at a company that provided engineering services. Approximately two months before the study commenced, the corporate e-mail system was changed from WordPerfect Office Mail to MS Office '97. It was this change that provided the need for this study. Although there was a change in the software that supports all electronic communications, there was no training provided at the time of the change, nor was training planned at anytime in the future. Since the decision not to provide training effected multiple locations, it was assumed this was a corporate decision based on cost. If cost was to be the major training factor within the organization, the researcher reasoned that a study could determine the effectiveness of a low cost PSS or informal training supplementing a PSS. If this approach to training for application upgrades can be validated, then future upgrades would not be so likely to rule out employee training based on the perception that all training is expensive to conduct.

As stated earlier, employee training to learn software applications will continue to take an increasing amount of training resources. If these training requirements can be met with a PSS or PSS and informal training, then corporate support will be more likely to be provided to employees as their software applications are upgraded. This is significant
since one factor of employee productivity is their ability to use the software applications. These applications are the tools of the service industry.

Just as software applications are tools, so are PSS's. Just as mechanics rely on a Chiltons as the tool to show them how to change an ERG valve, service industry employees can use PSS's to show them how to use their software applications. A PSS can be as simple as the one utilized in this study, a list of Frequently Asked Questions (FAQ's), or as complex as embedded expert systems such as Microsoft Wizards. As PSS's are incorporated into more software products, employees are becoming increasingly aware of their value. Informal training sessions can be used to expedite this employee awareness. These employees are already aware of whom, within their organization, they can turn to for a quick answer related to the use of software applications. It would seem a logical extension that these employees would be as free to use a PSS as they are to interrupt a co-worker for an informal peer to peer training session.

LIMITATIONS

Limitations of this study are the number of employees who volunteered to attend the informal training. Additional limitations were as follows:

1. Time was only available for one 90-minute training session.
2. Employees who work off-site could not attend the training.
3. Space to conduct this training was limited to 25 employees.
4. Information systems support is not available to configure all employees e-mail systems to reflect the configuration used in the PSS.
ASSUMPTIONS

The following assumptions are based on observations made during similar training exercises and a familiarization with corporate software installation processes.

1. All employees send and receive e-mail on a daily basis.
2. All employees use Windows 95 and are familiar with drop down menus.
3. All employees are familiar with the use of the left mouse button, but not all employees are aware of the menus available by pressing the right mouse button.
4. The time allocated for conducting informal training will only provide an overview of Outlook '97 capabilities.
5. Employees will attend the informal training and will become a training resource for those employees who do not attend the training.
6. Some employee's personal computers Outlook '97 configurations will not match the configuration as described in the PSS.
7. The employees have many traits associated with self-directed learners.

PROCEDURES

Research was conducted using employees of a company that provides engineering services. Employees were notified of the training session two weeks in advance. At the same time they were requested to provide examples of what they would like to see covered during the informal training. One week prior to the training date a pre-training assessment instrument was given to all employees to determine which functions of
Outlook '97 they used. On the day scheduled for training, one 90-minute informal training session was conducted. During the training, functions of Outlook '97 were discussed and demonstrated. At the completion of training, a PSS was placed on the Local Area Network (LAN). This PSS was an information sheet explaining how to use features of Outlook '97. The contents of this document were based on the information provided during the informal training session. Six weeks after the completion of training, a post-training assessment instrument was provided to all employees to document changes in the number of Outlook '97 functions they were utilizing.

DEFINITION OF TERMS

Acronyms and special terms used during this study are defined as follows:

**Acronyms**

FAQ       Frequently Asked Questions  
OJT       On the Job Training  
PSS       Performance Support System

**Special Terms**

Frequently Asked Questions

FAQ’s are presented in a document format to answer the most common questions on a hardware or software application.
Informal Training

This is also called lunch hour or brownbag training since it normally occurs during a lunch break. The training materials are typically prepared by a volunteer and presented without the use of a lesson plan. The lesson design is whatever the presenter thinks the audience needs to learn.

Novice

An employee whose use of a computer is limited to sending e-mail and creating simple documents using a word processing program.

On The Job Training

As used in this research, OJT is any training accomplished outside a classroom environment. It may be informal or structured.

Outlook '97

Outlook '97 is Microsoft e-mail, time and knowledge management software.

