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# Implementation of Job Performance Support Training in an Industrial Workplace

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**Implementation of  
Job Performance Support Training  
in an Industrial Workplace**

**A Research Paper Presented to the Graduate Faculty of  
the Department of STEM Education and Professional  
Studies at Old Dominion University**

**In Partial Fulfillment of the Requirements for the Degree  
of Master of Science**

**By**

**Don Garmer**

**August 2009**

# Approval Page

This research paper was prepared by Don Garmer under the direction of Dr. John Ritz in OTED 636, Research Problems in Occupational and Technical Studies. It was submitted to the Graduate Program Director as partial fulfillment for the Degree of Master of Science in Occupational and Technical Studies with a concentration in Business and Industry Training at Old Dominion University.

APPROVED BY: \_\_\_\_\_

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# **CHAPTER I**

## **INTRODUCTION**

Training for trades workers is as important to the construction of a ship as the steel that is used to build it. A company can have the highest-quality materials, the most advanced computers, and the best equipment in the world, but to produce the highest quality product it is absolutely essential that the people who put the pieces together know what they are doing. Manufacturing companies know this very well and are dedicated to keeping their workers among the best-trained shipbuilders in the world. This study looked at one type of training that is being used at several locations in the shipyard and analyzed how effective it has been in helping the shipyard workers maintain their high level of proficiency.

Job Performance Support (JPS) training is a mentor-assisted training program which is designed to be conducted in the workplace and is administered by the members of the workplace. The mentor is a specially chosen subject matter expert who assists, coaches, and guides the trainee through all the skills involved in the training topic. Three important benefits of training the worker with JPS are the development budget, the training location, and the workplace production. Since a separate training delivery is not part of the project, the development effort is directed to the collection of tasks that the trainee will need to perform. The training is accomplished on site where the trainee and mentor normally work. They are able to be flexible with the location and can plan their

own training sessions. Workplace production benefits from JPS because there is no need to take the trainee away from the workplace.

JPS training products have been delivered to several production work centers in the shipyard in the past three years. During that time the work centers have been utilizing them in a variety of ways and to different degrees. But a feedback mechanism is not in place to judge how or when they are being used, and if they are being used as the developer originally intended. The Training Services Department does not have a definitive way to evaluate the effectiveness of the training, so the intent of this study was to look at the training in each location to determine how it is being used, and how it is benefitting the workplace it was designed to assist. The information can then be used for future training products of the same or similar designs.

#### STATEMENT OF THE PROBLEM

The problem of this study was to determine the effectiveness of the work center in an industrial environment using Job Performance Support training.

#### RESEARCH GOALS

The following are the research objectives of this study:

- How effective was Job Performance Support as a training tool in the workplace?
- How can Job Performance Support training be changed to improve its effectiveness in the workplace?
- How has Job Performance Support training been implemented in the workplace?

## BACKGROUND AND SIGNIFICANCE

JPS was originally designed and developed by the Training Services Manager to solve a budget need. When a small population of workers needs training for a particular topic, the per-student cost is relatively high. So he devised a way for his department to deliver training materials to the workplace while saving the cost of instructor delivery. The training development includes the same type of Training Needs Analysis as Instructor Led Training (ILT). The developer determines what the student needs to learn, but the needs are then put in the form of a list of tasks that can be learned with the guidance of a skilled mentor. This type of training allows the workplace to use materials developed by the Training Department to accomplish the training using their own people. It is a method of delivering quality training to the work center at a lower cost.

As the early JPS deliveries progressed, other advantages became evident. Working in their own location while learning, the trainees are not required to be away for any length of time, and thereby help to avoid production losses. They are also learning on their own materials and machinery and so do not need to relearn skills as they might after returning from an offsite school. JPS training is developed for individual job functions within a workplace and lays the foundation to teach all the specific skills needed.

As instructional designers develop the JPS training products they apply the same sound instructional strategies that they apply to classroom training products making adjustments in the design to foster mentor led training. Two examples are given to illustrate the point. The first example, Gagne's (1985)

Nine Instructional Events Effective Strategies for Learning, are used regularly by the designers as they develop Instructor Led Training. These tools can easily be adapted for JPS keeping in mind that the individual event has to be applied to the checklist in such a way that it is intuitive to the mentor and to the trainee. Using the first Instructional Event, "Get Attention", the designer incorporates something in the checklist that will catch the interest of the reader and thereby stimulate the desire to learn. It could be an image on the page or it could direct the trainee's focus to the machine that is being taught. The same applies to the other eight Instructional Events, such as "Tell the Learners the Learning Objectives" and the others. The second example of the tools the designers use are Motivational Strategies (Wlodkowski, 1999) that are built into the JPS product to keep the learner engaged. These strategies work well in the classroom with a group of learners, but can be easily adjusted to the mentor-trainee learning situation. To encourage a proper learning attitude, the JPS Handbook must include activities that build a positive attitude toward the subject matter and eliminate negative conditions surrounding the learning situation.

JPS training was received well by the supervisors and workers in each of the locations during the time it was delivered and informal communication between the training developers and the workplace indicate that JPS is used to different degrees by the workshops. A workable feedback system was not universally established to follow-up on delivered products, so the department who develops the product does not have an effective way of knowing how well the product is working. Other types of training products such as classroom and

Computer Based Training (CBT) are under direct control of the training delivery department, so utilization is tracked and the effectiveness of the products can be determined at any time.

It is important for the success of the JPS program that the Training Services Department has an indication of how the products are being used, if updates are needed, and if it is necessary to make changes in the way they are developed in the future. A study was needed to determine how well they had been implemented and if they were still serving the original intended purpose. Information had not been gathered about how many of the training products were being used and if they were helping the trainees and the workplace as expected.

#### LIMITATIONS

The following are the limitations on this study:

- The study was based on the JPS training products delivered in the period between 2006 and 2009.
- Surveys were conducted in the organizations where the training was developed and delivered.
- Each of the organizations where the training was delivered has a different work structure due to the nature of the work performed in that location.
- Each of the organizations where the training was delivered has a different training structure.
- This is a defense contractor so any facts or figures that could possibly be proprietary or classified are not included in this study.

- All trainees were hourly personnel working in the trade for which they were being trained.

### ASSUMPTIONS

This study was based on the following assumptions:

- The surveys were conducted regardless of the JPS participation rate of the various locations.
- By its nature, JPS is based on the structure of the workplace where it is delivered.
- Usage of the training at the various locations was more important than completion scores.

### PROCEDURES

Surveys were developed and administered in several locations for the best overall perspective of how the training was planned, developed, and implemented. Different methods of data collection including forced-choice and open ended short answer questions were used to facilitate the best manner of gathering the necessary information. Data were collected at the various locations where the training was delivered from managers whose workers have received training, from the workers who have received training, and from Subject Matter Experts. Data were also collected from others who were involved in the development of the training such as managers of the training department and the developers of the training. The data were then analyzed to determine the overall use of JPS in the workplaces and how it is perceived as an effective teaching tool.

## DEFINITION OF TERMS

As with any work environment, this work environment has unique terms that apply to this study:

CBT – Computer Based Training. The trainee sits at a desk computer to complete the training. This can be proctored or un-proctored and can be completed in a formal computer lab or at the worker's desktop computer.

ILT – Instructor Led Training. This training, as the name implies, is led by an instructor and takes place in a classroom of various style, shape, and size. They range from a formal multimedia equipped classroom to a bench in the corner of the machine shop.

Job Aid – Any device used in the training to assist in facilitating learning.

JPS – Job Performance Support. The common name of the mentor assisted training conducted at the workplace by workplace personnel.

Mock up – A device built with the purpose of simulating a machine or a process to facilitate learning.

SME – Subject Matter Experts. Those who worked on the equipment or processes who served as consultants in the development of the training.

## OVERVIEW OF THE CHAPTERS

This study is comprised of five chapters which present the information in a logical and organized manner. Chapter I provides an overall description of the study and explains the reason why it was conducted. It includes the basic information about the study such as the limitations of the research and the assumptions that had to be made in order to conduct it. It explains the layout

and the structure of the study and prepares the reader for the data and conclusions. Chapter II includes research information related to training in the workplace, methods and strategies of industrial training, and motivational strategies for learning. Chapter III describes the methods and procedures used to gather data for the study. It shows the various methods of survey that were used and how the data were analyzed. Chapter IV describes the research and data in detail. It describes Job Performance Support training in the workplace, the differences in the training structure where it has been implemented, and how effective it has been since it has been implemented. Chapter V is the final section where the results of the various types of data are summarized and put into perspective. Conclusions are drawn about Job Performance Support training and recommendations are made regarding its future development and use in the workplace.



## **CHAPTER II**

### **REVIEW OF LITERATURE**

Training is one of the most important factors that management of an industrial workplace has to consider. The subject of this study is one type of training that has been implemented to allow the worker to be trained while remaining at the workplace. Job Performance Support (JPS) training is made to be used in the worker's environment and avoid some of the disadvantages of offsite training. This chapter is divided into four sections that describe related aspects of workplace training and tools that complement the JPS. It discusses Workplace Onsite Training, Coaching and Mentoring, Tools of Onsite Training, and Instructional Design for Workplace Onsite Training.

Production is understandably the center of thought for all levels of management in an industrial workplace. From the highest level of management to the front line supervisor, the primary goal is to make the best use of their assets, both human and material. Managers know the importance of maintaining a motivated, well-trained work force, and the need to fit the workers to the jobs as appropriately as possible. Efficient training is the key to their success (Landy & Trumbo, 1980), but it has to be the right training at the right time. Most of the training that occurs at any workplace is onsite and in the same area where the workers spend most of their time. It has been shown that employers provide most of their training at the job (Carnevale, 1989). In a manufacturing facility, any time that a worker is away from work he or she is not productive so any training will be held onsite when it is possible and practical.

