Examining Factors Affecting Transfer of Learning for Centralized Medical Schedulers in a Hospital Setting

Elaine R. Ivan
Regis University

Follow this and additional works at: https://epublications.regis.edu/theses
Part of the Arts and Humanities Commons

Recommended Citation
Ivan, Elaine R., "Examining Factors Affecting Transfer of Learning for Centralized Medical Schedulers in a Hospital Setting" (2006). All Regis University Theses. 278.
https://epublications.regis.edu/theses/278

This Thesis - Open Access is brought to you for free and open access by ePublications at Regis University. It has been accepted for inclusion in All Regis University Theses by an authorized administrator of ePublications at Regis University. For more information, please contact epublications@regis.edu.
Use of the materials available in the Regis University Thesis Collection ("Collection") is limited and restricted to those users who agree to comply with the following terms of use. Regis University reserves the right to deny access to the Collection to any person who violates these terms of use or who seeks to or does alter, avoid or supersede the functional conditions, restrictions and limitations of the Collection.

The site may be used only for lawful purposes. The user is solely responsible for knowing and adhering to any and all applicable laws, rules, and regulations relating or pertaining to use of the Collection.

All content in this Collection is owned by and subject to the exclusive control of Regis University and the authors of the materials. It is available only for research purposes and may not be used in violation of copyright laws or for unlawful purposes. The materials may not be downloaded in whole or in part without permission of the copyright holder or as otherwise authorized in the “fair use” standards of the U.S. copyright laws and regulations.
EXAMINING FACTORS AFFECTING TRANSFER OF LEARNING FOR CENTRALIZED MEDICAL SCHEDULERS IN A HOSPITAL SETTING

By

Elaine R. Ivan

A Research Project Presented in Partial Fulfillment of the Requirements for the Degree Master of Arts – Adult Learning Theory and Design

Regis University
November 2006
EXAMINING FACTORS AFFECTING TRANSFER OF LEARNING FOR CENTRALIZED MEDICAL SCHEDULERS IN A HOSPITAL SETTING

By

Elaine R. Ivan

has been approved

November, 2006

APPROVED:

__________________________________, MA Faculty Advisor

__________________________________, MA Degree Chair
ABSTRACT

The purpose of this study was to examine the factors that influenced the failure of learning transfer for a workplace-training program. As employers demand more concrete and useful results, it is essential that training curriculum be developed in which learning transfer techniques are incorporated to ensure that participants are able to apply what they have learned. Several different reasons for lack of transfer may exist and finding the most effective method to combat the transfer problem can be difficult, but the benefits of finding the correct transfer methods are numerous. Using both qualitative and quantitative research methods, this study will examine issues of post-training learning transfer within a live centralized scheduling department at a hospital. Specifically, this study identified specific factors that contributed to the failure of learning transfer in the training for centralized schedulers and the role of prior knowledge on the transfer of learning on scheduling tasks. These factors included: (a) lack of participation; (b) lack of management reinforcement and support; (c) work and time pressures; (d) ineffective work processes, and finally; (e) staff discomfort with change. Specific recommendations for ways in which the training can be modified to enhance learning transfer are also presented.
EXAMINING FACTORS AFFECTING TRANSFER OF LEARNING FOR CENTRALIZED MEDICAL SCHEDULERS IN A HOSPITAL SETTING

ABSTRACT

CHAPTER 1. INTRODUCTION
  Centralized Scheduling
  The Training Intervention
  Statement of the Problem
  Purpose of the Project
  Chapter Summary

CHAPTER 2 REVIEW OF LITERATURE
  What is Transfer of Learning?
  Factors Influencing Transfer of Learning
  Setting Conditions for Training Transfer
  Integrating Learning Transfer into Training
  Transfer of Learning and Training at Memorial Hospital
  Measuring Learning Transfer
  Chapter Summary

CHAPTER 3. METHODOLOGY
  Procedures
  Selection of Participants
  Validity of Subjects as Participants
  Measures
    Survey Questionnaire
    Follow Up Interview
    Observation
    Audit Form
  Data Collection
  Analysis of Data
  Interpretation of Data
  Chapter Summary

CHAPTER 4. RESULTS
  Sample
  Procedures
    Data Collection and Analysis
    Surveys
    Observations
    Audits
    Interviews
  Chapter Summary

CHAPTER 5. CONCLUSION
  Overview Discussion of Findings
  Overall Discussion of Factors
  Management/Organization Responsibility
LIST OF TABLES

1. Demographic Data – Centralized scheduling participants..........................40
2. Criterion for performance.............................................................................47
3. Audit results.................................................................................................47
4. Description......................................................................................................49

LIST OF FIGURES

1. Gap analysis of the instructional problem......................................................7
Chapter 1

INTRODUCTION

The healthcare industry is experiencing an enormous transformation. Market forces and continued federal government spending reductions are creating a new paradigm in the delivery of healthcare in the United States. The majority of healthcare organizations have responded to these challenges by initiating reengineering efforts to streamline business and clinical processes. Many of these efforts have involved the use of information systems technology.

A participant in this transformation is Memorial Health System, a 380-bed hospital with multiple-offsite locations in Colorado Springs, Colorado. In an effort to stay competitive in this new age of healthcare delivery, Memorial Health System implemented a centralized scheduling system. As a result, Memorial Health System changed from a decentralized system of experts in each field of medicine scheduling their respective procedures to a centralized scheduling service.

Centralized Scheduling

Centralized scheduling (patient scheduling) is an automated centralized scheduling package for all patients scheduling a medical test or procedure. The primary customers of this process are the physician and the patient. The concept of centralized scheduling carries a type of stigma; ancillary departments are often quite reluctant to give up the task, fearing the loss of scheduling control.

At the inception of centralized scheduling at Memorial Health System, it had been assumed that any scheduler could handle scheduling any procedure for any department accurately because the majority of the information needed to schedule a patient was built
into the scheduling system. This information included patient demographics, specified
time slots, patient preparations and instructions, appropriate clinical questions, and the
location of facilities. Yet, as scheduling volumes increased in each area, operational
issues surfaced; mistakes were made and problems developed.

Memorial Health System Radiology Department, one of the two most difficult
departments to schedule, was dissatisfied with the service it was receiving from
centralized scheduling. Numerous errors were occurring when scheduling patients for
imaging procedures. These errors caused additional time for the radiologists, nurses and
technologists, and sometimes, resulted in the patient being rescheduled. For example,
schedulers were unfamiliar with contrast exams performed in the radiology department
and how they could interfere with one another. Schedulers were also unaware of the
significant impact of not providing the patients with adequate information regarding
necessary preparations to be done prior to the appointment (patient preparation). Most
schedulers did not have the clinical knowledge to schedule patients for different imaging
modalities on the same day without interference issues. Managers and radiologists were
quick to suggest that centralized scheduling be deferred and control of scheduling
returned to the departments. By decentralizing scheduling, the radiology department
administration reported they would have more control over the process and fewer
mistakes would be made. How could thirty-one individuals with limited radiology
knowledge accomplish this task successfully?

It became clear that scheduling was a primary concern for referring physicians as
well as radiologists. Physicians who referred a high volume of patients expressed
difficulties their clinical staff experienced when scheduling radiology exams. Busy
physicians appreciate efficiency, especially when it involves booking an outpatient screen or test. Physicians who use Memorial Health System Radiology Services were frustrated with the scheduling process. The physician’s office encountered long wait times and often had to wait for a callback to confirm an appointment. For Memorial Health System, this inefficiency could cause physician loss and patient volume to decline because dissatisfied referring physicians might send patients to other hospitals and freestanding imaging centers. Patients who remain may experience delays in their treatments. If this happened, it could decrease the hospital revenue and negatively impact the satisfaction of patients and referring physicians.

The Training Intervention

After examining the issues presented by stakeholders, it was decided to educate and train scheduling staff on clinical requirements, protocols, and processes for radiology. As an educator and the director of the radiology school at Memorial Health System this researcher was asked to provide appropriate education and training for scheduling staff on protocols and clinical requirements of radiology.

A team of six individuals representing various departments was established to develop a training course for schedulers. Three individuals were from centralized scheduling, one was from information services, and two were from radiology. The education team began by exploring known information about the centralized scheduling department and its employees to determine what additional information was needed in order to design effective instruction for centralized schedulers.

The education team’s first step was identifying any instructional problems to determine whether instruction should be part of the solution. The education team
considered several questions: (a) what is the performance problem; (b) will instruction solve the problem; (c) what is the purpose of the planned instruction, and (d) is the instructional intervention the best solution?

The instructional problem was identified as “individuals’ performance in centralized scheduling was below expectations when scheduling diagnostic imaging procedures.” Once the root cause of the problem was identified, determination could be made as to whether an instructional intervention would solve the problem. A needs assessment was performed to identify the needs relevant to the scheduler’s job or task; that is the problems that were affecting performance. Identifying critical needs, including those that had a significant financial impact or disrupted work, allowed the team to set priorities and provided baseline data to assess the effectiveness of the instruction. A “need” is a performance gap separating what people know, do, or feel from what they should know, do, or feel to perform competently (Rothwell & Kazanas, 1998, p. 55).

The team divided the needs assessment into four phases. The first phase was planning. It was decided that the focus would be on a single job classification, Scheduling Clerk II. The education team then determined who would participate in the study (i.e. which individuals to interview). The target audience was identified as each diagnostic imaging modality coordinator, physician offices, management, nurses, radiologists, experienced individuals who were once members of the target audience but had received a promotion, and the schedulers themselves. Next a decision was made as to how the data would be collected. The methods chosen were questionnaires, interviews, and reviews of data for error rates (Appendices A & B). The next phase of the needs assessment was data collection. The third phase was data analysis. From this data, the education team
identified four main training issues relating to scheduling services: patient preparations, multiple exam scheduling, knowledge of what is included in exams, and providing consistency in training.

An alternative approach to a needs assessment to define the problem is a goal analysis. Unlike a needs assessment that seeks to identify problems, a goal analysis begins with input suggesting a problem (Rothwell & Kazanas, 1998, p.154). As the team leader, this researcher chose to seek this input from the education team to have subcategories for each of the four main issues.

The results of this input can be presented as four goals. The first goal is for the schedulers to understand all information regarding preparation of a patient for a radiology exam to include: (a) the importance of looking at the patient preparation information on the computer screen; (b) the importance of the radiology staff informing schedulers when patient preparations have changed; (c) the importance of understanding patient preparations for the various radiology departments; (d) the importance of lab work as a part of preparing a patient for various radiology exams; (e) the importance of pre-medicating a patient as a part of preparing a patient for various radiology exams; (f) research if a patient as diabetic is part of the patient preparation for certain radiology exams; (g) the importance of preparing a patient for a pelvic ultrasound; and (h) the importance of having clear and concise information on the computer screen for preparing a patient.

The second goal is for the schedulers to understand how to schedule multiple exams, especially when radiographic contrast is an integral part. To supplement this instruction, it was important to establish a list of all radiology exams that utilize contrast
and to utilize the computer system as a potential job aid for the schedulers to access instruction on radiographic contrast exams.

The third goal is for the schedulers to know what is included in each radiology exam in order to: (a) limit the need for schedulers to involve radiologists or radiographers; and (b) to assist the scheduler in answering questions the physicians office staff or the patient asked. To supplement this instruction, it was also important to educate physicians and their staffs on what is included in radiology exams and to make sure all radiology ordering forms were consistent, informative, and easy to use.

The final goal is to provide more consistent training for the schedulers. In order to accomplish this, six seasoned schedulers were asked to become trainers. In addition, monthly educational sessions were established to educate schedulers on specific scheduling issues involving the radiology department.

The next step for the education team was to identify educational possibilities. The education team identified three potential audiences: schedulers, physicians’ office staff, and radiology staff. The group initially decided to concentrate on education with the schedulers.

Once the team had identified the client and completed a needs assessment, the education team had to identify and document the gap between the desired results and the current achievement. It was also crucial to determine the cause for the gap. A step-by-step process of instruction took place to identify the necessary content to be developed to achieve the team’s desired goals.
Figure 1 illustrates this example.

\[
C - A = B
\]

Figure 1. Gap analysis of the instructional problem.

The education team performed a complete learner analysis as the next step. The department had thirty-one employees. The average tenure in the department was three years. Two employees had high school diplomas, five reported having completed a certification program, thirteen had finished a two-year college, six had graduated from a four-year college, and one reported having completed graduate work. All members had successfully passed a medical terminology course. A few of these employees had various certifications including a CPT Coder. Two employees were part-time registered nurses. The approximate age of the group was forty-three years old. The department consisted of twenty-nine females and two males. When questioned about ethnicity, twenty of the employees reported being Caucasian, six Hispanic, two Native American, one African American, and two not responding. The survey indicated that most employees were motivated to improve their skills and efficiency. Twenty-two employees reported that they felt knowledgeable about their jobs. A training program, in which a seasoned scheduler mentored the new employee for one month was the current method of induction.