Peer to Peer Training

As used in this study, peer to peer training is an informal training session where one employee asks a second employee to show them how to perform a specific task related to a software application.

Performance Support System

A PSS is any system that provides access to information, advice, tutorials, and tools to assist in the performance of a task. As used in this study, the PSS consisted of step by step procedures on how to utilize the e-mail and knowledge management functions of Outlook '97. It was made available to all employees on the company LAN.
OVERVIEW OF CHAPTERS

Sometimes companies buy software applications with no thought of training the employees on how to use them. If the decision not to formally train employee is based purely on a perception of cost, alternative training/learning methods can be utilized. One of these less costly means for providing training is the use of a PSS either by itself or in conjunction with informal training.

PSS's already reside in many software applications; the challenge is to make the employee aware of the existence and value of the PSS. This is where informal training may be effectively employed. Informal training may be used to demonstrate the software capabilities to the employees. This would prompt the employee to use a PSS accessed from their desktop, or hard copy, in learning how to use a particular function of a software application. Chapter II is a review of literature focusing on the use of job aids, informal training, and adult learning styles. Chapter III delineates the methods and procedures used to conduct the study. Chapter IV lists the findings of the study and lastly, Chapter V summarizes the study to include recommendations for future studies.
CHAPTER II

REVIEW OF LITERATURE

During the review of literature it became apparent that there were several factors that had to be understood in order to answer the problem statement. The factors included how adults learn, methods of informal training, use of job aids, performance support systems, and training. Together these topics provided a complete picture as it related to the use of PSS's and informal training as presented in this study.

HOW ADULTS LEARN

By understanding how adults learn, and the concept of andragogy, the researcher was able to develop more effective training materials and PSS's. The four basic premises of andragogy, as detailed by its creator, Malcom Knowles are that:

1. The adult learner has a psychological need to be self-directing in their approach to learning.
2. The adult learner attaches more meaning to skills they gain from experience than those skills they gain passively.
3. The adult learner becomes ready to learn a skill when they have a need to use it to solve a real-life task.
4. The adult learner is performance centered in their approach to learning.
These four assumptions indicate that PSS's or PSS's supported with informal training would be well-received in meeting adult training requirements (Knowles, 1980, p. 43).

This is further illustrated in the model, Figure 1, shown below which was developed by Richard Witte of Old Dominion University for use in graduate level Human Resource Development courses (Witte, unpublished). This model provides a range of learner styles based on the assumptions of pedagogy and andragogy.

The researcher regards the adult learners who participated in this study, as being located from the middle to the right edge of the model. This is in alignment with the requirements for a PSS to be effective. PSS's rely on the learner being self-directed since they are activated or accessed from the desktop by the learner when there is a training requirement. It also illustrates some usefulness for informal training since the points located from the middle to the right edge of the model indicate learners with some to many self-dependent learning traits.
PENDULUM OF LEARNING STRATEGIES

ASSUMPTIONS

PEDAGOGY

1. Learner is dependent on others to determine learning priorities.
2. Learning is built on experience of others.
3. Readiness to learn is dictated by society.
4. Knowledge is gained for use at some undefined future time.

ANDRAGOGY

1. Learners tend to be self-directed in achieving goals.
2. Learning is based on experience.
3. Readiness to learn is dictated by need.
4. Knowledge is gained for use in a well defined time frame.

FIGURE 1
METHODS OF INFORMAL TRAINING

When methods of informal training are discussed, probably the first term to come to mind is On The Job Training (OJT). An alternative method of informal training is structured peer training. Structured peer training is OJT with the exception that it rarely occurs in the classroom. Also, it is not the same as using an instructor or Subject Matter Expert to conduct the training (Filipczak, 1993, p. 30). In this method of training employees are chosen to be the instructor then trained and supported in the process. In this process a peer-training checklist or manual is utilized. This document contains job procedures and they can be used as job, or performance aids. The performance aids are the key to successfully training the self-directed learner. This is because if the peer trainer is not available, the learner can use the checklist or manual for answers. Peer training also offers advantages over formal training courses. Peer trainers can watch the learner perform tasks correctly, while the instructor who teaches in a classroom can only assume the skills transferred.