Much of their planning is related to two factors. They need to make the best use of the talents and skills of the individual workers by fitting them to the needs of the workplace, and they need to ensure that, through training, the skills of the worker matches the skills needed for the specific job. It is essential that any training causes a change in behavior in the worker that is to the benefit of the work place. The subject of this study is a look at one specific type of onsite workplace training called Job Performance Support, more commonly referred to as JPS and how it has been implemented in the workplace. As production foremen carry out their day to day duties, they are constantly required to think of ways to improve the operation, a major part of which is people. Training is ongoing and happens continuously both onsite and offsite. This paper discusses the forms that onsite training can take and studies how one particular type of onsite training, Job Performance Support, has been implemented.

Onsite training in a manufacturing environment is continuous and an ongoing occurrence to meet constantly changing requirements. It can range in complexity from a single-page user manual for a hydraulic press to a 12-week multi-part melt crew operator training session. This paper looks at three types of onsite training. Job Performance Support (JPS), On the Job Training (OJT), and Training Within Industry (TWI). Each of these is a distinct type of training, but at the job site, where the work is being performed, they are mutually supporting and sometimes used interchangeably.

## WORKPLACE ONSITE TRAINING

Professional development is a high priority with the managers in the workplace, but the balance between the training and production is a constant battle. It benefits the supervisor greatly if the worker is able to receive training while still at the job rather than attending training off site. Onsite training allows the worker to receive appropriate training at the time and place of the work. Training at the workplace takes many forms and has several names associated with it, so a brief summary of the terms is given.

**Job Performance Support (JPS)** is a graphically-oriented tool used in several shops and is the central focus of this study. It was invented to provide a form of training that can be conducted at the workplace by the employees most closely associated with that particular type of work, in other words, by the experts. In a JPS program, a trainee proceeds through a list of skills that were determined by a team of subject matter experts to be all the skills and knowledge related to the particular job. Throughout the process the trainee is guided and assisted by a mentor who is an expert in the area of the training. Depending on the complexity of the subject matter, the trainee proceeds through the steps with different degrees of assistance by the mentor. In cases where independent thinking skills are needed the mentor will be available as needed. In other instances where a greater degree of assistance is needed, the mentor will work through each step of the process with the trainee.

**On the Job Training (OJT)** is the center of workplace training. It describes any training that takes place while the worker is at the normal job

setting and includes the full range of experiences and types of workers. The definition of OJT is determined by its use and can include a broad list of applications. It can come in the form of JPS which was just described above where a mentor is involved, or it could be a stand-alone training program where the trainee works independently. The main defining factor of OJT is a process in which an employee receives specific training on the processes and practices of a particular unit or system while remaining at the workplace (Lawson, 1997).

It includes the time when the new employee is shown the particular aspects of the job by one of the more experienced workers, but it also includes the time when the experienced employee is required to learn a new device or a new process on the job. OJT encompasses any type of training that is accomplished at the workplace. It can take the form as simple as a worker using a Job Aid to a complex program of instructions.

**Structured On the Job Training.** On the Job Training is an important means of helping make the workers as proficient as possible, but as with any other training, it is important to ensure that it is as efficient and applicable as possible. A well planned and organized OJT will be much more suited to the situation and better serve the needs of the workplace. Structured On The Job Training describes the formalized and planned use of OJT. When a worker provides informal and unstructured training to a fellow worker, he will explain how to perform the tasks in the same way as he himself had been doing it. This is not necessarily a bad way for the learner to know the process but may not be consistent with the way the other mechanics learned it. Structured OJT is

researched and formalized to ensure that it is taught in an organized and well planned sequence (Jacobs & Jones, 1995). It is developed in a logical manner by analyzing the needs, designing an orderly flow, and using sound instructional strategies. It is used as a tool for a new employee with no experience or for an experienced employee learning a new machine. It can be used as a single stand alone learning event or as a follow up for offsite training. Planned OJT, as it is also called, uses the knowledge and experience of an experienced and well-rounded group of individuals from the workplace to plan and develop the training. The DAPPER Model (Rothwell & Kazanas, 2004) is a six-step method for the development and implementation of OJT. Discover the needs, Analyze the work, workers, and workplace, Prepare the planned OJT, Present the planned OJT, Evaluate the results, and Review Aids and Alternatives to the Planned OJT.

**Training Within Industry** (Dooley, 2001) is often used as the starting guide and inspiration for OJT as it is used in industry today. It is a method of training that has a history as far back as World War II. During the war when Germany invaded France and the American war effort built up, industry had the dual problem of needing to increase production and replace the skilled laborers that were lost to the war effort. At the end of the war, the American workers returned and replaced the temporary workers. Japan's industrial capacity was devastated and had to be built from the ground up. Trainers from the United States went to Japan to train the workers and get production going again. The Japanese factories embraced the ideas and methodologies and improved upon them to the extent that they are now the model to emulate. Toyota is one of the

best examples of the use of Training Within Industry (Liker & Meier, 2007).

Today they continue to use the methods started in the United States during the war and their success with them has gotten the interest of American companies in incorporating it into their methods. An important reason for knowing the methods of TWI is the insight that it brings to supervisors and managers about how workers learn their skills and it gives them some methods that they can easily implement in their own operations. An underlying principle used in the TWI is the multiplying effect, where the program starts by training some key supervisors, who train other supervisors to use the methods (Robinson, 1993). The training program is divided into three “J” programs. Job Instruction Training (JIT) teaches the proper training of the workforce, Job Methods Training (JMT) focuses on ideas for method improvement, and Job Relations Training (JRT) is a course in supervisor-worker relations. The primary advantage of TWI is its simplicity and ease of implementation.

## COACHING AND MENTORING

Training at the workplace comes in many forms and is implemented in many ways but one common factor among the different methods is that in most cases, someone provides some type of guidance to the trainee. This guidance in one form or another takes the form of a coach or a mentor. Though the general purpose is similar, there is a difference between a coach and a mentor. One often thinks of a coach as the all-knowing football or basketball coach who expertly steers the team through the obstacles to win the game. Coaching in an industrial work environment is much the same as in sports but without the

screaming and yelling (Luecke, 2004). As workers progress through their normal work careers, their managers have much to do with their professional development and coaching tends to focus on a particular skill or on a specific ability. Mentoring, on the other hand takes a more holistic approach and guides the learner through broader aspects of the particular job (Cunningham, Dawes, & Bennett, 2004). The mentor would be a part of a whole training process and be available for the trainee for questions and consultation. In most types of training programs it is common for an experienced worker to help provide guidance and knowledge and lead the trainee through the skills needed to perform the job. Depending on several factors such as the complexity of the tasks and the type of training required, mentoring could range from an occasional point of reference for a simple program, all the way to a full time teacher in a classroom setting.

#### TOOLS OF ONSITE TRAINING

Onsite Training is often described as ongoing training that is involved in most operations in the workplace. In the following paragraphs are two of the tools commonly used when implementing the training. Many of the terms and concepts are used both in the formal context and in the informal context.

Hands-on Training is an important part of any training and is especially important in an industrial environment where the primary job function is working with tools and machinery. Two minutes with a tool in the hand is worth two hours of classroom training. Defined simply as learning by doing, training in this environment is always supported by some type of hands-on training. Even in an unstructured situation where a mechanic is starting to work on a new process,

the learning becomes permanent only after the job is actually performed. One particular use of the term Hands on Training is presented by a six step method of training suggested by Sisson (2001) where he formalizes On the Job Training with a system he calls HOT POPPER. HOT is simply Hands on Training and the other letters stand for the steps Prepare, Open the session, Present the session, Practice the skills, Evaluate the performance, and Review the subject.

Visual Instruction is used in some of the workplaces for mechanics on the use of the machinery. It can be effectively used as a part of the training process and also as a reinforcement tool. One particular company has developed an easy to use tool for the mechanics at the worksite to develop and use visual aids. Visual Instructor (Blackwell\_Solutions, 2009) is a software application that allows the supervisors and training representatives in the workplace to develop highly effective training aids and place them in strategic locations around the machines. It is an easy to use application that incorporates principles based on the Lean Manufacturing tool called Visual Factory.

#### INSTRUCTIONAL DESIGN FOR WORKPLACE ONSITE TRAINING

When designing training tools to be used for onsite training the instructional designer needs an understanding of the culture around the workplace and the type and level of training that is being accomplished. Many of the same learning strategies (Gagne, 1985) that they use for other forms of training such as classroom or computer-based training are applied to onsite training, but many factors have to be considered to allow for the differences of this type of training. The primary difference is the independence of the learners



from training professionals in the workplace. Much of the time the worker is in a program where he is training while working. He will receive guidance from a mentor or coach but is required to set the scope and pace of the training on his own. When classroom instruction is developed, the instructional designer includes tools that the instructor can use to provide motivation and encouragement for the student to proceed through the training. When the trainee is learning in the workplace the controlled environment of the classroom is not there, so the need for motivational strategies (Wlodkowski, 1999) in the materials is much greater.

#### SUMMARY

Keeping a skillful and well informed workforce is essential for an industrial workplace to remain competitive and meet production goals but at the same time keep safe and continuously improve. The best way for management to achieve its goals and to stay ahead of constantly changing needs is a comprehensive and coordinated training program. This will consist of a variety of types and methods of training programs both onsite and offsite. The subject of this study is a type of onsite training called Job Performance Support and how it has been implemented into various locations. This review looked at JPS and the other types of onsite training and how they often work together in the workplace to train the mechanics and other employees. The next chapter describes the methods and procedures that were used to study the effectiveness of JPS in the workplace.