Through a survey, the education team asked employees to identify their main sources of frustration and conducted a contextual analysis. A contextual analysis is an analysis that ensures the instruction is presented in a familiar context that will enhance both student achievement and student attitudes (Morrison, Ross, & Kemp, 2004). An
instructional designer should analyze three types of context when designing instruction: orienting context, instructional context, and transfer context. The education team began with the orienting context. Orienting context focuses primarily on the learner. As part of the orienting context, the education team asked the learner (the scheduler) the following questions:

- What goals did he have for taking or attending this instruction?
- What was his perceived utility of the instruction?
- Did he see the course as providing them with useful information?
- What was the learner’s perception of accountability?
- Was the learner accountable for mastering the content presented in the instruction?

Eighty percent of the schedulers felt that education was valuable, and they were eager to receive instruction. The schedulers wanted the instruction to be delivered in a consistent and similar fashion for each scheduler. The scheduler’s requesting to have training on how to schedule multiple radiology exams was another survey result. In addition, many reported that they wanted clinical information on each radiology exam they scheduled, so they had a better understanding of what they were scheduling. If the schedulers had this additional information, the involvement of the radiologists or the radiographers would be limited. The final factor to consider in the orienting contextual analysis is the learner’s perception of accountability. At the inception of this project, the schedulers were not held accountable for mastering the content presented in any instruction.
The education team also took a look at the instructional context by analyzing the instructional environment. The team agreed that the educational intervention would be an hour-long instructional session once a month in the evening during the schedulers’ staff meeting. The facility was to be well lighted and provide all necessary accommodations including audiovisual equipment and adequate seating.

As a result of time constraints, the training provided only a limited amount of time on the transfer context portion of the design process. The schedulers never received instructional objectives; instead, the instructional designer was the only one who knew the expected outcome of the objectives. The goal of the designer was to ensure the schedulers had the knowledge of radiology and the skills necessary to schedule radiology exams successfully with limited errors.

An environment was created that tried to promote application of the newly acquired knowledge and skills. In addition, instruction was developed to help the schedulers connect their learning to the workplace. As a part of the instructional design process, the educational team’s centralized scheduling subject matter experts completed a task analysis depicting the tasks necessary to schedule a radiology procedure successfully. Finally, feedback was solicited from the schedulers as to what they would like to see addressed at each session.

Unfortunately, the team failed to address the diverse range of situations that the schedulers confront on a daily basis. The team had not implemented an assessment process, including potential scenarios, to evaluate the scheduler’s ability to apply the information he had received from each session to his workplace.
The educational team first sequenced the instructional content in such a way to address the problems that were the most significant for both the radiology department and the scheduling team. As a result of a rapid instructional design process, four training sessions were delivered over a six month period: (1)“Radiology Contrast,” “The Do’s and Don’ts of Scheduling Contrast Exams,” (2)“Scheduling Multiple Radiology Exams,” (3)“Smashing the Myth,” and, (4) “Magnetism of MRI.”

The instruction was designed and developed utilizing PowerPoint. Additional hands-on learning experiences were used including having each participant drink a small cup of barium during one talk and, during a second session, each participant palpating mock breasts for lumps. The instruction did not provide handouts. Because the designer perceived these presentations to be informal, she did not include any assessment. The only evaluating instrument utilized to evaluate the instruction was verbal feedback from the audience.

Statement of the Problem

The instruction was well received, evidenced by the end-of-course evaluations and the participants’ questions and topic discussions. As the educator for these sessions, the researcher came away feeling very optimistic after each session. Despite the designer addressing the three critical areas presented by Goldstein and Ford (2002) for developing training in relation to the learning environment: instructional design, trainee factors, and work characteristics, plus positive informal feedback received from the schedulers, the radiology department was still not satisfied. Various modalities within the radiology department still complained that scheduling mistakes continued on a daily basis involving items that had been covered in each session. These results were puzzling. The manager
thought each of the presentations of the training session had been designed to improve the performance on the scheduling tasks. Yet according to one of the stakeholders, the radiology department, the schedulers had not been able to transfer what they had learned from the instructional setting to the workplace. Had the transfer of learning been taken for granted or overlooked by not ensuring that the knowledge and skills acquired during the presentations were applied on the job?

This lack of transfer presented a problem to the researcher and the stakeholder. No training is successful unless the participant successfully takes the knowledge and skills learned and applies them appropriately on the job. Training employees involves costs. As hospitals necessarily attempt to control costs, it is essential that training programs provide the expected results. In addition, training programs must be able to prove that the investment return or the cost-benefit ratio of training is positive. The best demonstration of value occurs when learning translates into lasting behavioral changes.

In addition, how was the perceived lack of learning transfer affecting the schedulers? Were they frustrated? Most participants tried to connect what they had learned with what they had experienced and expected to experience at work. Why did the instruction not produce the desired outcome? Was it poor instructional design and delivery? As the educator of the instructional sessions, the researcher was faced with numerous possibilities as to why the sessions might have failed to deliver the impact for which they had been designed. First, was it because of a time delay between the time the schedulers learned the material and the time they performed it, i.e. was there too much of separation from the instructional source? Or was it because of a lack of transfer of learning? For example, what roles did transfer play in the learning/execution of the task
of schedulers? Was there evidence of the lack of learning transfer in scheduling medical procedures? Were the learners able to practice transfer of their newly acquired skills and knowledge? Third, what took place in the instruction itself, and how well was the material taught aligned with what the schedulers do? Consequently, the researcher investigated the factors that lead to the failure to transfer learning and the reason for the continued errors in scheduling radiology exams. In addition, what role did prior learning play in the development of new skills and knowledge?

Purpose of the Project

The literature on learning transfer (Baldwin & Ford, 1988, p.63) indicates there is a growing recognition of a transfer problem in organizational training. It is estimated that while North American industries annually spend over one hundred billion dollars in training and development, not more than 10% of these expenditures actually result in transfer to the job. Researchers have similarly concluded that the amount of training conducted in an organization fails to transfer to the work setting.

Usually the context of learning differs somewhat from the ultimate context of application. Consequently, organizational training does not provide the end goals of education and training unless transfer occurs. As a result, the aim of this study was to investigate factors influencing transfer of learning in workplace training programs. Specifically, this study addressed the following research questions:

Question One: What specific factors contributed to the failure of learning transfer in the training of centralized schedulers?

Question Two: What role do learner characteristics, specifically prior knowledge, have on the transfer of learning for the task of scheduling medical examinations?
Chapter Summary

Workplace training is becoming more prominent as employers try to improve work processes and retain employees. Often, newly hired graduates do not come to the workplace with the necessary skills to perform the job successfully. Obtaining a return-on-investment that organizations make in training has become a major priority for many organizations. There are also increasing expectations for trainers to demonstrate the link between training and organizational outcomes, to evaluate training, and to justify organizational investment in training (Shoobridge, n.d., p. 154). Given these objectives and the cost of delivering such programs, it is imperative that trainers develop and deliver training courses that will encourage transfer of learning.

In chapter two, a review of literature presents the formal and informal research regarding transfer of learning as it relates to the effectiveness of workplace training. Topics include: (a) defining transfer of learning; (b) factors influencing transfer of learning; (c) conditions for training; (d) integrating learning transfer into training; and (e) strategies to enhance the transfer of learning.
Chapter 2

REVIEW OF LITERATURE

The literature reviewed in this paper encompasses formal and informal research regarding transfer of learning as it relates to workplace training. The research material reviewed is relevant to situations, behaviors, and issues identified with workplace training. Transfer of learning was defined for the purpose of this research as “the effective application by trainees to their jobs of knowledge and skills gained as a result of attending an educational program” (Taylor, 2000, p.4).

The review of literature explored the following topics: (a) defining transfer of learning; (b) factors influencing transfer of learning; (c) conditions for training transfer; (d) integrating learning transfer into training; and (e) strategies enhancing the transfer of learning.

What is Transfer of Learning?

Most trainers aspire to the outcome of transferability of learning. From a theoretical point of view,

Transfer of Learning occurs when prior knowledge or skills affect the way in which new knowledge and skills are learned and performed. When later acquisition or performance is facilitated transfer is positive. When later acquisition or performance is impeded, transfer is negative. Transfer can be general, affecting a wide range of knowledge and skills, or specifically affecting only particular knowledge and skills within a circumscribed subject matter. If there is no transfer at all, students will need to be taught specifically every act that they will ever perform in any situation (Taylor, 2000 p. 4).

Perkins and Salomon (1992, p. 3) introduced the concept of near and far transfer.

Near transfer is when what you are teaching closely relates to another context or performance, as for instance when a garage mechanic repairs an engine in a new car, but with a design much the same as in prior models. Near transfer
of skills and knowledge are applied the same way every time the skills and knowledge are used. Near transfer training usually involves tasks that are procedural in nature, that is, tasks, which are always applied in the same order. Although this type of training is easier to train and the transfer of learning is usually a success, the learner is unlikely to be able to adapt their skills and knowledge to changes.

In far transfer the current concept is quite different from the context of learning.

Far transfer tasks involve skills and knowledge being applied in situations that change. Far transfer requires instruction where learners are trained to adapt guidelines to changing situations or environments. For instance, a chess player might apply basic strategic principles such as ‘take control of the center’ to investment practices. Although this type of training is more difficult to instruct (transfer of learning is less likely), it does allow the learner to adapt to new situations. Research argues that very often transfer does not occur, especially far transfer.

As emphasized earlier, near transfer seems easier to achieve than far transfer does. Since the 1970’s, a number of investigators have built a case for the importance of local knowledge: that is, knowledge taken in a broad sense to include skills, concepts, propositions, etc. (Perkins & Salomon, 1992).

Findings from various sources suggest that transfer happens by way of two different mechanisms (Perkins & Salomon, 1992). First, reflexive or low road transfer involves the triggering of well-practiced routines by stimulus conditions similar to those in the learning context. For example, when a person learns to drive a truck after driving a car, they find that the steering wheel, shift and other features evoke useful car driving responses. Driving the truck is almost automatic, although it is a different task in several minor ways.

Mindful or high road transfer involves deliberate, effortful abstraction and a search for connections such as during critical reflection or problem-solving exercises. Conventional educational practices often fail to establish the conditions for either
reflexive or mindful transfer. However education can be designed to honor these conditions and achieve transfer. Abundant evidence shows that very often the hoped-for transfer from learning experiences does not occur (Perkins & Salomon, 1992). Thus, the prospects and conditions for this paper are crucial educational issues.

Perkins and Salomon distinguish transfer from ordinary learning. Ordinary learning occurs when a student demonstrates certain grammar skills on an English test (ordinary learning) but not in everyday speech (the desired transfer). Thorndike (1901) concluded that transfer depended on identical elements in two performances and that most performances were simply too different from one another for much transfer to be expected.

Factors Influencing Transfer of Learning

Taylor (2000) identified a number of reasons employees either do or do not apply what they have learned as a result of attending workplace education programs. Newstrom (1986) reported that the most significant barrier from the perspective of the instructor was the lack of reinforcement to support trainees in applying training to their jobs. In other words, the instructors believed that trainees did not expend the energy to do something new because no one around them really cared.

Interference by the immediate environment is the second most powerful impediment to workplace learning mentioned in the literature. Such factors include working with time pressures, insufficient authority, ineffective work processes, and inadequate equipment. This implies that even if trainees are willing to change, they may not be able to use their new skills because of obstacles placed in their way. Supervisors hold the most significant keys to resolving the problem of transfer training. They hold the
primary responsibility for the most cited barrier – absence of reinforcement on the job for
the newly acquired skills and abilities. The third most important barrier was lack of active
support by the organizational climate for the transfer of the programs content or skills to
the workplace. The fourth most important barrier is impractical, irrelevant or poorly
designed or delivered instruction (Taylor, 2000).

In a similar vein, Kemerer (1991) suggests that factors inhibiting learning can be
organized around three areas: structural expectations, improvement skills and establishing
rewards.

Under the category of structural expectations, poor timing of the training is a
factor. Much of the adult learning theory has argued at length about readiness
as a key variable in learning. There can be little doubt that without the
perception by the trainee of the need for new behaviors, there is no
motivation to change and, therefore, no readiness to learn. Thus the
introduction of new or changed work expectations has to be timed carefully
so that participants are ready to learn when the training program is offered
(Transfer of Learning: Planning Effective Workplace Educational Programs,
p. 4).

The second category of variables that impedes learning transfer are related to
elements of the design and implementation for example, the unfocused learning
objective. According to Kemerer (1991, p. 71),

One of the best ways to inhibit the transfer of learning is to use learning
objectives that are written from the instructor’s not the learner’s point of
view; and are so specific that they sound odd and do not mirror the exact
tasks required by a job.

Another barrier to transfer of learning is that many teachers believe the goal of
instruction is to help students learn the material as efficiently as possible or the teacher is
responsible for covering each of the topics in the curriculum. The instructor makes no
attempt to demand a high level of cognition from the students. So, students become rote
learners and never bother about transferring what they have learned to other situations (Ip, 2000).

A final area that affects training transfer is the establishment of rewards. Without the application and reinforcement of new skills, new behaviors will likely diminish. In workplace education, the supervisor is a key factor in reinforcement.