Often the peer trainer is simply the first person who learns an application. This person is not selected by the organization to be a peer trainer; the employees with the training requirement selects them. In a survey conducted to establish how people learned a variety of software applications, workers ranked 30 different approaches to training. Formal training ranked 23 out of 30 for people who consider themselves as "self-directed" learners when it came to learning software. They ranked peer training as third in usefulness. On the other hand, "dependent learners" on software applications ranked formal training as their sixth favorite method of training (Blumfield, 1997, p. 46).
Self-directed learners are not passive in their approach to learning, and although many adults think of themselves as dependent learners, they may be mis-classifying themselves. In the late 1970's, research indicated that 90 percent of all adults, at home and work, performed five learning projects a year. They spent an average of 100 hours in their performance. Further research not only confirms these facts, but also indicates that up to 500 hours per year may be spent on self-directed learning which took place both in and out of the workplace (Zemke, 1998, p. 61).

Self-directed learning accomplished at work does not easily present itself to evaluation. To determine the effectiveness of PSS and any informal training provided with it requires some form of evaluation. To measure learning, paper tests are normally assumed to be the ideal leaning evaluation test instrument (Kirkpatrick, 1998, p. 4). However, for self-directed learners using PSS's, another approach, such as the assessment instruments used in this study, may be the more practical evaluation method.

USE OF JOB AIDS

Paper based technical manuals are not job aids, at least not user friendly job aids. They normally focus on the system, not the user. This is why the Dummy Series of "How To" books have been a tremendous success. These books are focused entirely on the user. When training is conducted, regardless of the training method employed, each student should be provided with a set of job aids, not just manuals (Strandberg, 1997, p. 38). These job aids typically address common questions as well as including seldom used, but important information and procedures that are seldom used, and typically not committed
to memory. The use of these job aids acts as a safety net for new users and helps instill self-confidence.

Job aids are more than an after training support mechanism. Managers often see only two approaches to training, formal, classroom training, and informal, on the job training. This is an incomplete picture. Eighty to ninety percent of critical job competencies are learned on the job, leaving formal, classroom training supporting only 10 to 20 percent of critical job competencies (Lee & Zemke, 1997, p. 36). In fact, a better approach than formal training would be a structured on the job learning environment. This environment would give the learners the tools they need to build skills, including PSS's, which include job aids such as task checklists and reference materials.

PSS's are useful when a procedure requires a skill, not knowledge or attitude (Lawson, 1986, p. 4). They serve as a reminder of what to do, and serve as a substitute for inaccessible reference materials such as large manuals. They can eliminate the cost of an instructor while decreasing the time to learn a skill since the learner references, not memorizes, the material.

PERFORMANCE SUPPORT SYSTEMS

Corporations spend billions of dollars annually for computer hardware and software applications. The typical business problem is that few people can use a personal computer or its software applications to their maximum potential which impacts on employee productivity (Wood, 1995, p. 28). PSS's are designed to integrate the worker, task, and technology. When they are utilized PSS's provide the user the knowledge they
need to perform a skill. This knowledge is provided real-time, normally on the users
desktop personal computer. When employees are expected to learn new skills on their
own a PSS can provide an alternative to formal training.

This alternative to formal training is especially relevant to the needs of learning
organizations. These organizations are continuously undergoing learning experiences and
adapting themselves to new technologies and processes. One model of a PSS provides the
employees of these organizations an integrated solution to knowledge management. It
provides for on-line references, such as data tables, help files, and tutorials. It also
includes e-mail and Internet access resources as well as a knowledgebase.

SUMMARY

The review of literature indicated that adult learners are self-directed learners and
become ready to learn when they need to solve a real life task, such as learning to use a
new software application. This would indicate that the use of PSS's or PSS's with
informal training would be well received by these self-directed learners. Informal training
can be on the job training, also known as OJT, or structured peer training. Regardless of
the training method used, self-direct learners will incorporate it into their approach to
learning, as they are not passive learners.

Informal training can be supplemented with the use of job aids. Job aids support the 80 to 90 percent of the critical job competencies that are learned on the job, not the
classroom. Job aids are a type of PSS, as are task checklists and reference materials.
PSS's provide knowledge, real-time, to employees that need support in performing a task or skill.

Upon completion of the review of literature, methods and procedures for this study were developed. These are discussed in Chapter III.
CHAPTER III

METHODS AND PROCEDURES

The methods and procedures used for this experiment are delineated in this chapter. Contents of this chapter include a description of the population, research variables, instrument design, classroom procedures, methods of data collection, and statistical analysis.