## CHAPTER III

### METHODS AND PROCEDURES

The problem of this study was to determine the effectiveness of work centers in an industrial environment when they are using Job Performance Support (JPS) training. The purpose of this chapter is to describe the procedures used in gathering data to determine the implementation of JPS. It describes the population associated with the study, the instrument used to conduct the study, the methods used to gather data, and how the data were analyzed.

#### POPULATION

The purpose of the study was to gain an understanding of the implementation and effectiveness of the JPS training method. It was therefore necessary to obtain the perspective of a wide range of people who were associated with its planning, development, and implementation. This included 70 workers who had received the training, their mentors and supervisors, and those who analyzed the training needs and developed the various JPS training products. The population of this study consisted of several diverse groups:

- Those who received the training were the mechanics and other trades-related people who were the users of the equipment and systems that required training.
- The mentors were the Subject Matter Experts (SME) who provided the trainees with the guidance and help through the training.

- The supervisors, in the context of this study, included all of the management involved in the training - from the immediate foreman to higher management.
- The developers of the training were closely involved with the workplace and their training needs. They performed the initial analysis and facilitated the final implementation. This required the trainers to become very familiar, not only with the specific operation of the machinery or system, but also with the workplace environment, the people, and the workplace culture.

#### INSTRUMENT DESIGN

A survey was designed to gather information that would help determine the attitude people had toward JPS and the climate of the location where the JPS was delivered. The survey consisted of a comprehensive one-page questionnaire that was designed to gather the desired information from each participant in a short period of time.

The questionnaire consisted of a set of forced-choice questions where the participant was asked to select from four choices that were answered on a scale from 1-strongly disagree to 4-strongly agree. All of the questionnaire items were written to support the three research questions and were analyzed on a Likert Scale to determine the effectiveness of the work centers when using JPS. The questions related to what attitudes the participants had toward the effectiveness of the JPS training, which elements of the JPS they thought were most useful,

and how the JPS was implemented in their own work environment. See Appendix A for a copy of the survey.

### METHODS OF DATA COLLECTION

A letter of introduction was given to the manager of each organization before the researcher began conducting any of the surveys. The letter explained that the purpose of the study was to analyze the implementation of the JPS, to determine what impact it had on the workers in that location, and to see how it could be improved to better serve the needs of that organization. It showed the questions that would be asked and the approximate amount of time it would take for each participant. Data were collected by the researcher in the participant's own work environment by use of the questionnaire. Specific questions were asked about the use of JPS and comparable training programs.

### STATISTICAL ANALYSIS

The data collected from the surveys were analyzed for the purpose of evaluating the implementation of the JPS training. Each of the survey tools was analyzed to determine the intent of the Research Goals. The researcher used

- the total number of delivered JPS products to determine the degree of use as a percentage
- the mean of the forced choice questions to identify patterns and trends in the use of JPS
- the number and frequency of response for short answer questions to further clarify the feelings toward the use of JPS and the extent to which it was being used as originally intended

## SUMMARY

The methods used to gather data for the study were selected to obtain the most accurate data possible and determine the effectiveness of the shops who had received JPS training programs. Questionnaires were chosen as the method of collecting the data because of the nature of the environment and the people who were to be surveyed. A wide range of participants were selected to be surveyed in order to gain a broad perspective of the use of JPS in the workplace. The questioning was designed to allow the flexibility to discover unanticipated findings in the use of JPS. This chapter described the type of data that were collected and how they were collected. The next chapter describes in detail the findings of the surveys and how the data were analyzed.

## CHAPTER IV

### FINDINGS

Chapter IV presents the data collected from this study on Job Performance Support (JPS) training in the workplace. The survey was conducted with 52 participants and was designed to ask questions of all people who had been involved with JPS in order to get their perspective regarding its usefulness. It sought the perspectives from four different groups of people in order to gain a broader picture of how it was being used in the workplace and what could be done to make it even more useful. The four groups targeted in the survey included the following. The trainee who had received instruction with JPS, the mentor who has been selected for his or her expertise, the manager of the trainee who is familiar with the JPS method of training, and the developer who has been involved in the development of JPS. The problem of this study was to determine the effectiveness of the work center in an industrial environment using Job Performance Support training. The research objectives that were established to conduct this study were:

- How effective was Job Performance Support as a training tool in the workplace?
- How can Job Performance Support training be changed to improve its effectiveness in the workplace?
- How has Job Performance Support training been implemented in the workplace?

The survey was developed to address the research objectives by asking a series of questions for each designed to get the participant's own perspective of the implementation of JPS in the workplace. It also asked the participant to identify their role in the use of JPS with respect to their involvement.

### STUDY RESPONDENTS

Surveys were distributed to the shops and workplaces where JPS had been delivered. The foremen who have been working with JPS were asked to distribute the surveys to their people who had been involved with it. They were asked to complete the surveys anonymously and return them to the researcher. Of the 70 surveys handed out, 52 (74%) were returned. Table 1 shows the distribution of the respondents.

Table 1. Total number of respondents

Participants	Number who responded
Trainees	23
Mentors	14
Managers	8
Developers	7
Total	52

### SURVEY FINDINGS

The survey was divided into sections based on the three research objectives. Under each research objective were several forced-choice questions where the participant was asked to select one of four choices from 1-strongly

disagree to 4-strongly agree. The forced-choice questions were followed by an open-ended question where the respondents were encouraged to further explain their answers. Following is an analysis of the findings of the survey. The results of each question are shown in two views, both of which use the Likert scale. The *Total* on the left of each figure shows a count of all responses, and the *Group* on the right shows the mean of each of the four groups of participants.

### JPS EFFECTIVENESS

Under Research Objective 1, an opening question introduced the topic, eight short questions were asked about that topic, then one open-ended question allowed the respondent to clarify any of the answers. These questions were intended to determine what the participant thought of JPS as a training device.

*How effective was the JPS as a training tool in the workplace?*

Question 1 - *Was it easy to use?* The findings showed that 49% of the respondents (25) strongly agreed, 49% agreed (25), and 2%, which was only one, disagreed. The mean was 3.47 which indicates that nearly all of the respondents agreed that JPS was easy to use. The means of the groups were consistent in their answers. See Figure 1.

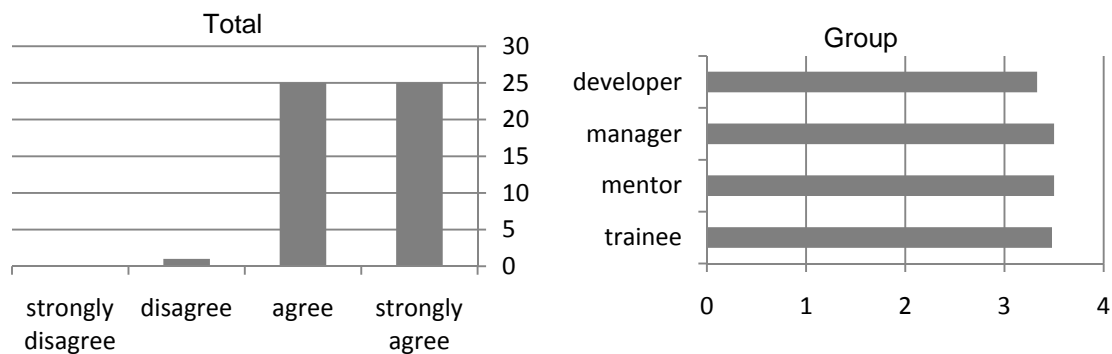


Figure 1. Easy to Use



Question 2 - *Was it ready to use with no need for prerequisite training?* The findings showed that 20% of the respondents (11) strongly agreed, 57% (31) agreed, 19% (10) disagreed, and 4% (2) strongly disagreed. The mean was 2.97 which showed that the participants agreed that JPS was ready to use without prerequisite training. The mentors' mean was 2.64, which was lower than the others. See Figure 2.

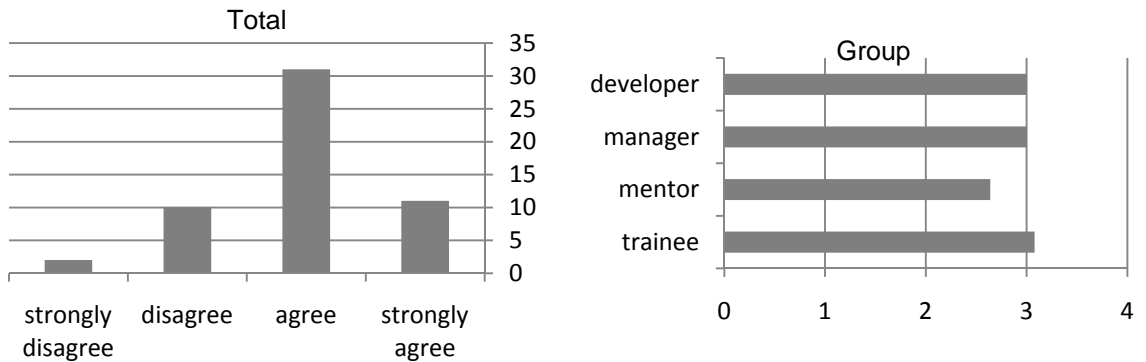


Figure 2. Ready to Use - No Need for Prerequisite Training

Question 3 - *It included all the skills related to the topic.* The findings showed that 33% of the respondents (17) strongly agreed, 58% (30) agreed, 10% (5) disagreed, and none strongly disagreed. The mean of 3.23 indicated that most agreed that the JPS training included all the skills related to the topic. See

Figure 3.