In an attempt to summarize some of the literature on the topic, Caffarella (1994), categorizes these ideas into five key influencing factors including the (a) perception of program participants; (b) program design; (c) program content; (d) changes required to apply learning; and (e) organizational context.

As Ottoson (1994, p. 5) mentions,

…Program planners in workplace education have varying levels of control over the decisions they can make related to factors that influence the transfer of learning. They have the most control over program design and implementation and probably less control over organizational context. Because planners have the greatest decision making power over the design implementation of a program, it is important that instructors consider planning for transfer of learning as an integral part of the planning process.

Setting Conditions for Training Transfer

A person’s readiness for transfer to occur is apparent when he/she is aware of acquiring meanings and abilities that are widely applicable in learning and living. A person must also want to solve new problems or approach new situations and take risks in light of the insights gained through previous experience. For transfer to occur, individuals must generalize; that is, perceive common factors in different situations. They must comprehend the factors as applicable and appropriate to both situations and thereby understand how a generalization can be used, and they must desire to benefit by the
sensed commonality (Bigge & Shemis, 1992). Shoobridge (n.d.) states that transference of information from training to the job is meaningless unless an individual learns effectively.

A primary goal in developing training is to facilitate learning and transfer. Goldstein and Ford (2002) defined critical areas to be investigated by the trainer in relation to the learning environment. Instructional design elements include: (a) objectives, (b) an instructional plan, (c) learning principles, (d) trainee factors, and (e) readiness and motivation to learn. Work characteristics include: (a) opportunity for practice, (b) an organizational climate that values training, and (c) supervisor support to ensure trainees can access resources and strategies that will facilitate transfer of learning to work practice.

A model that proved helpful for this study was introduced in the literature titled “The Role and Time Model of Learning Transfer”. Broad and Newstrom (1992) developed a classification system that addresses the various factors influencing the transfer of learning. This transfer matrix, which consists of nine cells across three dimensions, assists in the understanding of the people responsible for the transfer of learning and the proper timing to support transfer. Each of these cells contains a wide range of teaching, learning, and support strategies. The authors reported that various people and groups play roles in helping transfer take place. They found that peers, coworkers, supervisors, the overall organization, the instructor, the trainees, the program planner, and others all help to facilitate transfer. From this evidence three major roles came into play, which may be important to this study. First, instructors can be instrumental in facilitating transfer. Their influences extend in many ways to the trainees
both directly and indirectly, through quality and relevant training. The following are examples of how workplace instructors can enhance the transfer of learning before, during, and after the training session: (1) involve supervisors and trainees in the program development, (2) design instruction systematically, (3) provide practice opportunities, (4) develop trainee readiness, (5) design a peer coaching component for the program, (6) develop application-oriented objectives, (7) answer the “what’s in it for me” question, (8) give individualized feedback, (9) provide job performance aids, (10), provide follow-up support, (11) conduct evaluation surveys and provide feedback, (12) develop recognition strategies, and (13) provide refresher sessions (“Transfer of Learning: Planning Effective Workplace Education Programs,” n.d.).

Second, the trainees are often central figures as they choose whether to: (a) come forward with areas which need improvement, (b) attend the training, (c) open themselves up to new learning, and (d) make commitments to change and carry them out. Further, they bring with them into training a variety of abilities, motivational desires, and career aspirations that need to be considered. A third person who plays a role is the manager or supervisor. In general, management is a powerful factor in inducing or constraining change and is a focal point of control. Outside the role of the manager, there are many other factors that influence the transfer process: the external environment, economic conditions, the organization’s structure, upper management and peers, the culture, and the reward system (Taylor, 2000).

Integrating Learning Transfer into Training

To integrate learning transfer into the planning process of workplace education programs, a number of important areas demand consideration such as when transfer
strategies should be employed, who are the key players involved, and how it can best be facilitated. For example, when do barriers to learning transfer usually arise? Broad and Newstrom, 1992, state that the three time periods were before, during, and after the training occurs. Barriers to transfer of learning were to some degree a problem throughout the three major time periods affecting the training process. However, the most likely period in which barriers tend to arise appeared in the category after training occurs. Next, which source or role is primarily responsible for the barrier? Four sources of responsibility were identified: the trainees themselves, the instructor, the direct supervisor of the trainee, and the organization in general (Broad & Newstrom, 1992). Supervisors hold the most significant keys to resolving the problem of transfer of training. Finally, how can learning transfer be facilitated? It is possible to teach for transfer. Some patterns that emerged in studies of effective transfer instruction include modeling practice, providing feedback, and using cooperative learning groups (Transfer of Learning: Planning Effective Workplace Education Programs, pp. 8-9).

Strategies to Enhance the Transfer of Learning

An article titled “Transfer of Learning” (Clark, 2000) stated: “in order to produce positive transfer of learning, an instructor needs to practice under a variety of conditions – task variation.” If learners have no practice in transferring their newly acquired skills and knowledge, they will have trouble transferring their learning when they return to the job as most work environments are neutral toward the transfer of new skills. That is, they do very little to encourage the transfer of learning. A trainer should provide as many different tasks and conditions for the trainee in the learning environment as possible in
In order to practice the newly acquired skills and knowledge. The two main principles that
work with transfer of learning are the variation should not be too easy, and the shift or
transfer should be progressive but rapid. People improve in their ability to learn new
skills more proficiently because of prior practice on a series of related tasks. This helps to
acquire new views on a topic by looking at the task from different approaches, which
strengthen understanding of the topic.

Perkins and Salomon (1988) introduced two broad mediation strategies for
transfer that they call “hugging” and “bridging.” Hugging serves an automatic kind of
reflexive transfer. It involves making the learning experience similar to the situations to
which one wants transfer to occur. Strategies that belong to this category include setting
expectations, matching, simulating, modeling, and problem-based learning (Fogarty,
1991). Cooperative learning groups can also help in the learning transfer. Cooperative
learning usually involves two or more students working together to improve their
understanding of text or to retain material in texts. Bridging serves reflective transfer.
Bridging means helping students to make generalizations, monitor their thinking, and be
thoughtful in other ways that foster mindful connection making. Strategies involved are
anticipating application, generalizing concepts, using analogies, parallel problem solving,
and metacognitive reflection (Fogarty et al., 1991). From the literature, it also became
evident that successful transfer practices occur at different times (Gist, Bavetta, &
Stevens, 1990).

Gardner and Korth (1997) advocate utilizing Kolb’s experiential learning theory
(1984) as the most appropriate and theoretically sound framework to design courses and
facilitate the student’s transferring learning to the workplace.
Transfer of Learning and Training at Memorial Hospital

After reviewing the learning transfer literature, questions surfaced about what could have caused the failure of learning transfer in the training for centralized schedulers. One assumption based upon the instructional design process is that each scheduler could apply the information received every time he processed a scheduling call without regard for the concepts of near, far, high road, and low road transfer. For example, every scheduling situation is different for the same radiology procedure depending on the patient's physician, the diagnosis, and any other complication that the patient may present. As previously discussed, Thorndike (1901) concluded that transfer depended on "identical elements" in two performances and that most performances were simply too different from one another for much transfer to be expected. Some investigators have urged that learning be highly situated; that is, finely adapted to the context. They offer a situated learning view of transfer in which transfer depends on similar opportunities for actions across situations that may be very different superficially. If this is all true, it becomes even more imperative that this researcher investigate factors contributing to the failure of learning transfer in order to improve the chances for trainees who are involved in complex work situations to transfer their learning from training situations to their work environment in a positive manner. Is there something the researcher could initiate to change the learning outcome with a positive result? What specific factors contributed to the failure of learning transfer in the training of centralized schedulers?
Measuring Learning Transfer

The increased attention to the transfer problem in recent years has resulted in significant literature and research on training outcomes within the contexts of modern workplaces. However, the amount of actual research on strategies of facilitating transfer of formal employee training is still limited (Subedi, 2004). Research for transfer is both important and timely. It is important because of the pivotal role that transfer plays in education. Yet, we are only beginning to see how to do relevant research.

The work of behaviorist psychologists (Thorndike, Pavlov, & Skinner) influenced early research and experiments on transfer and emphasized whether transfer did occur. Contemporary research in transfer of training is generally aimed at determining why transfer occurs – that is, discovering the exact variables that influence transfer (Subedi, 2004).

A survey of top executives by Kotter (1988) reported four major factors that frequently inhibited the success of training and development efforts to improve the performance of managers: (a) lack of involvement by top management in the behavioral change process, (b) new efforts to improve were too centralized in the top echelons of the organization, resulting in little acceptance by lower-level participants, (c) new efforts to improve employee behavior were believed by executives to be too staff centered, with insufficient participation by direct users, and (d) executives believed that expectations from the training programs were often too unrealistic: too much was expected too soon (Kotter, 1988, p. 113).
In another investigation, Newstrom (1986) studied transfer barriers in two stages. A group of twenty-four trainers identified the major impediments to the successful transfer of training in their organizations. Newstrom classified their responses into nine distinct categories. He then constructed and administered information from this questionnaire to a set of thirty-one trainers from a diverse range of organizations. Newstrom instructed these trainers to rank order the nine categories of barriers according to their perception of the relative influence against transfer. Their responses were tabulated, averaged, and used to create an overall rank-ordered list of the most potent impediments to transfer of training. Their responses were classified into nine distinct categories:

1. Lack of reinforcement on the job.
2. Interference from immediate (work) environment.
4. Trainees’ perception of impractical training programs.
5. Trainees’ perception of irrelevant training contents.
6. Trainees’ discomfort with change and associated effort.
7. Separation from inspiration or support of trainer.
8. Trainees’ perception of poorly designed/delivered training.

Subsequently, some researchers applied Broad’s model in their research. Taylor (2000) performed a qualitative exploratory study in which eleven workplace literacy programs were purposely selected. Participants for the study were recruited from three different types of program stakeholders – the instructor, the trainee, and the workplace supervisor. Interview schedules were devised for each of the three groups of stakeholders
based on the transfer of learning literature and interviews with experts from North America. Questions that centered on Broad’s model for using transfer strategies were also incorporated into each interview schedule. The schedules were then piloted and further revised. Several methods of data collection were employed in this exploratory study including field studies. Research coordinators also kept field and observation notes and submitted these research diaries along with their interview data (Taylor, 2000). The results of the study described some of the common transfer strategies implemented by instructors, trainees, and supervisors across a variety of basic skills programs. A number of significant barriers influencing the transfer of learning were identified which shed some light as to why trainees are not always able to apply newly learned skills to their jobs. Together these findings have implications for practice in workplace literacy and for further research in the area of transfer.

Burke, Jones, and Doherty (2005) analyzed students’ perceptions of transferable skills via undergraduate degree programs. Their investigation had two objectives: the first was to assess students’ perceptions of the knowledge and skills acquired during their undergraduate program; the second objective was to evaluate perceived effectiveness of the strategies adopted in respect of learning transfer. Data collection undertaken used a self-completion questionnaire. The findings demonstrated that students perceived that they had acquired a variety of skills as a result of their undergraduate work. In addition, the strategies adopted in respect of learning transfer were communication, interaction with others, and applied knowledge (Burke, Jones, & Doherty, 2005).

Finally, one can also analyze training programs by utilizing Kirkpatrick’s Four Levels of Evaluation. Kirkpatrick states that, “any training can be evaluated at four
progressive levels” (Kirkpatrick, 1979, p.78-92). Level I “reaction” is a measure of learner’s reactions to the course. Level II “learning” is a measure of what they learned. Level II “transfer” is a measure of changes in behavior when they return to the job after the training program. Finally, Level IV “results” is a measure of the business outcomes that occur because they are doing their jobs differently.

Chapter Summary

It is important to take note of some of the important observations and conclusions that have been derived from the review of the literature. First, transferability of learning is an outcome to which most trainers aspire. Effective learning transfer requires the educator to consider the effects of near and far transfer, reflexive or low road transfer and mindful or high road transfer.

Second, a number of factors influence transfer of learning; for example, Newstrom (1986) reported the most significant individuals to influence transfer of learning are trainers, trainees, and the supervisors/organization. In a similar vein, Kemerer (1991) suggests that one can organize factors inhibiting learning around three areas: structural expectations, improvement skills, and establishing rewards.

Third, it is important to set conditions for training transfer. Goldstein and Ford (2002) defined critical areas to be investigated by the trainer in relation to the learning environment: instructional design, and work characteristics. Finally, the literature presented strategies to enhance the transfer of learning. Perkins and Salomon introduced strategies such as hugging and bridging.