POPULATION

The population of this study consisted of 20 defense contractors that provide engineering services to local naval activities. All of the population had a personal computer on their desktop with Microsoft Outlook '97 installed and access to the LAN. Out of this population, 10 employees attended a 90-minute, informal, training session on how to use Outlook '97. The 10 employees consisted of supervisors, electronic technicians, and clerical personnel. All 20 employees were provided access to an Outlook '97 PSS via the LAN.

RESEARCH VARIABLES

Research variables were minimized wherever possible to increase validity of the experiment. The two variables that entered into this experiment were:
1. The instructor was available, during the six weeks after the training, to answer questions about how to use the e-mail system. This permitted knowledge of the software to be gained by means other than informal training or the PSS.

2. Not all employees attended the informal training session.

**INSTRUMENT DESIGN**

Pre- and post-training assessment instruments, Appendices A and B, were developed based on the functions available with Outlook '97. The term survey is used on the form title since it is a term familiar to the employees, whereas instrument is not. The forms differ only in that the pre-training instrument establishes a level of e-mail usage, and the post-training form asks if the individual has used the Outlook '97 Training File (PSS) that is located on the LAN. The pre-training instrument first sets a level of e-mail usage, Question 1. Questions 2a through 2f address the major functions of Outlook '97 capabilities, such as Calendar and Contacts. Questions 3 through 18 ask questions about specific functions found within the categories listed in Questions 2a through 2f. Question 19 is used to determine if there is an external reason for having an above average ability to use Outlook '97. The Post-training assessment is different only in that Question 1 is changed to determine if the PSS was accessed.

The assessment questions, 2b, 2c, 2d, 2f, 3, 5, 7, 8, 9, 12, and 13 ask for information about how the employees use the Outlook '97 management tools. This information determined which group of employees started using more of the management functions of Outlook '97 during the six weeks after training was given.
This information is required to determine the validity of H1. The validity of H2 required analysis of all questions from both the pre- and post-training assessment forms.

**EXPERIMENTAL PROCEDURES**

All employees were notified by e-mail that Microsoft Outlook '97 e-mail training would be conducted and were encouraged to attend. The e-mail also announced that a PSS would be accessible to all employees on the LAN. A tentative outline of the training topics, and length of training time, 90-minutes, were also provided. This e-mail was sent two weeks prior to the date of training. One week prior to training, the first test instrument was distributed. The memo sent with it indicated that the results would ensure the training topics met the employee's requirements.

On the day of training, one 90-minute, informal training session was held. The material was presented using a personal computer, Outlook '97, and projection system. A connection to the e-mail server was made in the classroom allowing skills to be demonstrated after they were introduced. The concept was to reinforce the explanation of how an e-mail function worked with a demonstration of its use. At the completion of training, a question and answer session was conducted. During this time employees shared shortcuts, and how-to's, they had learned through use of the software. The PSS was placed on the LAN after the training was conducted.

The instructor was also available during the six weeks after training to answer questions about how to use the e-mail system. This permitted knowledge of the software to be gained by means other than the informal training or the PSS. During this period,
employees that had attended training, and those that did not, asked the instructor questions. Each group asked about an equal number of questions. Six weeks after the informal training session a second test instrument was distributed. This instrument was designed to capture any new skills the employees were using and to determine if this was a result of training or use of the PSS.

METHODS OF DATA COLLECTION

The test instrument was forwarded to all employees one week prior to the date of the training course. The second test instrument was forwarded to all employees six weeks after the informal training was conducted.

STATISTICAL ANALYSIS

For H1, a comparison of data was conducted for responses to questions 2b, 2c, 2d, 2f, 3, 5, 7, 8, 9, 12, and 13. T-tests were computed on the sample means to determine what skills were being utilized prior to training, and post-training. The validity of H2 was to be obtained by comparing the total number of new skills used by each group. However, since the PSS was not accessed by any of the population under study, statistical analysis could not be conducted on H2.

The PSS was not accessed because of a failure in the mail server that held the majority of the employee's e-mail. This loss occurred the day after the training session
was conducted. Prior to training employees were not aware they could back up their e-mail onto their local hard drive, therefore the majority of all e-mail that had been received in the previous months was lost. The e-mail server failed twice more in the following week. The Information Support personnel were able to recover some e-mail files during the remaining five weeks of the period during which this research took place. The research population during this time frame displayed a negative opinion towards the Outlook '97 e-mail system. This negative option appears to have also impacted any desire to learn anything further about how to use this system.