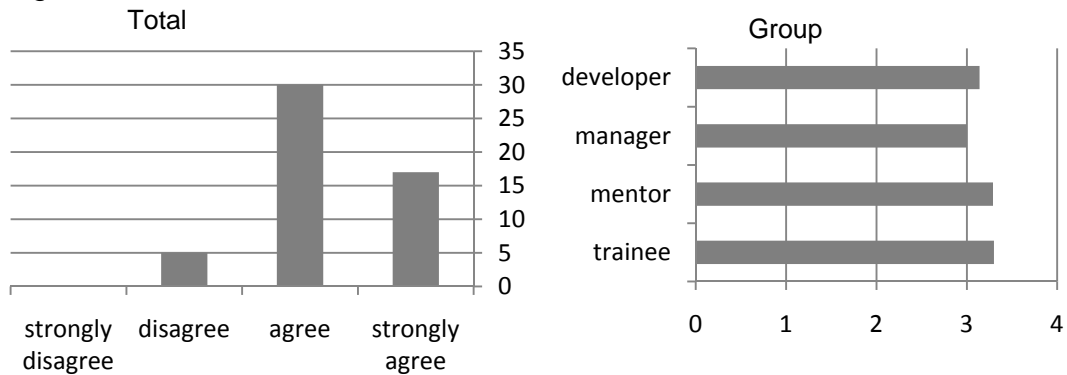


Figure 3. Included all the Skills Related to the Topic

Question 4 - *It made the worker more productive in the workplace.* The findings showed that 37% of the respondents (19) strongly agreed, 57% (29) agreed, 6% (3) disagreed, and none strongly disagreed. The mean was 3.31 which indicated that most respondents felt that JPS makes the worker more productive in the workplace. All the group means were well over 3.0, indicating that all of the respondents agree. See Figure 4

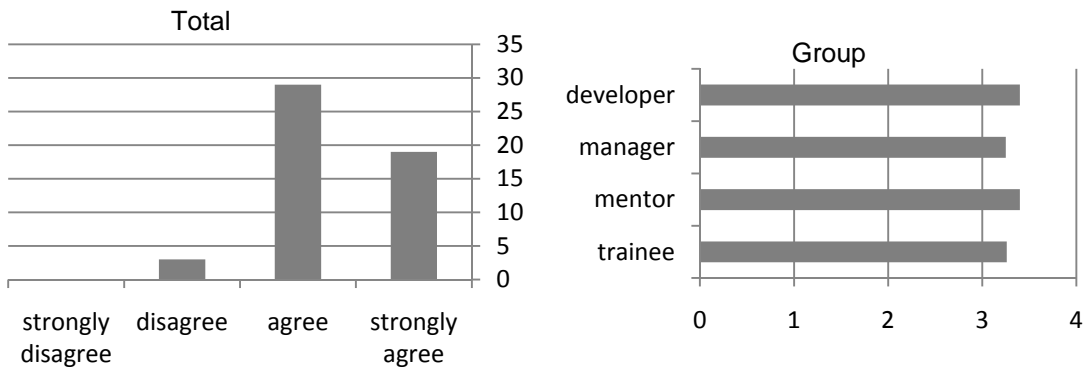


Figure 4. Made the Worker More Productive in the Workplace

Question 5 - *Most effective when supported by a mentor.* The findings showed that 63% of the respondents (32) strongly agreed, 35% (18) agreed, 2% (1) disagreed, and none strongly disagreed. The mean was 3.61 showing a strong approval of having a mentor involved when training with JPS. See Figure 5.

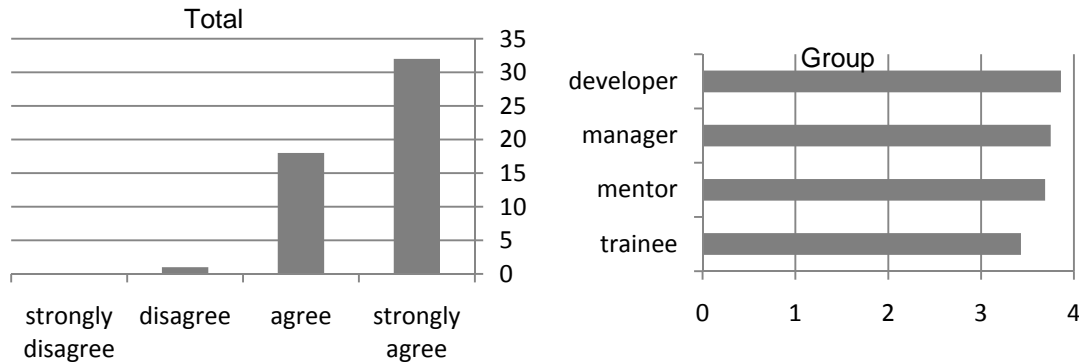


Figure 5. Most Effective when Supported by a Mentor

Question 6 - *Effective when used without a mentor.* The findings showed that 14% of the total respondents (7) strongly agreed, 34% (17) agreed, 40% (20) disagreed, and 12% (6) strongly disagreed. The mean was 2.5 which indicated a split in the opinions, but a higher total believed that the mentor was needed to complete JPS. The trainees' means were above 2.5 indicating agreement and the others were below 2.5 which indicated disagreement. See Figure 6.

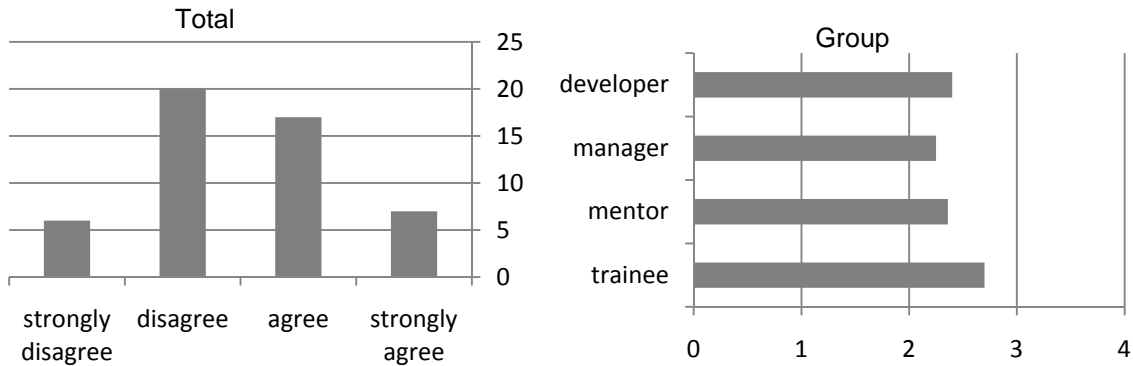


Figure 6. Effective when used Without a Mentor

Question 7 - *Effective when used as a reference.* The findings showed that 38% of the total respondents (19) strongly agreed, 60% (30) agreed, 2% (1) disagreed, and none strongly disagreed. The mean of 3.36 showed that most of those involved felt that JPS was an excellent tool in the work place that would also be used as a reference. The means of the groups showed that all feel the same way. See Figure 7.

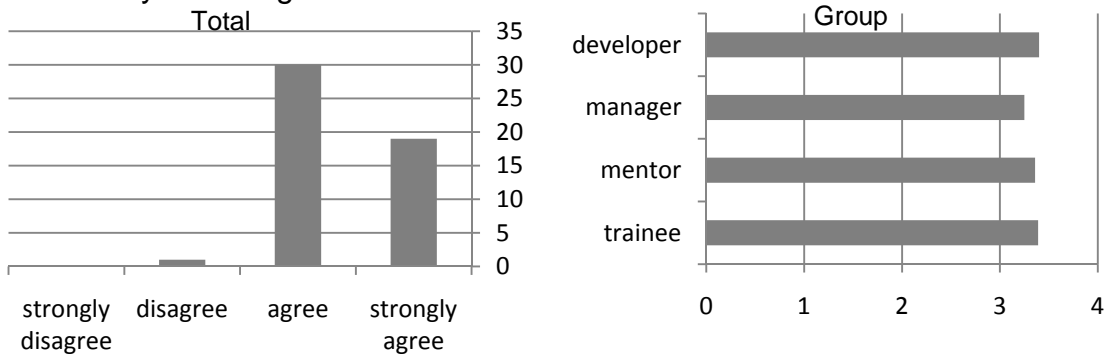


Figure 7. Effective when Used as a Reference

Question 8 - Overall, it was an effective way to train in the workplace. The findings showed that 49% of the total respondents (25) strongly agreed, 49% (25) agreed, 2% (1) disagreed, and none strongly disagreed. The mean was 3.47 and 94% of the total number of responses were in the 'agree' and 'strongly agree' responses. See Figure 8.