Most articles lacked evidence of background research on actual research strategies to facilitate transfer learning in formal employee training. There is an emerging
awareness of the need to perform research in this area. As a result of the limited research into actual research strategies to facilitate transfer learning, the researcher’s failure to foster transfer of learning in the schedulers at Memorial Hospital Centralized Scheduling, and the proven need to employers for trainers to provide this type of learning transfer in any training program, this researcher chose to investigate learning transfer through both quantitative and qualitative research utilizing the schedulers from Memorial Hospital Centralized Scheduling Department. Chapter three describes the methods in which the researcher investigated learning transfer in order to make a positive difference in workplace training programs.
Measuring the actual transfer of learning to the workplace from any instruction is challenging. In addition, some literature states that an educator can do nothing to ensure effective learning. Learners must decide to undergo the process, otherwise educators indoctrinate and coerce rather than educate. For the researcher, information such as this was frustrating. As a result, the purpose of this study was to investigate factors influencing transfer of learning in workplace training programs, specifically the following research questions:

Question One: What specific factors contributed to the failure of learning transfer in the training of centralized schedulers?

Question Two: What role do learner characteristics, specifically prior knowledge, have on the transfer of learning for the task of scheduling medical examinations?

Prior to this study, this researcher relied on self-reports by the students on the application of their learning. In addition, as a result of the working situation, this researcher had an extended opportunity to hear about the scheduler’s progress or difficulties in transferring this learning to the workplace through daily interactions with the radiology department and management.

Procedures

This study was a qualitative and quantitative research study. Through the use of surveys, interviews, observation, and an analysis of audit forms, this study identified factors that influence failure of learning transfer in the training of centralized schedulers and the role of prior knowledge in learning transfer. To strengthen the study, multiple
methods were selected, including both quantitative and qualitative approaches. Triangulation methods were applied to improve the validity and the reliability of the research. Triangulation also helped control bias and establish valid propositions. In order to strengthen the chances of obtaining the richest data possible, four methods were utilized including (a) audits, (b) surveys, (c) follow-up interviews, and (d) observation. All reasonable efforts were made to assure reliability and validity. For example, the researcher developed a relationship with the potential participants through the educational sessions and was available for questions when needed. This helped to build a trusting relationship. Next, the researcher maintained a journal to enhance self-reflection. Third, the researcher made sure the data collection was thorough. Finally, the researcher developed instruments that accurately measured the concepts that they were intended to measure.

Selection of Participants

The cluster-based sample was drawn from centralized schedulers and administrators who completed the scheduler training. Their experiences with centralized scheduling and transfer of learning were examined. First, an email was sent to the administrator of the department, the manager, and the direct supervisor to request their permission to have their employees participate in this study. After receiving permission from management, the researcher personally gave each of the participants a letter at their monthly staff meeting. The letter stated the nature of the study and a request for them to participate in the study. Participating in the study was purely optional. Those who agreed to participate signed an informed consent. Data was gathered and examined only from the participants from whom consent had been granted. Confidentiality of the participants
was assured by assigning each participant with a unique identifier to ensure their identity was protected. Background information regarding number of years in centralized scheduling, approximate age and sex of participant was surveyed and incorporated with the results.

Audits from Memorial Hospital Radiology Department were collected and analyzed (Appendix D) for participants who completed the training and agreed to participate in the study. Only forms depicting mistakes from exams that were presented in the educational sessions were collected. A technologist from each relevant modality filled out the audit reports when an error occurred. The technologists were made aware of the importance of being objective and consistent when documenting mistakes.

An informant who was typical of the group of schedulers also conducted audits. The informant only audited calls that were related to the four educational sessions presented. The informant was a professional with appropriate training in management and quality assurance, which allowed her access to all records and strengthened any argument against bias.

The researcher, a subject matter expert in radiology, conducted a structured, non-participant observation. Finally, the researcher asked the schedulers to participate in a survey and follow-up interview.

Validity of Subjects as Participants

Individuals who participated in the training were unaware of this research. The relationship between the researcher and participants, prior to this study, had been through instructional sessions that had been interactive enough for rapport to exist. Only data from those participants who provided consent was included in the study. To insure the
investigation’s validity and to maintain objectivity, the researcher employed the following methods of research: (1) observation; (2) the sound expertise of the auditor to provide quantitative data that insured more validity to the study, helping to avoid researcher bias, guiding, and cues that can impact the validity and reliability of the data collection; (3) a survey questionnaire; and, (4) a follow-up interview.

Measures

*Survey Questionnaire*

This researcher developed and administered a survey questionnaire with accompanying instructions to each participant (Appendix C). The purpose of the questionnaire was to collect data in the words of the participants regarding retention of information presented and reasons for and against the ability to utilize the information presented in each educational session. Open-ended questions were used in the survey to gather as much information as possible. The questions were as clear and concise as possible to decrease the chances of respondents misunderstanding what was being asked. The respondents will be identified for purposes of follow-up interviews. A high response rate is the key to legitimizing a survey’s results. Baabie (2004, p. 261) reports that a response rate of fifty percent is adequate for analysis. A response rate of sixty percent is good; a response rate of seventy percent is very good. However, he also emphasizes that these are only rough guides; that they have no statistical basis, and that a demonstrated lack of response bias is far more important than a high response rate. To increase the chances of eliciting responses from a large percentage of the target population, survey distribution occurred at a staff meeting. The time to complete the survey was provided at the staff meeting or, if chosen, in private, respondents returned the surveys in a self-
addressed stamped envelope to the researcher. During the meeting, the researcher explained the survey and the importance of the questionnaire. The participants received notification about how the data would be used; the researcher also thanked the participants in advance for being a part of the research. Any potential participants not attending the meeting were given the opportunity to participate in the study by receiving the information through their manager.

*Follow Up Interview*

The importance of follow-up cannot be overstated. Six participants were interviewed in order to clarify answers from the questionnaire they had completed and returned. Each questionnaire was matched to the interview. Both closed and open-ended questions were used in the follow up interview. Each interview lasted fifteen minutes or less.

*Observation*

A careful, structured, non-participant observation of six participating schedulers exhibiting behavior in a particular scheduling situation in order to assess changed work behaviors and the specific situations in which they occur was conducted to research possible factors that may have contributed to the failure of learning transfer in the training of centralized schedulers (Appendix F). Six schedulers were selected as a result of the time limitations of this study. Direct observation helped the researcher understand the nature of scheduling and any problems or successes. The researcher looked for information of which the respondents might not have been aware, not recall or wish to divulge. In addition, field notes were taken and transcribed after each session. Efforts were made not to influence the subject’s behavior any more than was absolutely
necessary by not interfering with any conversation the scheduler had with any client. In addition, the researcher limited the number of questions asked.

*Audit Form*

An audit form with accompanying instructions (see Appendix D) developed by the manager of centralized scheduling was given to each department in radiology. The purpose of the form was to collect data on scheduling mistakes that were happening in each respective imaging modality. To maintain validity and reliability, an email was sent out to request that information be objectively and consistently filled out and collected. The radiology department agreed to comply with this request. All forms were collected daily by the researcher and analyzed. Only error information pertaining to the content discussed in the four educational sessions was analyzed.

In addition, a quality assurance individual (informant) in the centralized scheduling department (Appendix E) conducted an audit on each individual scheduler. Key areas that were investigated were: correct demographic information, correct physician, correct procedure, complete physician order, complete diagnosis including ICD-9 code if on physician order, Health Insurance Portability and Accountability Act (HIPPA), patient engagement, all pertinent information given to patient, and did the scheduler’s ability to speak clearly and professionally. An example of a baseline audit consisting of four charts/telephone calls is included in table 2. In October 2005, the auditor randomly pulled ten charts/telephone calls (Table 2). Charts that were pulled did not correlate with the educational presentations given; as a result, the information presented in Table 2 is skewed.
Table 2. Audit Findings

<table>
<thead>
<tr>
<th></th>
<th>Baseline 2005</th>
<th>October-05</th>
<th>January-05</th>
<th>Apr-05</th>
<th>Jul-05</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>95.0%</td>
<td>95.0%</td>
<td>99.3%</td>
<td>99.7%</td>
<td>99.3%</td>
<td>95.0%</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>99.3%</td>
<td>98.8%</td>
<td>99.7%</td>
<td>98.8%</td>
<td>99.7%</td>
</tr>
<tr>
<td></td>
<td>97.8%</td>
<td>98.8%</td>
<td>93.6%</td>
<td>98.8%</td>
<td>93.6%</td>
<td>98.8%</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>93.6%</td>
<td>90.8%</td>
<td>98.8%</td>
<td>90.8%</td>
<td>98.8%</td>
</tr>
<tr>
<td></td>
<td>97.3%</td>
<td>90.8%</td>
<td>99.2%</td>
<td>98.6%</td>
<td>99.2%</td>
<td>98.6%</td>
</tr>
<tr>
<td></td>
<td>98.0%</td>
<td>99.2%</td>
<td>95.8%</td>
<td>98.6%</td>
<td>95.8%</td>
<td>98.6%</td>
</tr>
<tr>
<td></td>
<td>95.0%</td>
<td>95.8%</td>
<td>97.2%</td>
<td>96.9%</td>
<td>97.2%</td>
<td>96.9%</td>
</tr>
<tr>
<td></td>
<td>99.0%</td>
<td>96.8%</td>
<td>n/a</td>
<td>97.8%</td>
<td>96.8%</td>
<td>97.8%</td>
</tr>
<tr>
<td></td>
<td>93.9%</td>
<td>96.8%</td>
<td>n/a</td>
<td>95.0%</td>
<td>96.8%</td>
<td>95.0%</td>
</tr>
<tr>
<td></td>
<td>97.5%</td>
<td>94.4%</td>
<td>n/a</td>
<td>97.9%</td>
<td>94.4%</td>
<td>97.9%</td>
</tr>
<tr>
<td></td>
<td>97.0%</td>
<td>98.3%</td>
<td>n/a</td>
<td>97.3%</td>
<td>98.3%</td>
<td>97.3%</td>
</tr>
<tr>
<td></td>
<td>97.0%</td>
<td>97.6%</td>
<td>n/a</td>
<td>97.3%</td>
<td>97.6%</td>
<td>97.3%</td>
</tr>
<tr>
<td></td>
<td>96.0%</td>
<td>98.5%</td>
<td>n/a</td>
<td>97.3%</td>
<td>98.5%</td>
<td>97.3%</td>
</tr>
<tr>
<td>n/a</td>
<td>90.2%</td>
<td>90.2%</td>
<td></td>
<td>90.2%</td>
<td>90.2%</td>
<td>90.2%</td>
</tr>
<tr>
<td></td>
<td>94.0%</td>
<td>92.0%</td>
<td></td>
<td>93.0%</td>
<td>92.0%</td>
<td>93.0%</td>
</tr>
<tr>
<td></td>
<td>97.0%</td>
<td>96.4%</td>
<td></td>
<td>96.7%</td>
<td>96.4%</td>
<td>96.7%</td>
</tr>
<tr>
<td></td>
<td>99.5%</td>
<td>96.8%</td>
<td></td>
<td>98.2%</td>
<td>96.8%</td>
<td>98.2%</td>
</tr>
<tr>
<td></td>
<td>97.0%</td>
<td>98.1%</td>
<td></td>
<td>97.9%</td>
<td>98.1%</td>
<td>97.9%</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>97.4%</td>
<td></td>
<td>98.7%</td>
<td>97.4%</td>
<td>98.7%</td>
</tr>
<tr>
<td></td>
<td>99.0%</td>
<td>94.4%</td>
<td></td>
<td>96.7%</td>
<td>94.4%</td>
<td>96.7%</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>97.2%</td>
<td></td>
<td>98.6%</td>
<td>97.2%</td>
<td>98.6%</td>
</tr>
<tr>
<td></td>
<td>98.5%</td>
<td>97.2%</td>
<td></td>
<td>97.9%</td>
<td>97.2%</td>
<td>97.9%</td>
</tr>
<tr>
<td></td>
<td>91.5%</td>
<td>96.0%</td>
<td></td>
<td>93.8%</td>
<td>96.0%</td>
<td>93.8%</td>
</tr>
<tr>
<td></td>
<td>96.7%</td>
<td>97.6%</td>
<td></td>
<td>97.2%</td>
<td>97.6%</td>
<td>97.2%</td>
</tr>
<tr>
<td></td>
<td>97.3%</td>
<td>98.4%</td>
<td></td>
<td>96.9%</td>
<td>98.4%</td>
<td>96.9%</td>
</tr>
</tbody>
</table>

Average: 97.3% 96.2% 0.0% 0.0% 0.0% 96.8%

Outstanding: 97% - 100%
Proficient: 86% - 96%
Acceptable: 71% - 85%
Unacceptable: 65%

Department Average: 97.3% 98.2%
For the purpose of the study, the auditor (informant) agreed to pull charts during the period from January 2006 through March 2006 that correlated study participants with the four educational presentations. Information was collected from the auditor on a monthly basis, archived for access, and analyzed at a later date using basic procedures such as the measure of central tendency or the arithmetic mean and mode.

Data Collection

After having received the signed consent forms from each participant, data from the Audit Form and the PHS Form was collected January 2, 2006 through March 31, 2006. The information during this time period was archived for access and analyzed at a later data. The survey was distributed on February 16, 2006. Follow-up interviews were conducted on April 3, 2006. Observation of participants took place between April 3 and April 7, 2006.