SUMMARY

The data collected for this study was gathered from employees who use e-mail in their daily work. All employees were informed of the availability of training, and of the PSS that was to be made available on the LAN. Data was collected through pre- and post-assessments. The data collected for H1 was subjected to a one-tailed t-test to determine if the hypotheses should be accepted or rejected. Data could not be collected to support statistical analysis of H2.
CHAPTER IV

FINDINGS

The findings from the pre- and post-survey data were subjected to statistical analysis to establish the validity of the H1. Extraneous research variables precluded any statistical analysis in support of H2. The finding of this study are reported in this chapter.

Pre- and post-survey data were collected from the 20 employees who participated in the initial survey and are reported in the following tables. Appendix A and B contain the data collection forms used in the pre- and post-surveys. Table 1 represents the pre-survey results. It was used to baseline the Outlook '97 skills used by each employee to which post-training survey results were compared.

<table>
<thead>
<tr>
<th>PRE-TRAINING OUTLOOK '97 TRAINING SURVEY</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>1. I send and receive more than 15 e-mails a day</td>
</tr>
<tr>
<td>2. I use the following Outlook '97 features</td>
</tr>
<tr>
<td>2.a E-mail</td>
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<tr>
<td>2.b Calendar</td>
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<tr>
<td>2.c Contacts</td>
</tr>
<tr>
<td>2.d Journal</td>
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<tr>
<td>2.e Notes</td>
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<tr>
<td>2.f Tasks</td>
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<tr>
<td>3. I have created my own personal distribution list</td>
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<td>17.</td>
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<td>18.</td>
</tr>
<tr>
<td>19.</td>
</tr>
</tbody>
</table>

**TABLE 1**

Table 2 reports the post-training findings. The results are shown in two columns. The first column, labeled Attended Training Yes Responses, displays the yes responses of personnel who attended the training session. The second column, labeled Did Not Attend Training Yes Responses, displays the yes responses of personnel who did not attend the training session. For both columns, a Yes response for questions 2 through 18 indicates
the respondent used that Outlook '97 skill for the first time after the training session was conducted. A question number box that is grayed out, for example 2b, indicates that the skill under question represents an advanced Outlook '97 feature.

**POST-TRAINING OUTLOOK '97 TRAINING SURVEY**

<table>
<thead>
<tr>
<th>Question</th>
<th>Attended Training Yes Responses</th>
<th>Did Not Attend Training Yes Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have used the Outlook '97 Training File that is one the LAN</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. I use the following Outlook '97 features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.a E-mail</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2.b Calendar</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>2.c Contacts</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>2.d Journal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.e Notes</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2.f Tasks</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>3. I have created my own personal distribution list</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>4. I sometimes mark my e-mail personal, private, or confidential</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. I sometimes flag my e-mail as a reminder</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>6. I sometimes save my messages as a file</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>7. I have created my own Outlook '97 folders</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>8. I use the calendar to track my appointments</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 3 compares the use of Outlook '97 advanced features before and after the training session was conducted. The post-training data is further divided to reflect the responses of personnel who did, or did not attend training. The advanced features of Outlook '97 are those features described in question 2c, 2d, 2f, 3, 5, 7, 8, 9, 12, and 13 in the survey. The wording of these questions can be found in Table 2.

Statistical analysis using a one tailed t-test for H1 indicates a significant positive difference (2.2775) of data at the .01 level of significance (.6639). As a percentage,
personnel who attended training used the advanced features of Outlook '97 215 percent more than the personnel who did not attend training.

**USE OF ADVANCED OUTLOOK '97 ADVANCE FEATURES**

<table>
<thead>
<tr>
<th>Personnel using advanced features used prior to training</th>
<th>31</th>
</tr>
</thead>
<tbody>
<tr>
<td>First time use of advanced features used by personnel who attended training</td>
<td>43</td>
</tr>
<tr>
<td>First time use of advanced features used by personnel who did not attend training</td>
<td>20</td>
</tr>
</tbody>
</table>

**TABLE 3**

Since the data in Table 3 represents the actual total of the advanced features used by the employees, the numbers are equal to or greater than the research population of 20 employees. This is because there are 11 advanced features of Outlook '97 on which data was collected. The maximum total number of times the advanced features could be accessed in this study was 220 times. The number 220 is representative of all 20 employees using all 11 advanced features of Outlook '97.