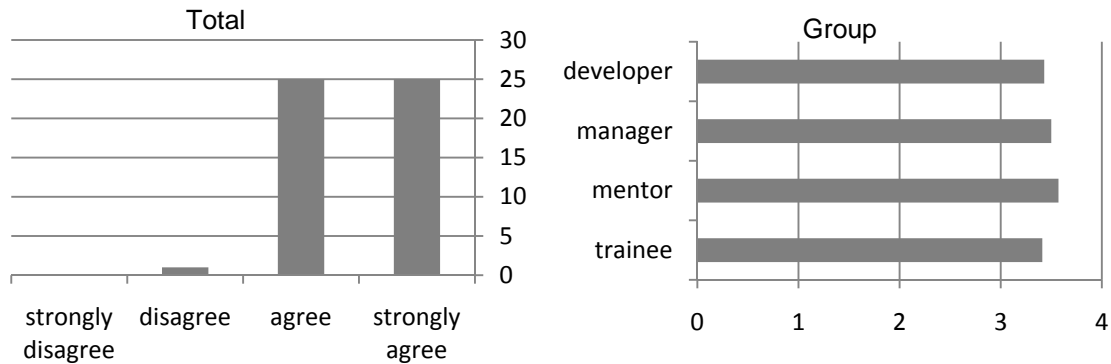


Figure 8. Overall, it Was an Effective Way to Train in the Workplace

An open-ended question was asked to summarize the questions on Research Objective 1. The question asked, *“What other aspects of JPS make it an effective training tool for the workplace?”* The following responses were received:

1. Ability to update easily/often.
2. Helps give the trainee a visual picture in their mind.
3. Took extra steps by providing info for each oven. No two ovens were the same and manual produced vital info.
4. The majority of the JPS is done out on the job, not in the classroom.
5. Training can be done as time permits. This training does not require the trainee to leave the workplace to be trained (reduces time).
6. General comments: JPS can be used in a variety of settings: Formal, structured training, just-in-time, refresher, or as an introduction to new skills.

The biggest benefit of JPS is that it is conducted on the job where real-time scenarios can be used to provide hands-on experience using real-life situations.

7. Pictures in the JPS/video.

JPS IMPROVEMENT

Under Research Objective 2, an opening question introduced the topic, six short questions were asked about that topic, then one open-ended question allowed the respondent to clarify any of the answers. These questions were intended to determine what elements of JPS the participants felt were good and if it could be improved. *Regarding JPS in general, how can it be changed to improve its effectiveness in the workplace?* The following leader was used for the six questions and followed by each element: *The most important and useful elements are:*

Question 9 - *Photographs*. The findings showed that 63% of the total respondents (32) strongly agreed, 35% (18) agreed, 2% (1) disagreed, and none strongly disagreed. The mean was 3.61 which showed that most strongly agreed that photographs were important and useful. See Figure 9.

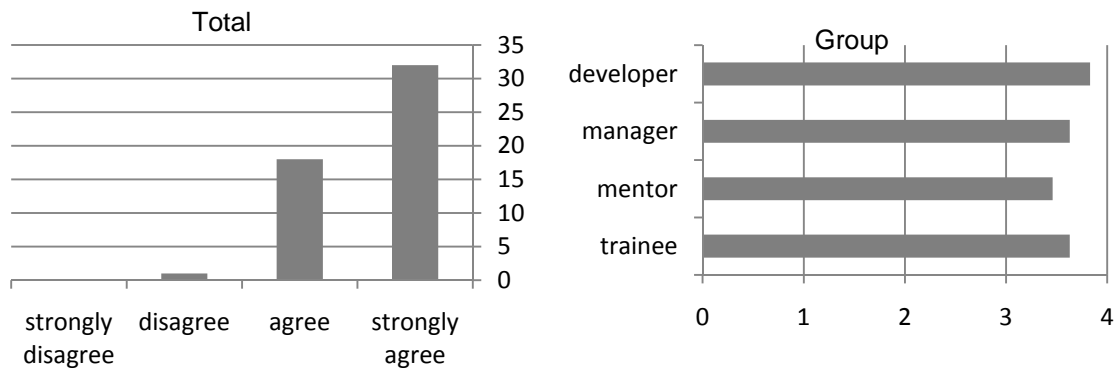


Figure 9. Photographs

Question 10 - *Diagrams*. The findings showed that 61% of the total respondents (31) strongly agreed, 33% (17) agreed, 6% (3) disagreed, and none strongly disagreed. The mean was 3.55 which indicated a high regard for diagrams. See Figure 10.

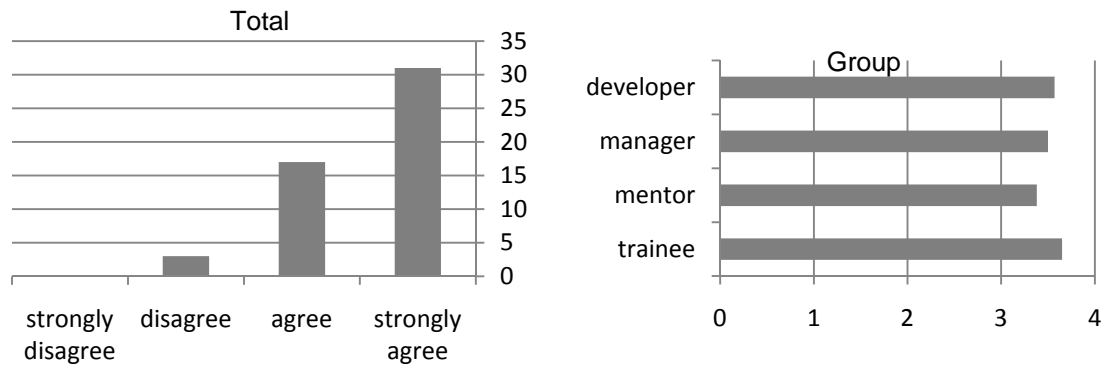


Figure 10. Diagrams

Question 11 - *Brief Explanations*. The findings showed that 50% of the total respondents (26) strongly agreed, 48% (25) agreed, 2% (1) disagreed, and none strongly disagreed. The mean was 3.48 showing strong approval with only one who disagreed. See Figure 11.

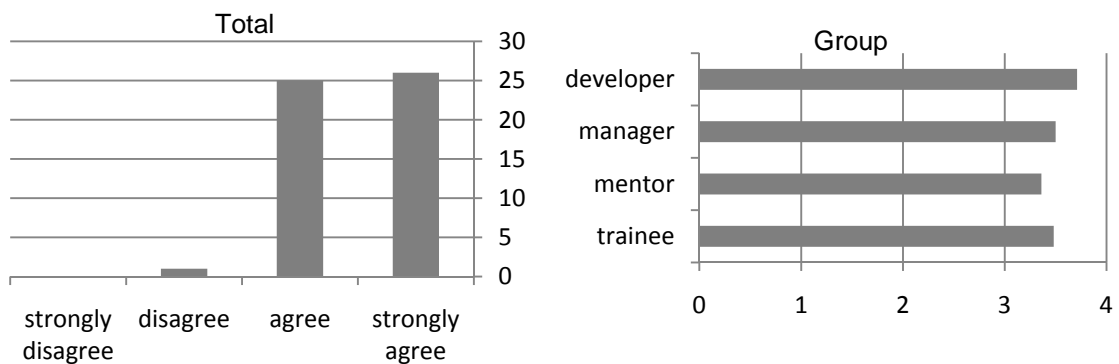


Figure 11. Brief Explanations

Question 12 - *Checklist of Skills*. The findings showed that 37% of the total respondents (19) strongly agreed, 55% (28) agreed, 8% (4) disagreed, and none strongly disagreed. The mean was 3.29 which indicated that most agreed that the checklist was good for JPS. See Figure 12.

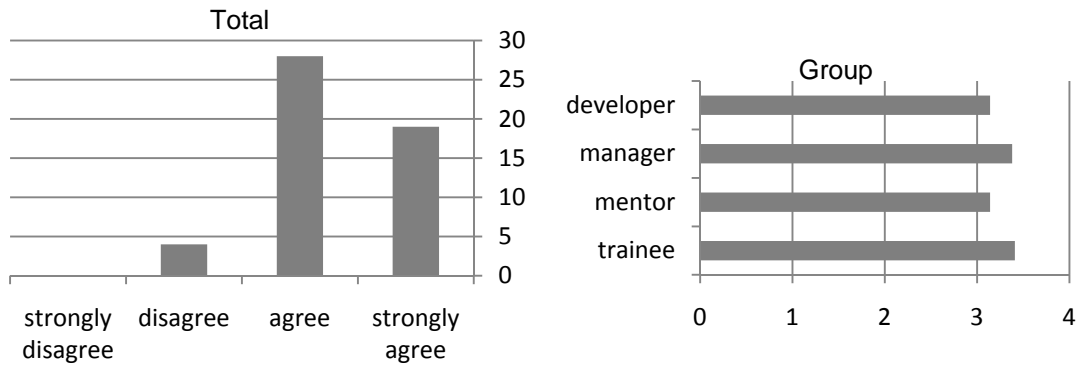


Figure 12. Checklist of Skills

Question 13 - *Appendices when longer explanations are needed*. The findings showed that 31% of the total respondents (15) strongly agreed, 58% (28) agreed, 8% (4) disagreed, and 2% (1) strongly disagreed. The mean was 3.30 which indicated that most felt that appendices were important elements of the JPS.

See Figure 13.