Analysis of Data

Once the data had been completed and collected, it was analyzed and organized. The data from the survey was collated, organized, summarized and described. In addition to measuring means, correlations were made and tables created. A narrative form was used to answer the qualitative data, specifically addressing the second research question: What role do learner characteristics, specifically prior knowledge, have on transfer of learning? The researcher extracted information concerning the concept of prior knowledge and its effect on transfer of learning from all four data collection methods. First, the researcher tabulated the number of responses concerning prior knowledge from the surveys and follow-up interviews. Next, the frequency of the number of responses to each question was tabulated and correlated to the demographics of each participant.
Written narratives from the surveys were transcribed. Next, the audit results from the informant in centralized scheduling were evaluated especially at each extreme end to investigate what type of prior knowledge individuals who represented these two aspects had. Information collected from the auditor was analyzed using the arithmetic mean and mode. In addition, the original audit score each individual scheduler had prior to the four workshops was compared to the three-month audit average each individual scheduler had after the four workshops.

The concluded result of the radiology audit was also tabulated and compared to the number of procedures each imaging modality performed in the three-month period of January 2, 2006 through March 31, 2006, to obtain the percentage of error.

Finally, the transcribed notes from the observation were studied to look at correlations between prior knowledge and the success or failure of performing the scheduling task. Any observations noted of the environment of the workplace and the tools utilized to perform the job of centralized schedulers were explored to look for any correlation to relevance to transfer of learning. Data from close-ended questions from the observation form were analyzed using basic procedures such as frequency counts and cross-tabulations.

Interpretation of Data

Once the qualitative and quantitative data were analyzed and organized, the data was interpreted and documented in Chapter Four.

Chapter Summary

Learning theory of transfer of learning is so important that it is a field of research in its own right. Currently, researchers and practitioners in this field are working to
understand how to increase transfer of learning and how to teach for transfer of learning. Teaching for transfer is one of the seldom-specified but most important goals in education. Transfer does not just happen. It is a process that requires implementation of carefully planned strategies to facilitate positive transfer. It is equally important to minimize the effects of factors that are recognized as barriers or as causes of barriers to transfer. It is the hope of this researcher that by investigating the factors contributing to the failure of learning transfer in the training of centralized schedulers and the role that learner characteristics, specifically prior knowledge, have on transfer of learning for the task of scheduling medical examinations, current research will be strengthened and workplace training programs will become more valuable to organizations.
Chapter 4

RESULTS

Transfer of learning is an important aspect to any corporate training. Workplace training is becoming more prominent as employers try to improve work processes and retain employees. How much do organizations spend for training? Carnevale and Gainer estimate that U.S. employers, both public and private, spend close to $30 billion annually on direct costs of formal training (design and delivery of training and job-related tuition reimbursement). This does not include indirect costs such as trainee salaries and costs of training facilities. In addition, U.S. employers spend $90 and $180 billion on less-structured informal training (1989). At least $50 billion in both direct and indirect costs is invested annually in the United States in formal training to improve employee performance in the present job (As quoted in Broad & Newstrom, 1992, pp. 5-6).

Do organizations get full value for their investments in training? That is, is the training they pay for fully transferred to the job? The aim of this study was to investigate factors influencing transfer of learning in workplace training programs specifically:

1. What specific factors contributed to the failure of learning transfer in training of centralized schedulers?

2. What role do learner characteristics, specifically prior knowledge, have on the transfer of learning for the task of scheduling medical examinations?

Both qualitative and quantitative research was used in this study. A triangulation method of research and data collection was used to improve the validity and the reliability of the research. Triangulation also helped control bias and establish valid
propositions. Data sources included: (a) a survey distributed to staff schedulers, (b) audit of error reports (c) observation, and (d) follow-up interviews.

Sample

Thirteen professional schedulers out of twenty-eight from a medical hospital participated in the study. Participating in the study was purely optional and an informed consent was signed. Confidentiality of the participants was assured and, at the request of participants, videotaping was not used. Soft copy documentation was received from all participants. Note taking was utilized during the observation and interview process. Follow-up interviews ranged from fifteen to thirty minutes. Background information on each participant regarding number of years each participant had worked in centralized scheduling, years of scheduling experience, level of education, and the number of workshops each participant attended are described below.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Years in centralized scheduling</th>
<th>Type of Experience</th>
<th>Level of Education</th>
<th>Number of workshops attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>#4</td>
<td>3-5 years</td>
<td>Staff</td>
<td>HS diploma/GED</td>
<td>Scheduling contrast and Mammography</td>
</tr>
<tr>
<td>#7</td>
<td>5-10 years</td>
<td>Trainer</td>
<td>2-year College</td>
<td>All</td>
</tr>
<tr>
<td>#8</td>
<td>1-3 years</td>
<td>Staff</td>
<td>4-year college</td>
<td>All</td>
</tr>
<tr>
<td>#10</td>
<td>5-10 years</td>
<td>Trainer</td>
<td>2-year college</td>
<td>All</td>
</tr>
<tr>
<td>#15</td>
<td>7 mo. – 1 year</td>
<td>Staff</td>
<td>4-year college</td>
<td>All</td>
</tr>
<tr>
<td>#17</td>
<td>3-5 years</td>
<td>Staff</td>
<td>HS diploma/GED</td>
<td>None</td>
</tr>
<tr>
<td>#19</td>
<td>5-10 years</td>
<td>Staff-RN</td>
<td>4-year college</td>
<td>All</td>
</tr>
<tr>
<td>#21</td>
<td>1-3 years</td>
<td>Trainer</td>
<td>2-year college</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>#22</td>
<td>5-10 years</td>
<td>Staff</td>
<td>HS diploma/GED, some college</td>
<td>All</td>
</tr>
<tr>
<td>#24</td>
<td>5-10 years</td>
<td>Staff</td>
<td>4-year college</td>
<td>All</td>
</tr>
<tr>
<td>#23</td>
<td>1-3 years</td>
<td>Trainer</td>
<td>2-year college</td>
<td>All</td>
</tr>
<tr>
<td>#27</td>
<td>5-10 years</td>
<td>Staff</td>
<td>2-year college &amp; MRI</td>
<td>All</td>
</tr>
<tr>
<td>#29</td>
<td>1-3 years</td>
<td>Staff</td>
<td>4-year college &amp; MRI</td>
<td>All</td>
</tr>
</tbody>
</table>

After analyzing the demographic data and the number of people who attended the workshops and participated in the study, two themes were apparent:

1. Theme one: Participation was less than expected.

2. Theme two: Most schedulers who participated in the study have been in their job longer than one year, and have a college education.

Procedures

A twenty-four-question survey was presented and distributed to all schedulers attending a mandatory staff meeting. Additional surveys were left with the department manager to hand out to those individuals unable to attend the staff meeting. The questions were designed around two major studies on barriers of transfer training identified in books by Broad and Newstrom (1992) and Kotter (1988). Based upon the two studies, a question survey was written and disseminated to each medical scheduler (Appendix B).
Data Collection and Analysis

Surveys
In order to maintain the utmost anonymity, participant responses are not identified with a particular member. Analysis of the survey is as follows

Demographics. The first six questions of the survey comprised demographic data. Results of the demographic data are reported in Table 1.

Educational sessions. One-half of the medical schedulers were involved in deciding the content of the educational sessions.

Management or work environment. Seven questions were asked regarding management or the environment. For example, 81.8% of schedulers surveyed felt the environment in which they worked supported them in their learning process. Also, 72.7% of schedulers participating in the survey reported they believed management reinforced and supported them in applying their new training to their job. In addition, 91% reported that work and time pressure affected their job and transfer of learning. Next, 72.7% reported ineffective work processes limiting their ability to do their job successfully. As well, 72.7% believed the equipment was adequate to perform their job successfully. Every scheduler participating in the survey felt he was given the opportunity and the time to use the new knowledge and skills at the work place. Finally, 81.1% felt their department valued training.

The above data correlates to the top three responses in Newstrom’s (1992) rank-ordered list of the most potent impediments to transfer of training according to trainers’ perceptions of barriers to transfer:

1. Lack of reinforcement on the job.
2. Interference from immediate (work) environment.


_Trainer._ Six questions from the survey dealt with how the training and the trainer were perceived. For example, 92% of the schedulers surveyed felt the educational sessions were practical. Every scheduler participating in the survey thought the training was not only relevant to his daily work, but also the training was professionally designed and delivered. The total surveyed group believed the sessions were long enough to cover the material they thought they needed to learn. Also, 27% said it would have been helpful for Elaine Ivan to be available after training to support their application of the training material. Yet, 36% stated it would not have been helpful because Elaine did a good job of presenting and left them with notes to reference if needed. Finally, 36% of the participants selected “no opinion” to the same question. The entire group of participants did not believe too much time had elapsed from each educational workshop to when the opportunity arose to apply their learned skills. Next, 63.6% felt that given the time of day the sessions were offered they were ready and motivated to learn. However, 16.6% felt it was too late in the day after working. Less than 1% had no opinion on the same questions. Finally, 36% did not feel scheduling situations were too different from one another to transfer one concept to another; yet, 45% of the participating schedulers had no opinion and less than 10% said yes to the same question.

The above data relates to what Newstrom (1992) states are the fourth, fifth, and seventh of his rank-ordered list of the most potent impediments to transfer of training:

1. Trainees’ perception of impractical training programs.

2. Trainees’ perception of irrelevant training contents.
3. Separation from inspiration or support of trainer.

*Trainee’s responsibility to the learning experience.* Six questions on the survey dealt with trainees’ responsibility to the learning experience. When asked about change, 63.6% of the participating medical schedulers reported that they were comfortable with change and the associated effort it took to be successful with change. In regard to co-worker support, 45.45% stated that co-workers were supportive of one another and the knowledge they received from educational settings; yet were pressured from their peers to resist change. In reference to previous knowledge, 54.5% reported that prior knowledge of scheduling radiology exams benefited them in their ability to learn new material. Yet, 18% stated it had no impact, stating the material presented merely enhanced their prior knowledge. The complete group of surveyed schedulers was able to build on their previous knowledge and skills. In addition, 100% of the medical schedulers were committed to using their training.

The above data represents the sixth and ninth most powerful impediment to transfer as reported by Newstrom (1992):

1. Trainees’ discomfort with change and associated effort.
2. Pressures from peers to resist change.

The trainees are often the central figures, as they choose (consciously or unconsciously) whether to admit deficiencies, attend the training, avail themselves of new learning, make commitments to change, and carry them out. The average attendance at each workshop was fifteen. Further, they bring with them into training an array of talents, abilities, backgrounds, cultures, motivational desires, and career aspirations that need to be considered. Trainees will always be key role players in the transfer process.
**Observations**

The researcher spent an average of two hours with six different schedulers at their designated work cubicles. Five out of the six observed also participated in the survey. During each observation, notes were taken and compiled. At the end of the observation period, an analysis was performed and several common issues were noted.

Four medical schedulers observed had worked in the department for greater than one year. In each of the two hours the researcher observed, three out of the four never read the prep screens. In addition, five out of the six schedulers during each two-hour period never used the radiology hint pages on how to schedule an exam. Was this the reason the researcher witnessed that in several exams scheduled patients were given the wrong preparation for the radiology exam?

The researcher was able to monitor the number of calls each scheduler averaged. Each individual averaged eighty-nine calls in an eight-hour workday. During observation, the researcher detected the need for each scheduler to have a vast array of knowledge in order to be successful in his job. Each scheduler received numerous calls on issues that had nothing to do with scheduling.

It was notable during the researcher’s observation that each scheduler was limited in his ability to question a patient properly to gather the appropriate information needed to schedule a procedure. For example, some schedulers talked the patient into things or transferred their fear of a procedure to the caller. Many schedulers had difficulty knowing when to question further to obtain important information. Two of the six schedulers interviewed had worked in their position less than a year. Both of them often had to leave their cubicle to receive assistance from the trainer. Scheduling
mammography exams was reported as being “difficult” for over half the participants. Schedulers had to be able to multitask. As a result of their lack of understanding of the field of radiology, schedulers reported that they had difficulty knowing how exams correlate with one another.

Several findings from the observation stage of the research correlated with the data collected from the surveys. For example, each scheduler averaged a large number of calls in an eight-hour day. This correlated with question 18 on the survey, 91% alleged that work and time pressures affected their job and transfer of learning. Further, 72.7% stated that there were ineffective worked processes limiting their ability to do their job affectively.

**Audits**

Two audits were conducted in the centralized scheduling department and the radiology department. The results from the audits assisted in validating the study. In addition, this data helped avoid researcher bias, guiding, and cues that might impact the validity and reliability of the data collection.

An audit of all medical schedulers was conducted for a three-month period by a staff member in the centralized scheduling department whose emphasis is on quality control (Appendix E); 90% of the exams audited were procedures that fell into one of the categories the researcher taught. Sixty procedures were examined for each scheduler. A quality assurance audit form developed by the centralized scheduling department was used. The criterion for the centralized scheduling department is presented in Table 2.
The Centralized Scheduling Department manager set a goal of ninety-eight percent for each staff member to achieve. She reported that she believed the members of her department constantly needed to work to improve themselves. In her belief, if you set the goal high enough, people will strive to meet it.