Table 4 represents the number of personnel who accessed the PSS located on the LAN. As explained earlier in this paper, because of an extraneous research variable, the PSS was not accessed by any of the population under study, therefore, no statistical analysis can be made in support of H2.
The PSS was not accessed because of a failure in the mail server that held the majority of the employee's e-mail. This loss occurred the day after the training session was conducted. Prior to training employees were not aware they could back up their e-mail onto their local hard drive, therefore the majority of all e-mail that had been received in the previous months was lost. The e-mail server failed twice more in the following week. The Information Support personnel were able to recover some e-mail files during the remaining five weeks of the period during which this research took place. The research population during this time frame displayed a negative opinion towards the Outlook '97 e-mail system. This negative opinion appears to have also impacted any desire to learn anything further about how to use this system.

### USE OF PERFORMANCE SUPPORT SYSTEM

| Personnel who attended training and utilized the PSS | 0 |
| Personnel who did not attend training and utilized the PSS | 0 |

**TABLE 4**
SUMMARY

Raw and t-test data were compiled in this chapter. T-test values were calculated to determine the validity of H1. H1 stated there would be a significant difference in the use of the advance features of Outlook '97 by those personnel who attended training when compared to personnel who did not attend training.

The raw data in support of H2 does not support analysis since no one in the population visited the PSS located on the LAN.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter provides a summary of the purpose of this research project, as well as identifying the research population. It also describes the experimental procedures used in conducting the research. Also located in this chapter is a reporting of the conclusions based on the validity of the two hypotheses formulated in Chapter I, as well as recommendations based on the finding and conclusions of this research.

SUMMARY

The purpose of this research project was to determine the impact that informal training would have on the use of a PSS. For this project an e-mail software application was used as the test medium. It was the researcher's belief that informal training on the e-mail application would increase the usage of advanced features found within the application, as well as increased usage of a supporting PSS.

The problem of this study was to determine if a PSS is as effective as a PSS used in conjunction with informal training in increasing the use of the number of features found in Microsoft Outlook '97, an e-mail and knowledge management application. The population of this study consisted of 20 defense contractors that provide engineering services to local naval activities. All of the population had a personal computer on their desktop with Microsoft Outlook '97 installed and access to the LAN. Out of this population, 10 employees attended a 90-minute, informal, training session on how to use
Outlook '97. The 10 employees consisted of supervisors, electronic technicians, and clerical personnel. All 20 employees were provided access to an Outlook '97 PSS via the LAN.

Employees were notified of the training session two weeks in advance. At the same time they were requested to provide examples of what they would like to see covered during the informal training. One week prior to the training date, a pre-training assessment instrument was given to all employees to determine which functions of Outlook '97 they used. On the day scheduled for training, one 90-minute informal training session was conducted.

During the training, functions of Outlook '97 were discussed and demonstrated. At the completion of training, a PSS was placed on the Local Area Network (LAN). This PSS was an information sheet explaining how to use features of Outlook '97. The contents of this document were based on the information provided during the informal training session. Six weeks after the completion of training, a post-training assessment instrument was provided to all employees to document changes in the number of Outlook '97 functions they were utilizing.

CONCLUSIONS

Of the two hypothesis stated in this paper, one hypothesis was shown to be significantly relevant as shown in the following information. The second hypothesis could not be shown to be either significantly valid, or invalid.
H1: Employees who have access to a software application's Performance Support System and who receive informal training on the application will use more of its advanced features than those employees who have access to the same information from a Performance Support System but have not attended training.

Prior to training personnel used a total of 31 of the advanced features included within the Outlook '97 e-mail application. Post training, personnel who attended training used an additional 43 of the advanced features for the first time. Personnel who did not attend training used 20 of the advanced features for the first time.

The level of significance for a one tailed t-test for H1 indicates a significant positive difference (2.2775) of data at the .01 level of significance (.6639). As a percentage, personnel who attended training used the advanced features of Outlook '97 240 percent more than the personnel who did not attend training. This indicates a significant difference between informal training and the increased use of capabilities within software applications.