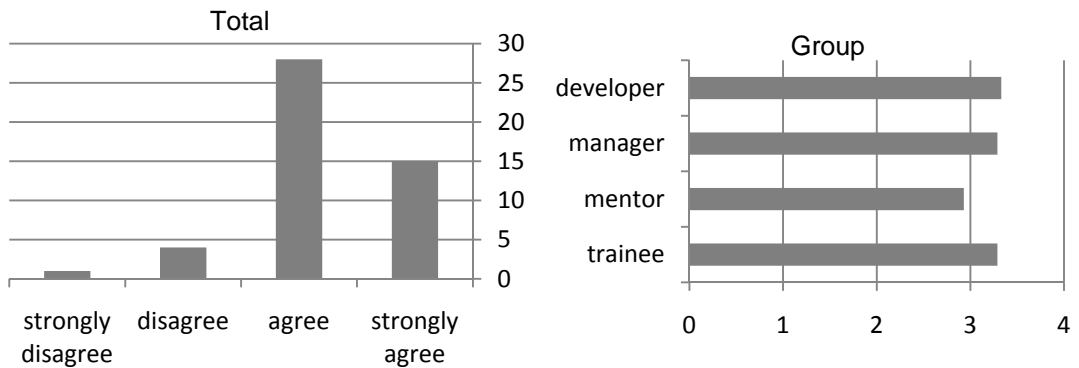


Figure 13. Appendices when Longer Explanations are Needed

Question 14 - *Skill Code when training is complete*. The findings showed that 40% of the total respondents (20) strongly agreed, 50% (25) agreed, 10% (5) disagreed, and none strongly disagreed. The mean was 3.19 which indicated that the respondents felt that it was important to receive a Skill Code after completing JPS training. See Figure 14.

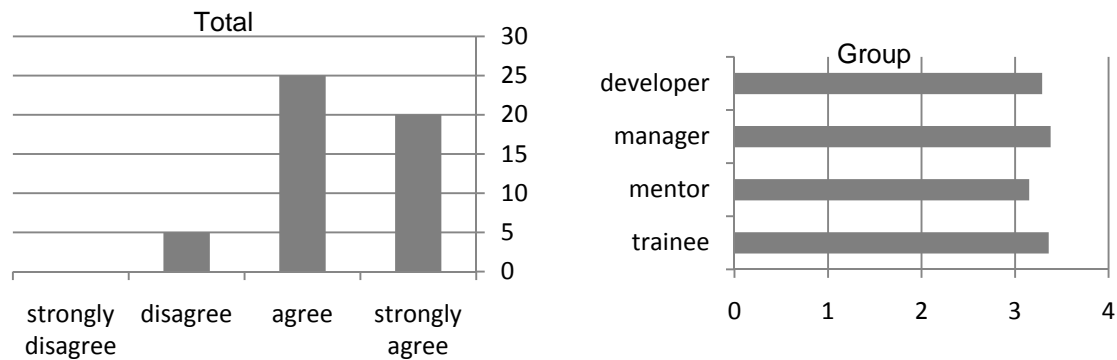


Figure 14. Skill Code when Training is Complete

An open-ended question was asked to summarize the questions on Research Objective 2. The question asked, *“Would any other elements add to the effectiveness of JPS?”* The following responses were received:

1. References.
2. Inclusion of all those will make the training better.
3. Mock-ups when appropriate.
4. Basically a how and why on dye selections.

### JPS IMPLEMENTATION

Under Research Objective 3, an opening question introduced the topic, five short questions were asked about that topic, then one open-ended question gave respondents the opportunity to clarify any of the answers. These questions were intended to determine if JPS had been used and how it was being used in



the workplace. It was intended to see if JPS was used as it had been designed and developed, or if it was being used in some other way. *How has JPS been implemented in the workplace?*

Question 15 - *Was Accomplished by a Mentor*. The findings showed that 49% of the total respondents (24) strongly agreed, 41% (20) agreed, 6% (3) disagreed, and 4% (2) strongly disagreed. The mean was 3.35 which showed that all but five respondents reported that the JPS had been accomplished with a mentor. See Figure 15.

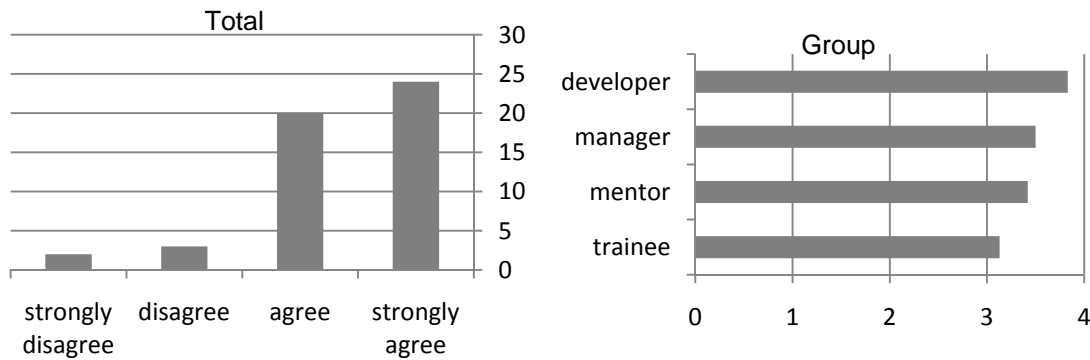


Figure 15. Was Accomplished with a Mentor

Question 16 - *Was Accomplished Without a Mentor*. The findings showed that 15% of the total respondents (6) strongly agreed, 27% (11) agreed, 29% (12) disagreed, and 29% (12) strongly disagreed. The mean was 2.27 which indicated differences in the answers but generally agreed with the previous question that the JPS was used with a mentor. The managers' mean was much lower which indicated that, overall, they felt strongly that the mentors were always used with the JPS training. See Figure 16.

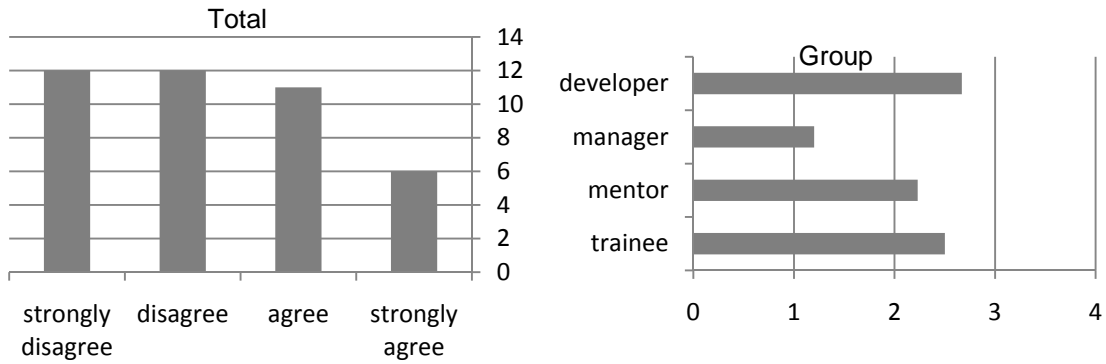


Figure 16. Was Accomplished Without a Mentor

Question 17 - *Used as a Self Guided Study*. The findings showed that 31% of the total respondents (15) strongly agreed, 40% (19) agreed, 17% (8) disagreed, and 13% (6) strongly disagreed. The mean was 2.9 which indicated that the JPS was used in many cases as a self study guide. See Figure 17.

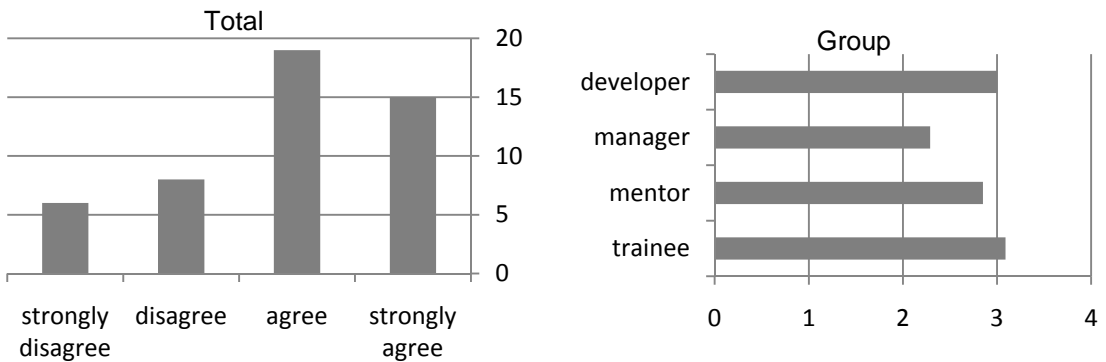


Figure 17. Used as a Self Guided Study

Question 18 - *Part of a Workplace Training Program*. The findings showed that 46% of the total respondents (22) strongly agreed, 44% (21) agreed, 8% (4) disagreed, and 2% (1) strongly disagreed. The mean was 3.33 which indicated that JPS was a part of workplace training program. See Figure 18.

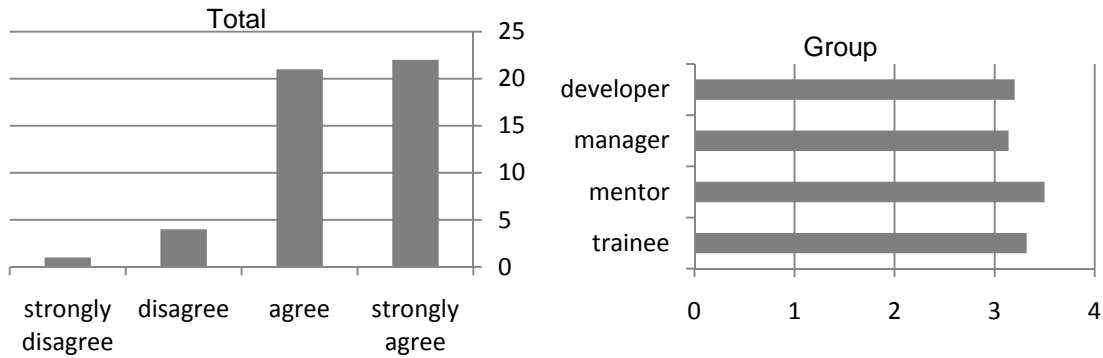


Figure 18. Part of a Formal Workplace Training Program

Question 19 - *Never Used*. The findings showed that nine percent of the total respondents (3) strongly agreed, 15% (5) agreed, 26% (9) disagreed, and 50% (17) strongly disagreed. The mean was 1.82 which gave a strong indication that the JPS was used in most cases. The developers' and the managers' means were each 1.0. This indicated that they strongly disagreed that the JPS was never used. In other words, the JPS had been used in their experiences. See Figure 19.