The results of the audit for the three-month period January through March are indicated in Table 3.

Table 2. Criterion for Performance

<table>
<thead>
<tr>
<th>Performance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding</td>
<td>97-100%</td>
</tr>
<tr>
<td>Proficient</td>
<td>86%-96%</td>
</tr>
<tr>
<td>Acceptable</td>
<td>71%-85%</td>
</tr>
<tr>
<td>Unacceptable</td>
<td>65%</td>
</tr>
</tbody>
</table>

Table 3. Audit results

<table>
<thead>
<tr>
<th>Scheduler</th>
<th>Average prior to workshops</th>
<th>January 06</th>
<th>February 06</th>
<th>March 06</th>
<th>Avg. for 3 month</th>
<th>+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>95%</td>
<td>95%</td>
<td>99.4%</td>
<td>99.3%</td>
<td>97.9%</td>
<td>+2.9</td>
</tr>
<tr>
<td>#2</td>
<td>100%</td>
<td>99.4%</td>
<td>100%</td>
<td>99.3%</td>
<td>99.5667</td>
<td>-.433</td>
</tr>
<tr>
<td>#3</td>
<td>97.8%</td>
<td>98.8%</td>
<td>96.4%</td>
<td>98.9%</td>
<td>98%</td>
<td>+.23</td>
</tr>
<tr>
<td>#4</td>
<td>100%</td>
<td>93.6%</td>
<td>92.0%</td>
<td>97.3%</td>
<td>94.3</td>
<td>-5.7</td>
</tr>
<tr>
<td>#5</td>
<td>97.3</td>
<td>90.8</td>
<td>95.8</td>
<td>96.6%</td>
<td>94.4%</td>
<td>-2.9</td>
</tr>
<tr>
<td>#6</td>
<td>98</td>
<td>99.2</td>
<td>97.6</td>
<td>97.8</td>
<td>98.2</td>
<td>+.2</td>
</tr>
<tr>
<td>#7</td>
<td>98</td>
<td>95.8</td>
<td>93</td>
<td>97.1</td>
<td>95.267</td>
<td>-2.7</td>
</tr>
<tr>
<td>#8</td>
<td>96.5</td>
<td>97.2</td>
<td>94.4</td>
<td>99.1</td>
<td>96.9</td>
<td>+.4</td>
</tr>
<tr>
<td>#</td>
<td>Value1</td>
<td>Value2</td>
<td>Value3</td>
<td>Value4</td>
<td>Value5</td>
<td>Value6</td>
</tr>
<tr>
<td>-----</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>#9</td>
<td>99</td>
<td>96.8</td>
<td>96</td>
<td>N/A</td>
<td>96.4</td>
<td>-2.6</td>
</tr>
<tr>
<td>#10</td>
<td>93.9</td>
<td>96</td>
<td>92</td>
<td>94.9</td>
<td>94.3</td>
<td>+.4</td>
</tr>
<tr>
<td>#11</td>
<td>97.5</td>
<td>94.4</td>
<td>97</td>
<td>97.9</td>
<td>96.43</td>
<td>-1.06</td>
</tr>
<tr>
<td>#12</td>
<td>97</td>
<td>98.8</td>
<td>92</td>
<td>96.8</td>
<td>95.867</td>
<td>-1.13</td>
</tr>
<tr>
<td>#13</td>
<td>97</td>
<td>97.6</td>
<td>92.2</td>
<td>97.1</td>
<td>95.6</td>
<td>-1.4</td>
</tr>
<tr>
<td>#14</td>
<td>96</td>
<td>98.5</td>
<td>96.6</td>
<td>98.8</td>
<td>97.967</td>
<td>+1.9</td>
</tr>
<tr>
<td>#15</td>
<td>N/A</td>
<td>90.2</td>
<td>91.2</td>
<td>97</td>
<td>92.8</td>
<td>N/A</td>
</tr>
<tr>
<td>#16</td>
<td>94</td>
<td>92</td>
<td>94.4</td>
<td>95.1</td>
<td>93.833</td>
<td>-.166</td>
</tr>
<tr>
<td>#17</td>
<td>97</td>
<td>96.4</td>
<td>96.4</td>
<td>95.7</td>
<td>96.166</td>
<td>-.833</td>
</tr>
<tr>
<td>#18</td>
<td>99.5</td>
<td>96.8</td>
<td>97.8</td>
<td>98</td>
<td>97.533</td>
<td>-1.96</td>
</tr>
<tr>
<td>#19</td>
<td>97</td>
<td>98.7</td>
<td>92</td>
<td>97.3</td>
<td>96</td>
<td>-1</td>
</tr>
<tr>
<td>#20</td>
<td>100</td>
<td>97.4</td>
<td>99.4</td>
<td>99.3</td>
<td>98.7</td>
<td>-1.3</td>
</tr>
<tr>
<td>#21</td>
<td>99</td>
<td>94.4</td>
<td>94</td>
<td>97.1</td>
<td>95.166</td>
<td>-3.83</td>
</tr>
<tr>
<td>#22</td>
<td>N/A</td>
<td>N/A</td>
<td>90.8</td>
<td>95.8</td>
<td>93.3</td>
<td>N/A</td>
</tr>
<tr>
<td>#23</td>
<td>N/A</td>
<td>N/A</td>
<td>93.4</td>
<td>96.4</td>
<td>94.9</td>
<td>N/A</td>
</tr>
<tr>
<td>#24</td>
<td>100</td>
<td>97.2</td>
<td>98</td>
<td>97.9</td>
<td>97.7</td>
<td>-2.3</td>
</tr>
<tr>
<td>#25</td>
<td>98.5</td>
<td>97.2</td>
<td>98.4</td>
<td>N/A</td>
<td>97.8</td>
<td>-.7</td>
</tr>
<tr>
<td>#26</td>
<td>91.5</td>
<td>96</td>
<td>94.6</td>
<td>96</td>
<td>95.533</td>
<td>+4.0</td>
</tr>
<tr>
<td>#27</td>
<td>96.7</td>
<td>97.6</td>
<td>93</td>
<td>N/A</td>
<td>95.3</td>
<td>-1.4</td>
</tr>
<tr>
<td>#28</td>
<td>97.3%</td>
<td>96.4%</td>
<td>90.6%</td>
<td>92.4%</td>
<td>93.133%</td>
<td>-4.1</td>
</tr>
</tbody>
</table>
The audit data indicates that 69% of the staff showed a decrease in performance. Following the breakdown of the data, the following errors were attributed to a transfer of learning problem:

1. Procedure scheduled incorrectly = 40 or 2%.
2. Required questions not answered or answered incorrectly = 72 or 4.2%.
3. Required information not documented (patient screened, insurance name, who they spoke with) = 220 or 13%.
4. Patient preparation information not given to patient = 21 or 1%.

Running concurrently with the centralized scheduling department audit was an audit completed by the outpatient radiology department (Appendix D). The staff completed Pathway Healthcare Scheduling Forms (PHS) in each radiology modality when an error occurred that was traced back to the scheduling department and a transfer of learning issue. Only errors related to the training sessions were compiled. The results are indicated in Table 4.

<table>
<thead>
<tr>
<th>Department</th>
<th>Exams performed</th>
<th>Number of error sheets</th>
<th>Percentage of error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat Scan</td>
<td>3113</td>
<td>16</td>
<td>.005139</td>
</tr>
<tr>
<td>MRI</td>
<td>2839</td>
<td>27</td>
<td>.009510</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>2753</td>
<td>5</td>
<td>.001816</td>
</tr>
<tr>
<td>Radiology</td>
<td>939</td>
<td>5</td>
<td>.005324</td>
</tr>
<tr>
<td>Nuclear Med.</td>
<td>693</td>
<td>6</td>
<td>.008658</td>
</tr>
<tr>
<td>Bone Dex</td>
<td>709</td>
<td>1</td>
<td>.001410</td>
</tr>
</tbody>
</table>
To verify the results of the above data, an interview was conducted with the coordinator from each radiology modality. All coordinators interviewed expressed that they believed the numbers reported were grossly inaccurate. When questioned further, each coordinator stated that staff did not consistently turn in the Pathway Healthcare Scheduling Forms (PHS) for every mistake during this research study; instead, they fixed the problem without reporting it. For example, the Magnetic Resonance Imaging Coordinator (MRI) acknowledged that despite instructions from the researcher, Magnetic Resonance Imaging staff only filled out a Pathway Healthcare Scheduling Form (PHS) for mistakes that weren’t caught prior to the patient arriving. The Magnetic Resonance Imaging Coordinator (MRI) affirmed that on average they fix one to two scheduling mistakes a day for an average of ninety mistakes in a three-month period. If this were true, the adjusted percent of error would be three percent. The ultrasound department coordinator also believed staff was delinquent in filling out the PHS forms. The coordinator stated they averaged eleven in the month of May 2006 alone. Adjusting the unconfirmed data in this department would change the percentage to one percent. In addition, the nuclear medicine coordinator was also frustrated as to the accuracy of the reported data. The coordinator stated they usually fix one to two mistakes a week. The last week in June 2006 they had to reschedule five patients due to scheduling errors. Adjusting for this new data would result in a 3% error. The Computed Tomography (CT) coordinator felt scheduling issues had improved. No data was available from the diagnostic radiology coordinator.
As a result, the radiology data was not chosen as a final part of this study as a consequence of its perceived inaccuracies. Thus, the conclusiveness of the study may be affected.

**Interviews**

Two separate follow-up interviews were conducted. First, interviews were conducted to summarize and clarify the survey results. Six individual interviews were conducted privately between the researcher and each of the six schedulers. Several themes emerged and are categorized by roles, as illustrated below:

**Staff Schedulers.** Theme One: Schedulers stated having previous knowledge and experience in healthcare, call centers, and/or college was a benefit to learning new material. Types of previous experience included unit clerks in the hospital, patient registrars, file room clerks in the radiology department, and call center technicians. In addition, the schedulers affirmed they were able to build on previous knowledge instead of that knowledge hindering them from learning and applying the new information.

Theme two: The schedulers confirmed that the work environment made it difficult to transfer learning. Examples given were: confining 6x6 cubicles, desks too small, monotonous job, the inability to control volume or work/phones, and not knowing one’s neighbor. Following up on a no response given to a question on the survey “Did management reinforce and support you in applying your new training to your job?” illustrates the problem. The participant stated: “I do not feel physically or mentally safe in this environment as a result of management constantly “nit-picking” which takes time away from my job and the learning process. I believe management needs to be more
supportive of the learning processes and learning curve. Personalities come into learning in a huge way and management needs to account for this.”

Two of the six people interviewed believed management reinforced and supported them in applying their new training to their job and current training was better than it had been previously.

Theme three: Schedulers stated there were work and time pressures on the job. A synopsis of the examples schedulers gave was: (1) management always wants you to do more, more, more; (2) the largest detriment to learning is the pressure to keep numbers up; (3) the department is too numbers oriented; (4) it is difficult to be on the phone and do faxes also; and finally, (5) trying to schedule complicated patients who are allergic or diabetic and still be responsible for answering other phone calls is nearly impossible.

Theme four: Schedulers confirmed ineffective work process affected their transfer of learning. To illustrate this fact, the schedulers gave several examples: (1) information about prep changes were slow to be implemented; (2) radiology patient preparations were incorrect; (3) the hints available in the computer were inadequate; (4) the new training system implemented made it limiting as to whom you could ask questions; and finally, (5) equipment is not always working properly. A question from the survey that was followed up on was “Does the environment in which you work support you in your learning environment?” An interview was completed with a participant who checked “no opinion.” The scheduler’s response was: “prior to the change in location of the department and a management change, the department was arranged so that we could bounce things off each other when the need aroused. Now, we are restricted to whom we can talk to”. In addition the scheduler explained, “Previous
management had a group of us performing one specific function of the job while another group performed another aspect. Then, we were able to bounce things off each other. Now, we are all required to do all aspects of the job which makes it difficult.”

Theme five: Schedulers stated that change is okay if they are trained properly and if they are told before the change instead of after the fact.

_Scheduling Trainers_. Theme one: The trainer stated the work environment did not support the training process. According to the trainer the reason was, “processes constantly change which do not allow time to learn, absorb, and apply before it changes again which makes it difficult because we are expected to know and apply the information. The opportunity and time we are given to use the new knowledge and skills is back at the workplace on the job not in simulated conditions first.”

Theme two: The trainer was questioned on her contradicting response to the question, “Were co-workers supportive of one another and the knowledge they received from educational setting or were there pressure from peers to resist change?” She stated, “many asked each other what they remembered about the session and there was discussion about the procedures. Yet, some resisted and did not want to accept change. Some things were more confusing because of the information offered.”

Theme three: The trainer stated there were ineffective work processes limiting a scheduler’s ability to do the job successfully. The examples the trainer gave were, useless patient preparation screens, controversy in the modalities, and unsettlement that trickles to scheduling.