H2: Employees who receive informal training will reference the Performance Support System more frequently than those employees that do not attend training.

Based on the 20 negative responses received on the post-survey question one, "I have used the Outlook '97 Training File that is on the LAN", the hypothesis H2 cannot be validated. This is because, of the two variables related to H2, use of informal training, and use of PSS’s, only the informal training was utilized by the population under study.
None of the employees accessed the PSS on the LAN. The reason for this can be traced to an extraneous research variable that occurred immediately after the informal training was provided.

This variable was the loss of our e-mail server that held the majority of the employees' e-mail. This loss occurred the day after the training session was conducted. Prior to training employees were not aware they could back up their e-mail onto their local hard drive, therefore the majority of all e-mail that had been received in the previous months was lost. The e-mail server failed twice more in the following week.

The Information Support personnel were able to recover some e-mail files during the remaining five weeks of the period during which this research took place. The research population during this time frame displayed a negative opinion towards the Outlook '97 e-mail system. This negative option appears to have also impacted any desire to learn anything further about how to use this system. The lack of personnel accessing the PSS on the LAN makes it impossible to determine the validity of H2.

RECOMMENDATIONS

Based on the finding and conclusions drawn, the following recommendations are offered to improve the experimental design:

1. Microsoft Office 2000 was recently released, which upgrades the e-mail software. This experiment can be replicated based on use of the new software application. The extraneous research variable consisting of e-mail server failing would not be
encountered since the cause of the failure has been identified and a process to prevent its reoccurrence put into place.

2. Advertise both the informal training and PSS for a longer period of time prior to the training. Remind personnel that the PSS is available in weekly e-mails. This will ensure personnel remain aware that the PSS is available during the entire period of research.

3. Post a weekly e-mail hint to all employees based on information extracted from the PSS. This will give validity to the content of the PSS and provide the employees an idea of what information it contains.
BIBLIOGRAPHY


APPENDIX A

PRE-TRAINING OUTLOOK ’97 TRAINING SURVEY

Please circle your answers and return this survey to Floyd Graham (x4917) at the Eltham Office.

**Name:**

1. I send and receive more than 15 e-mails a day  
   | Yes | No |

2. I use the following Outlook ’97 features

   2.a E-mail   | Yes | No |

   2.b Calendar | Yes | No |

   2.c Contacts | Yes | No |

   2.d Journal  | Yes | No |

   2.e Notes    | Yes | No |

   2.f Tasks    | Yes | No |

3. I have created my own personal distribution list  
   | Yes | No |

4. I sometimes mark my e-mail personal, private, or confidential  
   | Yes | No |

5. I sometimes flag my e-mail as a reminder  
   | Yes | No |

6. I sometimes save my messages as a file  
   | Yes | No |

7. I have created my own Outlook ’97 folders  
   | Yes | No |

8. I use the calendar to track my appointments  
   | Yes | No |

9. I use the calendar to track reoccurring appointments  
   | Yes | No |

10. I have printed billfold or planner size calendars  
    | Yes | No |

11. I sometimes e-mail tasks using Outlook ’97's task function  
    | Yes | No |

12. I add names to my contact list directly from incoming e-mails  
<pre><code>| Yes | No |
</code></pre>
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>I use Outlook '97's journal function to keep track of meetings</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>I archive my mail to my hard drive</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>15</td>
<td>I use the search function when I unarchive mail</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>I use several of the view options when sorting through my inbox</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>17</td>
<td>I sometimes indicate an e-mail message is of high or low importance</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>18</td>
<td>I use Outlook '97's notes function as electronic sticky notes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>I use Outlook '97 or Outlook Express for e-mail at home</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
APPENDIX B

POST-TRAINING OUTLOOK '97 TRAINING SURVEY

Please circle your answers and return this survey to Floyd Graham (x4917) at the Eltham Office

<table>
<thead>
<tr>
<th>Name:</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have used the Outlook '97 Training File that is on the LAN.</td>
<td></td>
<td></td>
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<tr>
<td>2. I use the following Outlook '97 features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.a E-mail</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2.b Calendar</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2.c Contacts</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>2.d Journal</td>
<td>Yes</td>
<td>No</td>
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<td>2.e Notes</td>
<td>Yes</td>
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