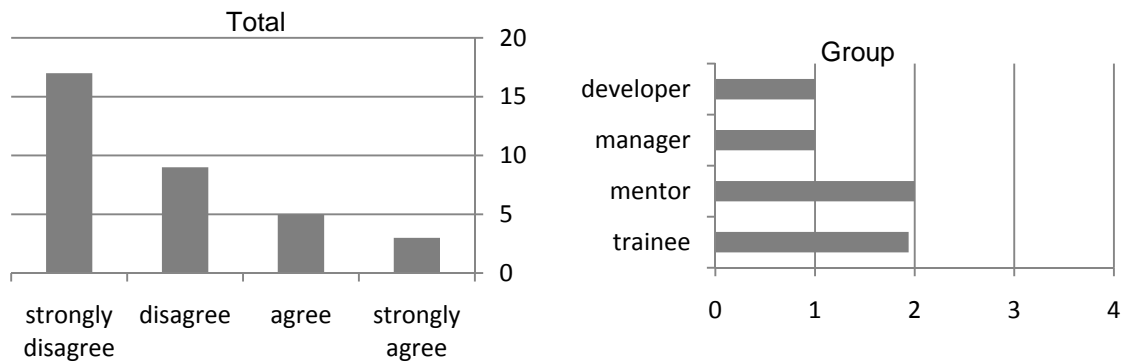


Figure 19. Never Used

An open-ended question was asked to summarize the questions on Research Objective 3. The question asked, *“What aspects of JPS help or hinder implementation in the workplace?”* The following responses were received:

1. Was never used.

2. OJT covers more in depth skills and faster.
3. Getting the opportunity to train for other jobs.
4. All JPS modules have been conducted with a mentor.
5. Have used for several machine operators and will use when we increase manning early next year.
6. JPS helps with the overall training of the workplace by eliminating the loss of experience.
7. The aspect which will hinder implementation is the quality of the mentor and the attitude of the supervisor toward workplace training.
8. Additional reading materials can be challenging.
9. It has helped because it gives a better look at the training that will be going. The presence of a mentor is still very helpful in this training.
10. Haven't had any trainees to use it on.

#### MY OPINION OF JPS

The final two questions were used to summarize the survey and did not fall specifically under the Research Objectives. They were used to help the reader understand the feeling that all of the respondents had toward JPS. Question 20 - *My Overall Experience Was Good*. The findings showed that 53% of the total respondents (27) strongly agreed, 45% (23) agreed, 2% (1) disagreed, and none strongly disagreed. The mean of 3.51 and only one disagree demonstrates an overwhelming support for JPS. See Figure 20.

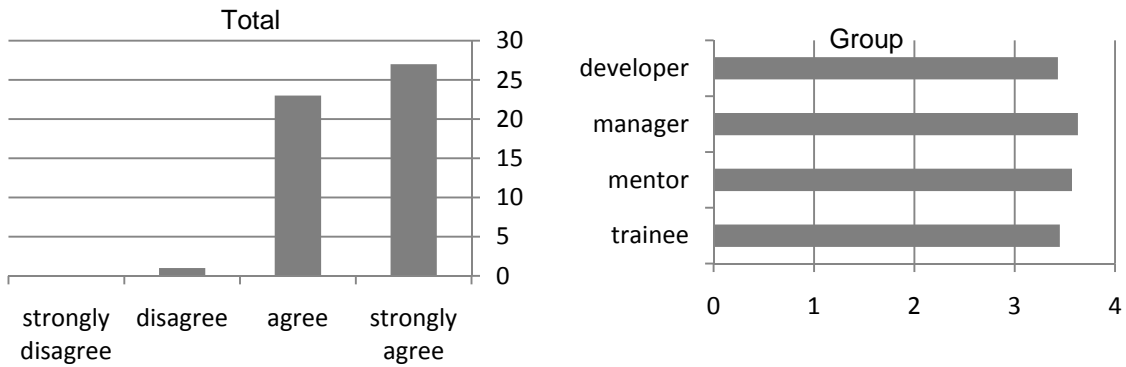


Figure 20. My Overall Experience was Good

Question 21 - *I Would Recommend JPS to Others*. The findings showed that 50% of the total respondents (26) strongly agreed, 48% (25) agreed, 2% (1) disagreed, and none strongly disagreed. The mean of 3.48 indicated a very high regard for JPS and its value in the workplace. The means of the groups show agreement. See Figure 21.

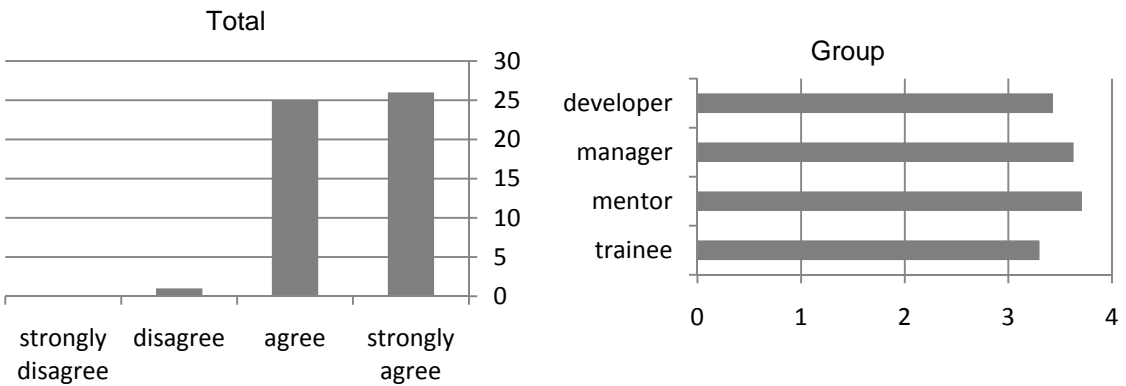


Figure 21. I Would Recommend JPS to Others

An *Additional Comments* block was placed at the end of the survey to provide an area for comments of any kind. The following responses were received:

1. A DVD of some functions in the JPS would be more effective in real time video.

2. I like that it is always available as a guide or to refresh you on details since all the ovens start and run with different processes.
3. JPS would better serve for study in DVD format. One copy (book form) for OTS reference. This would keep pace in a PC society.
4. Great way to break in new employees properly.
5. A need to be with the trainee longer.
6. Overall JPS programs are a great tool for training. Someone needs to manage the use and stay on management to use it.
7. Work better with hands on training.

#### SUMMARY

This chapter presented and analyzed the data collected from the trainees, mentors, managers, and the developers who had been involved with Job Performance Support (JPS) training in the workplace. Surveys were handed out to 70 workers who had been involved in the planning, development, and implementation of JPS and 74% were returned. The data collected from the surveys revealed the opinions of the participants in the three areas based on the research objectives. How effective was JPS as a training tool in the workplace? How could the JPS training be improved to make it more effective? And how had JPS been implemented in their workplace? Chapter V will summarize the data collected on JPS and report on the conclusions drawn. It will make recommendations on the future use and development of JPS in the workplace.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to summarize the research done in this study. Conclusions will be formed from the data collected for the established research objectives. Recommendations will be made based on the data collected and the findings.

#### SUMMARY

The problem of this study was to determine the effectiveness of the work center in an industrial environment using Job Performance Support training. The following are the research objectives of this study:

- How effective was Job Performance Support as a training tool in the workplace?
- How can Job Performance Support training be changed to improve its effectiveness in the workplace?
- How has Job Performance Support training been implemented in the workplace?

Job Performance Support (JPS) training has proven to be a very effective and reliable form of workplace training. It is mentor assisted training that is implemented onsite and administered entirely by the workplace personnel. There are several advantages of this type of training. It can be scheduled as management determines, it uses the workplace assets, the trainees stay in their own workplace, and it allows for local planning and scheduling. This study looked at the effectiveness of JPS and how it was being implemented in the

workplace. Limitations of the study included JPS training products delivered to the workplaces between 2006 and 2009. Surveys were conducted where the training was delivered with a defense contractor so the name of the company was not mentioned and some information about the company had to be withheld.

The instrument used to conduct this study was a survey consisting of a questionnaire based on the established research objectives. The survey asked several forced-choice questions and one open-ended question in support of each objective. The surveys were delivered to workers who had been involved with JPS and had done work associated with JPS training including research, the development of the training, and the use of the finished product. The people asked to take the survey included the trainees who learned with JPS, the mentors who assisted the trainees, the supervisors of the trainees, and the instructional designers who developed the training. All of the 52 participants had some experience with JPS as a trainee, a mentor, a manager, or as a developer. Forced-choice questions were asked and analyzed on a four-number Likert scale ranging from 'strongly disagree' equal to 1 to 'strongly agree' equal to 4. The data from the surveys were analyzed in two ways. One looked at the total number of responses received for each answer. The other looked at the mean of each of the groups who took the survey: the trainee, the mentor, the manager, and the developer.



## CONCLUSIONS

The following are the conclusions drawn from the research done on the implementation of JPS in the workplace based on the three research objectives.