Theme four: The trainer stated the work and time pressures were factors that needed to be looked into.
Theme five: The trainer stated the good knowledge base from which she had to start made it easier to grasp new things and retain them.

*Follow-up interviews based on results from the survey*

For the final stage in the data collection, a second set of interviews was done to question schedulers as to why they believed the transfer of learning issues that surfaced in the survey were apparent in the department and what, if any solutions, did schedulers have about how to fix them. The following issues that surfaced in the survey that can be barriers to transfer of learning were shared individually with six staff schedulers who did not take part in the first interview to follow-up on the surveys or may not have filled out a survey:

1. Of those surveyed, 72.7% felt that management reinforced and supported them in applying their new training to their job.

2. Of those surveyed, 91% believed that work and time pressure affected their job and transfer of learning.

3. Of those surveyed, 72.7% stated that there was ineffective work processed limiting their ability to do their job successfully.

4. Of those surveyed, 63.6% were comfortable with change and the associated effort it took to be successful with change.

5. Of those surveyed, 45.45% believed co-workers were supportive of one another and the knowledge they received from educational settings and there were pressures from their peers to resist change.

6. Of those surveyed, 54.5% felt that prior knowledge of scheduling radiology exams benefited them in their ability to learn new material.
Common themes that emerged were:

Staff Schedulers. Theme one: Five out of six interviewees stated they understood and acknowledged the time and work pressure response. For example, one participant stated: “We are pressured to have so many calls. Errors come when you are going too fast.” Another stated, “The doctors’ offices want things fast. Errors happen more from the time pressure than from a lack of understanding of the information.” Another said, “The phones are ringing constantly, and the work is very demanding. As a result, they have no time to look at help screens or learn any new information. Emphasis should be more on accuracy instead of volume.” The 91% response rate from her peers on the questions of time and work pressures were accurate she stated. “We are told to answer as many calls as we can, and the volume of calls is large.”

Theme two: Previous knowledge especially of radiology was beneficial.

Theme three: A perceived lack of co-worker support. For example, one participant stated: “We are more of a team now that we are processing things differently. Next, she agreed with the lack of co-worker support. She stated, “We do not talk to each other because there is no time to talk with each other.

Staff trainers. Theme one: Trainers giving conflicting reports. For example, one trainer stated that ineffective work processes limited her ability to do her job successfully, not time pressures. For example, “Radiology preps are not the same at all depending on what site you are scheduling the exam at. The procedures are not efficiently built. The phone systems are inadequate, and we don’t have all the tools we need to do a successful job, the scheduling department receives
confusing feedback from the radiology departments especially mammography, and finally, the Information Services and Radiology Departments built the system they use and looked at it from their perspective instead of the scheduler’s perspective”. The other trainer interviewed did not believe there were ineffective work processes, just time pressures.

Theme two: A majority of trainers believed previous knowledge was helpful in learning new material.

Theme three: Co-workers not supportive of one another. First, “as a whole, the centralized scheduling staff is not a very trusting group of people and many simply just do not care”. Second, people have the information and they don’t necessarily share it, or they don’t know if it’s okay to share it. Next, people in the department are not very accepting. For example, “the first year in the department was very difficult for me because I had previously worked in CT for nine months. I knew computed tomography (CT), but people would turn to me and say, “we are the seasoned schedulers, we know it better.”

Theme four: Management does not understand the job description of a scheduler because management has never done the job; as a result, they are not open to new ideas.

Chapter Summary
In this chapter, the results of the data collected from the participant questionnaire, observation, audit tools, and follow-up interviews were presented. Common elements were extracted from the data and presented. As a result of the study evaluating the outcome of the training efforts, the implications of the analysis are clear, a transfer of
learning problem exists in the overall training problem. In Chapter 5 the implications will be discussed.
Chapter 5

CONCLUSION

The purpose of this study was to address the following research questions:

Question One: What specific factors contributed to the failure of learning transfer in the training of centralized schedulers?

Question Two: What role do learner characteristics, specifically prior knowledge, have on the transfer of learning for the task of scheduling medical examinations?

Issues regarding transfer of learning were identified and presented in Chapter Four. Were these issues valid? Did they answer the researcher’s questions, and did they correlate with previous studies on transfer of learning?

Overview Discussion of Findings
The first purpose of this study was to examine specific factors that contributed to the failure of learning transfer of centralized schedulers. Broad and Newstrom (1992) examined the major impediments to transfer of training and classified them along two dimensions: when do the impediments arise, and what source or role is primarily responsible for the impediment? What they discovered was the majority of learning barriers appeared after the conclusion of training indicating a distinctive presence of negative threats to transfer during that time period. Second, it is more likely that barriers are more of a problem during the training program and after the training program than before the training. On the positive side, these high-barrier periods are fruitful times for improving the transfer-of-training process.

In addition, Broad and Newstrom (1992) discovered four primary roles responsible for impediments to transfer: (a) the trainees themselves, (b) the trainer, (c) the
direct manager of the trainee, and (d) the organization in general (such as top management, the trainee’s peer group, and physical factors in the work environment).

The findings from the current study “Examining Factors Affecting Transfer of Learning for Centralized Medical Schedulers in a Hospital Setting” corroborate a number of transfer of learning issues presented by Broad and Newstrom (1992) and Kotter (1988). According to the results of this study and previous research performed by Kotter, Broad and Newstrom, the specific factors that contributed to the failure of learning transfer in the training of centralized schedulers were:

1. Lack of participation in workshops, only 53.5% of the staff from the centralized medical scheduling department participated in each workshop.

2. Less than three-quarters of the centralized medical schedulers believing that the management reinforced and supported them in applying their new training.

3. Of those surveyed, 91% of the centralized medical schedulers believed there were work and time pressures affecting their job and transfer of learning. This finding was supported through researcher observation and follow-up interviews.

4. Of those surveyed, 72.7% of the centralized medical schedulers stated that there were ineffective work processes limiting their ability to do their jobs successfully. Observation by the researcher and follow-up interviews substantiated this finding.

5. Less than three-quarters of the centralized medical schedulers felt comfortable with change and the associated effort it took to be successful with change.

6. Only 45.45% of the centralized scheduling department believed co-workers were supportive of one another and the knowledge they had received from educational settings; there were also pressures from their peers to resist change.
Next, applying the survey data to previous research studies performed by Kotter, Broad and Newstrom several significant issues regarding learning transfer appear. First, issues that promoted learning transfer were as follows:

1. Of those surveyed, 92% of the participants believed the information delivered was practical.
2. Of those surveyed, 100% of the participants felt the training content was relevant.
3. Of those surveyed, 100% of the participants said the training was designed and delivered professionally.

The above three issues are major barriers that are partially within the trainees themselves according to Broad and Newstrom (1992). They may be perceptual, but nevertheless very real. Next,

4. The entire group of participants did not believe that too much time had elapsed before the opportunity arose to try applying their learned skills.
5. In addition, 81.8% stated that the environment in which they work supported them in their learning process.
6. Next 81.8% believed their department-valued training.
7. The whole group of participants felt they had been given the opportunity and the time to use their new knowledge and skills at the workplace.
8. All of the participants surveyed were able to build on their previous knowledge and skills.
9. Finally, 100% were committed to using their training.
Despite having several positive attributes to enhance transfer of learning, the survey also pointed out several barriers to transfer of learning:

1. Unfortunately, only 72.7% felt that management reinforced and supported them in applying their new training to their job.

2. A large number surveyed, 91%, believed that work and time pressure affected their job and transfer of learning.

3. In addition, 72.7% stated that there was ineffective work processed limiting their ability to do their job successfully.

4. Only 63.6% were comfortable with change and the associated effort it took to be successful with change.

5. Less than half of the participants, 45.45%, believed co-workers were supportive of one another and the knowledge they had received from educational settings; there were also pressures from their peers to resist change.

6. Lastly, 54.5% felt that prior knowledge of scheduling radiology exams benefited them in their ability to learn new material.

According to Broad and Newstrom (1992), trainees are a primary barrier to transfer due to their own attitudes regarding the personal costs (discomfort, increased effort) associated with change. The above barriers result in the limited impact of contemporary training programs. These include the absence of a strong organizational culture specifically supporting training and its applications, physical obstacles to transfer, and peer group pressures that tell recently trained employees to change their practices. Broad and Newstrom (1992) believe that the organization in general has primary responsibility for these barriers, which can also interfere with transfer of the best-intended training.
Overall Discussion of Factors

Problems can usually be solved more easily if they are well defined and classified for easy identification. The same is true of barriers to transfer. After examining the major impediments to transfer of training for centralized medical schedulers, it is important to identify which source or role is primarily responsible for the impediment.

Management/Organization Responsibility

Accountability
It is reasonable to expect that if individuals are not held accountable to attend each training session, overall transfer of learning will not be experienced consistently throughout the department.

Management
According to Broad and Newstrom (1992) managers hold the most significant key to resolving the problem of transfer of training. Not only are they a secondary source for five of the nine factors, but they also hold the primary responsibility for the number one overall impediment: absence of reinforcement on the job for the newly acquired skills and abilities. At least in the eyes of organizational trainers, uninvolved managers represent the major barrier to transfer, and hence, they are a primary target for change (Broad & Newstrom, 1992). Without management support, participants will rarely implement new skills and knowledge in the workplace. Therefore, the manager’s role is critical in the learning process. Most studies have shown that the two most powerful opportunities for management input occur during the interaction with the learner prior to the training solution and after the training has been completed. It is clear that managers usually don’t realize their influence. More action must be taken to ensure managers
understand their impact and how they can make changes. To get a full return on the investment in training, managers need to be responsible for taking an active role:

- Understand the skills being taught in training.
- Model the desired behavior.
- Before training, meet with the learner to discuss learner needs, goals and accountability.
- After training, meet with the learner to plan workplace applications of the skill.
- Look for “learning moments” – observe and listen to the learner.
- Coach the learner to learn from on-the-job experiences.
- Give feedback to the learner about observed performances.

In the current study of centralized medical schedulers, the largest problem attributed to management of the schedulers was the unfamiliarity management had with all the particulars of a scheduler’s job. Neither manager had any prior or current experience in scheduling procedures. As a result, they could not model the desired behavior or understand the skills being taught. In addition, this perceived lack of management competence led to a trust issue for the medical schedulers. Next, schedulers were not held accountable by their manager to attend each workshop. Allowing this to occur sends an implicit message that the program is not really important. Consequently, the trainees may have not been motivated to transfer what they learned to the job.

Environment
According to Newstrom (1992), the second most powerful impediment to workplace learning transfer was interference by the immediate environment. Such
factors included working with time pressures, ineffective work processes or inadequate equipment (Broad & Newstrom, 1992). This implies that even if the schedulers were willing to change, they still could not use their new skills because of obstacles (real or imagined) placed in their way – a powerful barrier.

Ineffective work process. Centralized medical schedulers gave several examples of ineffective work processes or inadequate equipment:

1. The department phones are inadequate and unreliable.
2. The schedulers’ computer systems are built improperly.
3. The computer screens for patient preparations are not kept up-to-date and hints are inadequate.
4. Trainers are not immediately available, as a result, schedulers have to leave their desks and find the trainer, leaving the client on the phone. In addition, if you are new to the system, you are limited as to whom you can ask questions.
5. Sometimes “too many hands in one pot.”
6. “Many ineffective processes that are slowly being changed.”
7. Lack of trust in the department.
8. “Unhealthy environment,” 6x6 cubicles, desks are too small, confining environment and unfamiliarity with neighbor.

Time pressures. Of those surveyed, 91% of participants stated they have work and time pressures on the job. Documented throughout the study through surveys, interviews, and observations were the pressures schedulers faced on a daily basis. A medical centralized scheduler averages ninety calls a day. Many schedulers stated: “It is very
difficult to schedule complicated patients who are allergic to contrast or diabetic and be responsible for answering additional calls. It is also difficult to be on the phones and process faxed orders at the same time. With constant phones and faxes, it is sometimes hard to finish one thing before you’re presented with something else.” As a result of the high volume of calls a scheduler must process and the pressure he feels to continually do more with a high degree of accuracy, transfer of learning is difficult to accomplish.

Although individuals may appear to pay attention during training and practice their new, correct, skills and knowledge over and over, the next day when placed under pressure to perform or when left to their own devices and unsupervised, they seem to forget what they have learned and the same habit pattern errors resurface. Unfortunately, the transfer of training problem is a “sleeper” in that it only shows up under certain conditions. During stressful periods of high activity where the scheduler is working at or near the limits of his or her mental capacity, active concentration is disabled in favor of operation at an automated instinctive reflex level (author unknown, “Negative transfer disables conversion training, http://www.personalbest.com.au/flight.html”). This is when the scheduler typically falls back to mental models and skills learned previously. When placed under pressure to perform or during periods of intense activity, even experienced schedulers can inadvertently revert back to their previous habits.