Research Objective 1 - **How effective was Job Performance Support as a training tool in the workplace?** The analyzed data from the surveys showed a very positive attitude toward the use of JPS in the workplace. From the perspectives of the trainees, the mentors, the managers, and the developers, JPS is an *effective way to train in the workplace*.

The questions were designed to ask about the various important aspects that would make this training method more useful to the workplace. Cumulative results suggested that the participants felt that it was easy to use, mainly for the trainee. It did not need any extra instruction as the trainee went through the skills. It was ready to be used as it was delivered so no prerequisite training was required. It included all the skills that were needed for the topic. When the training was complete, the training would have been competent with all the skills of the job. The JPS would be sufficient to make the worker more productive in the workplace. It was designed as training that is to be accomplished with a mentor, so when asked two questions about the use of a mentor with the training, the consensus was that it was a necessary part of this type of training. They also felt that JPS as a training device was a good tool to use as a reference, even by someone who is not involved with training at the time. Comments were written that mentioned the flexibility they had while training with JPS and the benefits of

training in their own workplace. Others remarked about how it was tailored to the individual workplace and the training could be done “out on the job” in their own location and on their own schedule. Overall, those who were surveyed felt that JPS demonstrated to them the qualities that were needed for a training method that would be effective in their working environment.

**Research Objective 2 - How can JPS be changed to improve its effectiveness in the workplace?** Based on the responses to the questions and the suggestions given, the participants felt that the elements that were included in JPS were sufficient and even well liked. In support of this objective, questions were asked to gain insight from the participants about what specific elements of JPS contributed to its effectiveness in the workplace. The answers were favorable toward all six of the items mentioned in the questions.

For this series of questions, a leader was used to introduce the six questions: *The most important and useful elements are:* then each of the elements was listed individually.

The responses to five of the six elements, *Photographs, Diagrams, Brief Explanations, Checklist of Skills, and Skill Code When Training is Complete* were all positive with a mean in each of over 3.0. In each of these responses, 90% or more said that they agreed or strongly agreed that these were important and useful elements of the JPS.

In the sixth element, *Appendices when Longer Explanations Are Needed*, the responses were positive and the mean was 3.3, but there were four who disagreed and one who strongly disagreed. It was interesting to note that in the

analysis of the individual groups, the mean of the mentors was lower than the mean of the other individuals. This gave the impression that they tended to like the idea of the appendices less than the others. A possible explanation to this was based on conversations between the researcher and several mentors. Generally speaking, the mentors wanted the trainees to spend more of their time on task and less on reading materials and researching. They knew that the extra reading material in an appendix would be beneficial to the trainee, but their focus was on the work and production. Three specific items were suggested by the participants as ways to improve JPS. References should be included in the training materials. Mockups should be used when they are appropriate and practical. A guide book on the how and why of specific operations would be useful. Overall, the respondents felt that the individual elements that made up the JPS were necessary and useful for its use.

**Research Objective 3 - How has JPS been implemented in the workplace?** Based on the responses to the survey, the JPS had been implemented in the various workplaces in the manner that it was intended by its developers. The workers who received the training proceeded through a checklist of skills while receiving guidance and instruction from a mentor. A normal occurrence in this manufacturing world was the up and down cycle in the workload and hiring. Because of this factor, the use of the JPS had to be delayed in some cases until new workers were hired. When this happened, the JPS was a welcome tool that could be used for training. It could be picked up on

a relatively short notice, with a minimal amount of prior planning and be used to conduct training.

In support of this objective, questions were asked about whether or not a mentor was used to accomplish the training and if it was used as a structured training program. The responses indicated that the answers to both of these questions were very positive. The responses also indicated, however, in some cases it was used in less formal circumstances when the worker was not currently assigned to a training program but needed some information about the subject matter. In these cases, the JPS was used without a mentor but it was an ideal resource that was used as a reference.

The JPS was used in many cases soon after it was delivered to the workplace. In some cases, though, the managers had to delay the start of the training because of production and manning issues. It was important to note that even in the cases when the JPS was not used, the managers felt that it was a very good training device and would like to use it as their needs arise.

## RECOMMENDATIONS

Job Performance Support training was a well liked and respected form of training for the workplace. The findings of this study showed that those who had been involved with JPS felt that it was a useful and effective tool that could be used to maintain a high level of proficiency in the workplace. In each case when the JPS was delivered to the workplace, it became their responsibility to maintain and administer it. This was different than other types of training where the instructors in the training department maintained the product and delivered it as

requested. Based on the findings of this study, three actions are recommended to keep JPS performing as an important training option in the workplace.

1. Maintain a *JPS Monitoring Program*. This would be established at the time of delivery for each organization that uses JPS and meetings should occur with the training department on a monthly basis. The training department should keep in contact with the individuals in the workplaces regarding the use of the JPS. This would include instruction and advice on how to maintain the organization's JPS program, and it would give the training department some valuable insight into how it is being used. A monitoring program would also be an useful way of maintaining uniformity across the various locations who train with it since it is sometimes used in different ways than the developer originally intended.

2. Establish a *Revision Program*. This would be established at the time of delivery with a revision page, but it should be backed by a tracking system within the training department. Each JPS training product should be officially reviewed on an annual basis. In the course of a year, changes occur that can affect the accuracy of the training. Equipment is replaced, procedures are updated, and factors change that can make the JPS obsolete and ineffective.

3. Encourage the use of a *JPS Training Coordinator* in the organization where JPS is used. This would be instituted at the beginning of the development of the JPS. The JPS Training Coordinator would be named at the first meeting between the training department and the organization receiving the training

product. Most workplaces have a representative who administers training for their organization but this representative is not specifically assigned responsibility for JPS. Some instances were mentioned in the surveys where JPS was not used for various reasons. A training coordinator would have made the necessary arrangements and initiated the use of the JPS. Though the individual JPS is easy to use, there are issues that need to be coordinated, such as the selection of the mentor and trainee, the issue of materials, and scheduling issues.

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## APPENDIX A

### JOB PERFORMANCE SUPPORT (JPS) SURVEY

DATE: \_\_\_\_\_

**Instructions:** For each statement, place an "X" in the column that best describes your experience with JPS.



Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
<b>For the JPS you were involved with, how effective was it as a training tool in the workplace?</b>					
1. Easy to use	4	3	2	1	
2. Ready to use - no need for prerequisite training	4	3	2	1	
3. Included all the skills related to the topic	4	3	2	1	
4. Made the worker more productive in the workplace	4	3	2	1	
5. Most effective when supported by a mentor	4	3	2	1	
6. Effective when used without a mentor	4	3	2	1	
7. Effective when used as a reference	4	3	2	1	
8. Overall, was an effective way to train in the workplace	4	3	2	1	
What other aspects of JPS make it an effective training tool for the workplace? <i>(use other side if necessary)</i>					
<b>Regarding JPS in general, how can it be changed to improve its effectiveness in the workplace?</b>					
The most important and useful elements are					
9. Photographs	4	3	2	1	
10. Diagrams	4	3	2	1	
11. Brief explanations	4	3	2	1	
12. Checklist of skills	4	3	2	1	
13. Appendices when longer explanations are needed	4	3	2	1	
14. Skill Code when training is complete	4	3	2	1	
Would any other elements add to the effectiveness of JPS? <i>(use other side if necessary)</i>					
<b>How has JPS been implemented in the workplace?</b>					
15. Was accomplished with a mentor	4	3	2	1	
16. Was accomplished without a mentor	4	3	2	1	
17. Used as a self-guided study	4	3	2	1	
18. Part of a formal workplace training program	4	3	2	1	
19. Never used <i>(if so, explain in additional comments block)</i>	4	3	2	1	
What aspects of JPS help or hinder implementation in the workplace? <i>(use other side if necessary)</i>					
<b>My opinion of JPS</b>					
20. My overall experience was good	4	3	2	1	
21. I would recommend JPS to others	4	3	2	1	
<b>Roles and Responsibilities</b>					
What is your role related to JPS? <i>(circle one)</i>	<b>Trainee</b>	<b>Mentor</b>	<b>Manager</b>	<b>Developer</b>	
Additional Comments:					



## **APPENDIX B**

### **MANAGER LETTER**

To: Manager  
From: Don Garmer  
Subj: Job Performance Support (JPS) Survey

I am conducting a research study on the effectiveness of the work center when using JPS training. This study will serve two purposes: it is a part of the requirements of my Masters degree in Occupational and Technical Studies at Old Dominion University, and it will be used to help Training Services with future development of JPS. With your permission, I would like to survey people in your organization who have been involved with JPS. The survey will take five minutes to complete. All data will be kept confidential, I will not use the names of any personnel and I will not mention specific work center or other company information. I have included a copy of the survey questions I will ask.

#### **Background**

As you are aware, JPS training is a relatively new style of training that has been delivered to you in the past few years. It is a mentor-assisted instruction that allows the trainee to work through a checklist of specific topics with the guidance of a mentor. It was designed to allow the work center to provide quality training to the employee while keeping them onsite. Advantages of JPS include:

- Familiar surroundings while training
- Immediate access to the learned material
- Reduced loss in production time while training
- Reduced training budget

#### **Benefit from the Study**

The intent of the study is to determine the effectiveness of JPS as a training tool in this type of environment. It looks at the ease or difficulty of using JPS, how it can be improved, and how it is being used. It asks the perspectives of four groups of people who have been involved with JPS – the trainees, the mentors, management, and the developers. The data gained will be used to make recommendations for future development of JPS and other training products for the workplace.

Thank you for your support,

Don Garmer