There are many ways to induce change, and it occurs not occur merely from pushing harder. Sometimes it is more effective to reduce the restraining forces. Managers need to make it easier (initially) for trainees to attempt transfer, and they can do this by temporarily reducing the job pressures that newly trained employees bear. This gives the employees a period to experiment, “to get up to speed,” and to take time to
solidify new patterns of behavior. The solution is largely under the control of trainees’
direct supervisors. The supervisor must take responsibility to give the trainee a respite
from a heavy workload to make it easier for the trainee to begin applying improved
methods.

In a related topic a number of investigations have shown that when sufficient
practice time and feedback is available, individuals are able to transfer newly learned
strategies to new tasks. It would appear from these studies that transfer occurs when
there is sufficient time to practice strategies. Opportunities for practice of new learning
provided during training give trainees the chance to put newly acquired knowledge to
work. They are safe opportunities to experiment with new skills and give instructors the
chance to note individual levels of achievement and difficulty. They also give trainees
the chance to ask questions, try alternatives and gain confidence. One of the keys to
success in this strategy is developing practice opportunities that are relevant to levels of
trainee skills and convincing trainees that they can benefit from doing so. Skill learning
is not an event, but a gradual physical process that takes place in the brain. The program
must stimulate the brain to grow new neural connections, forming a more effective
pathway. This is accomplished by lots of repeated behavior: Practice and more practice.
Unfortunately, the only time centralized medical schedulers are allowed to practice is on
the job.

Finally, management and the organization must address the ineffective work
processes, including unreliable equipment, improperly built computer programs, high-
pressure climate to get to the next call as soon as possible, and lack of time to try newly
learned skills because the phones ring off the hook must be addresses. Although the
training may be the “latest thing” in radiology scheduling, it has little impact without these processes being corrected.

The sources of several major barriers in this study are partially within the trainees themselves:

*Attitude.* Trainees are a primary barrier source due to their own attitudes regarding the personal cost (discomfort, increased effort) associated with change. Several of the schedulers were uncomfortable with change because they were told after the fact. Too often this situation arises in organizations where internal communication operates on a non-strategic basis and is for the most part unplanned. Effective change relies heavily on the level of trust that exists between employees, their supervisors or managers and the organization itself. Where trust is low, resistance will be high. Unfortunately, during the interview phase of the study, a lack of trust was revealed between management and staff, and among staff members themselves.

In addition, people do not like to change what they think they know. Given new information to consider, individuals will search their existing knowledge to ensure that the new information is consistent with what they know. What people think they know can prevent them from seeing what they need to learn. Before they can learn something new, individuals have to unlearn what they think they already know.

Finally, the trainer should have realized the impact of change on the medical schedulers and considered one or both of the following approaches to adjust the driving forces that encourage trainees to change:

(1) Identify the existing set of driving forces for change, and try to increase the magnitude of one or more of those for an overall net gain in the desired direction.
(2) Add new positive incentives to those already being used (Broad and Newstrom, 1992).

Co-worker support. It is important to distinguish between two important sources of social support in the work environment: co-workers and the direct supervisor. First, team members who feel supported by their co-workers and direct supervisor may more easily agree to take on additional tasks and responsibilities compared to team members who experience less support, regardless of the amount of team autonomy. Second, social support may moderate the relationship between team and individual autonomy, such that team members who feel supported by their supervisor and/or their fellow team members are more inclined to incorporate additional responsibilities into their individual jobs in exchange for the support they receive (Mierlo, Rutt, Vermunt, Kompier, and Doorewaard). High team autonomy has been linked to increased productivity, quality of performance, innovativeness, and job satisfaction. Substantial research supports that transfer climate, and the support of supervisors and coworkers in particular, influences the degree to which training transfers to the workplace (Pidd, 2004).

Several studies have indicated that learning in social groups and pairs can provide enough interaction to facilitate transfers to new situations. A major area of interest involved co-operative learning. Co-operative learning situations usually involve two or more individuals working together to improve their understanding of the material. Peer coaching is one way to implement co-operative learning. In this coaching method, trainees coach each other to apply newly learned behaviors through a carefully structured sequence. Another transfer strategy for trainees during training is to “link with a buddy.” In this strategy, trainees identify one or more other trainees with whom a supportive relationship can be established. This often occurs naturally during training, either as a
product of seat selection, task assignment, or employees from the same department. The buddy process is straightforward. It is based on making a commitment to another person to change some type of behavior. It is used to increase the likelihood of transfer through the use of interpersonal commitment, mutual support, and goal setting. Yet another strategy is to develop a mentoring relationship. In general, mentors are a rich potential source of useful information and guidance. Mentors from the same cultural background as trainees can provide particularly valuable assistance. Trainees can use the mentor as a source of feedback, bouncing new ideas off the mentor, and asking for constructive criticism on the application of the new skill. This kind of feedback can supplement that obtained from the supervisor (author unknown, “Transfer of Learning Planning Workplace Education Programs”,

As a result of how the centralized medical scheduling department is designed and laid out, it is difficult for medical schedulers to talk with each other, let alone form a buddy relationship. In addition, each of their lunches is strictly scheduled not allowing for the opportunity to lunch together. Finally, centralized medical schedulers’ workflow has been changed. In the past, each team of schedulers was responsible for a certain aspect of the scheduling process. Thus, they were able to bounce ideas off each of their team members. Currently, each scheduler works independently and is responsible for all aspects of the scheduling procedure. Therefore, the possible benefits from communication and cooperation in a team are not realized.

The second purpose of this study was to address what role learner characteristics, specifically prior knowledge, have on the transfer of learning for the task of scheduling
medical examinations. The results of this study reveal the importance of exploring and recognizing the relationship of knowledge and skills to other factors that affect performance at the work site. The entire group of centralized medical schedulers who participated in the study believed they were able to build on their previous knowledge and skills. In addition, 54.5% stated prior knowledge of scheduling radiology exams had a large impact on their ability to learn new material. The two participants (18%) who stated prior knowledge had no impact, followed up the question by stating that the material presented just enhanced their prior knowledge. Based on this information, an individual’s ability to transfer learning does benefit from prior experiences. People improve in their ability to learn new skills proficiently because of prior practice on a series of tasks. This helps individuals to acquire new views on a topic by looking at the task from a different approach, which strengthens their understanding of the topic. The principle that people learn by using what they know to construct new understandings can be paraphrased as “all learning involves transfer from previous experiences” (Bransford, Brown, n.d.). In reference to the medical schedulers, 84.6% of the medical schedulers had completed anywhere from two years of college to the graduate level education. Previous knowledge is relevant because each element builds upon the other. For example, one must understand the vocabulary terms before he understands a fact. Individuals may have knowledge that is relevant to a learning situation that is not activated. In addition, without an adequate level of initial learning, transfer cannot be expected. This point seems obvious, but it is often overlooked.

Trainers often ask themselves “What is in the learning situation that needs to be transferred?” The answer may be one or more of the following: content or conceptual
knowledge, strategic or procedural knowledge, and appropriate dispositions for learning (Thorndike, 1932; Perkins et al., 1993). Proponents for the teaching of content knowledge over strategic knowledge argue that learners who have mastered the content knowledge of a particular domain are fully capable of displaying sophisticated use of effective strategies in new situations, including those strategies never explicitly taught (Chi, 1998). They claim that without requisite domain-specific knowledge, general strategies have a weak effect on enhancing performance in most tasks. At the same time, a common argument for emphasizing the teaching of strategic knowledge is that if one can identify and teach the general skills (e.g., metacognitive and problem-solving skills) that are applicable to a broad range of tasks, it is easier to facilitate transfer of learning (Pressley et al., 1987).

Although proponents from the two camps disagree on the questions of what exactly is transferred, they concur that positive dispositions toward learning are vital to learner success. These dispositions include traits like high motivation, risk-taking attitudes, mindfulness or attentiveness, and a sense of responsibility for learning (Salomon & Perkins, 1988; Pea, 1988). In addition, transfer is affected by the degree to which people learn with understanding rather than merely memorize sets of facts or follow fixed set of procedures, which are examples of higher learning one experiences in college. Twelve of the medical schedulers who participated in the study had some form of college education.

The ability to understand becomes important for transfer problems. Individuals who only memorize facts have little basis for approaching problem-solving tasks (Bransford and Stein, 1993; Bransford et al., 1983). Finally, transfer can be improved by
helping individuals become more aware of themselves as learners who actively monitor their learning strategies and resources and assess their readiness for particular tests and performances.

On the contrary, trainers need to recognize that trainees seldom come to them with a clean slate; rather, they are a product of years of experience and habits. Sometimes these acquired practices interfere with new learning and its application to the job. At a minimum, trainers need to emphasize with trainees the difficult task of confronting the hold habits and work with them to let go of those old habits before new methods of behaving can be effectively acquired and used. Moreover, prior knowledge is not merely the individual learning that students bring based on their personal and idiosyncratic experiences. Prior knowledge is also not only a generic set of experiences attributable to developmental stages through which learners may have passed. Prior knowledge also includes the kind of knowledge that learners acquire because of their social roles, such as those connected with race, class, gender, and their culture and ethnic affiliations. In addition, Thorndike formulated the “Theory of Identical Elements” – previous learning facilitates new learning only to the extent that the new learning task contains elements identical to those in the previous task.

**Future Areas of Study**

Previous research has indicated that the transfer climate of work organizations is an important factor in determining the degree to which knowledge, skills, and abilities gained in training transfer to the workplace. As a result, it is important to continue to examine factors that enhance transfer of learning. Recommendations for future areas of study regarding transfer of learning are:
1. Study how collaborative learning enhances transfer of learning to generate reliable and valid data regarding the social processes evident in the workplace that can impact workforce development and training transfer.

2. Study how to transfer what is learned even in the day-to-day pressures of work to generate reliable and valid data concerning the relationship between the workplace context and training transfer.

3. Study how to develop stakeholder strategies to improve performance to lead to the development of more effective training programs in general.

4. Study how to implement transfer of learning to performance in a complex system to provide a comprehensive theoretical framework for understanding the relationship between the workplace context and training transfer.

Study Limitations
Some of the main limitations of this study were as follows:

1. The sample size was small. Only 46 percent of medical schedulers participated in the study. Although it is only a rough guide, a response rate of 50 percent is adequate for analysis. A larger sample size leads to more accurate parameter estimates, which lead to a greater ability to find what we were looking for. Although it was argued that transfer of learning problems did exist, it may be less representative of the overall climate of the centralized medical schedulers workplace. Thus a replication of this study may produce different results.

2. The survey instrument did not undergo test-retest reliability. As a result, stability reliability was not established. In order to determine
stability reliability, the survey would need to be repeated on the same subjects at a future time and the results compared and correlated with the initial test. In addition, the survey instrument was not evaluated to check that the questions were understandable and to assess the likely response rate and effectiveness of the follow-up procedures. Despite this and low feedback, scheduler feedback provided useful information.

3. Inter-observer reliability was not available. As a result of a strained relationship between the subject matter expert and the centralized scheduling department, a second evaluator was not used. Thus, interrater reliability was not established.

4. On average only 53.5% of staff attended the workshops. When attendance-related behavior occurs, it detracts from the potential learning of all trainees and the subsequent transfer to the workplace. The trainer did not have the authority, flexibility, or time to intervene in this situation. Some action is required to assure trainee presence.

5. In addition to the scheduler’s inability to transfer knowledge gained from workshops presented by the researcher, the results of the scheduling departments’ audit could have been influenced by other factors. For example, only five charts a month were examined for each scheduler for the baseline prior to the workshops compared to sixty for this study in three months. In the baseline audit, exams were chosen at random and did not necessarily apply to radiology. This
initial sample was extremely small compared to the number of procedures a scheduler schedules on a monthly basis.

6. Throughout the interview process, a consistent observation of the researcher was a trust issue by the schedulers to share information with about the department. Several medical schedulers stated they were very worried that management would use this information against them and affect their status in the department.

7. It would be negligent not to acknowledge the researcher’s own perspective and how it may influence this study. As a radiographer, there is a possibility that the role of researcher may influence the data analysis and interpretation. The subjective perspective and biases of both the learners and the researcher in the research frame must be acknowledged. By using several methods of data collection, the possibility of rater bias may be reduced.

Summary and Conclusion

The purpose of this study was to address the following research questions:

Question One: What specific factors contributed to the failure of learning transfer in the training of centralized schedulers?

Question Two: Who role do learner characteristics, specifically prior knowledge, have on transfer of learning for the task of scheduling medical examinations?

Transfer of learning is pervasive in our everyday life at work, at home, and in the community. Transfer takes place whenever our existing knowledge, abilities, and skills affect the learning or performance of new tasks. Research suggests that there are a
number of reasons why employees either do or do not apply what they have learned as a result of attending workplace education programs. In the case of centralized medical schedulers, this study identified three main roles attributing to the failure of transfer of learning for centralized medical schedulers in a hospital setting: (1) the manager; (2) the trainee; and finally, (3) the trainer. Each source contributed to the failure of learning transfer through not addressing factors such as accountability, management, the environment, ineffective work processes, time pressures, attitude of trainees, and finally, the support co-workers provided to each other. What do these findings mean for those involved in supporting individuals in transferring learning from workshops to the workplace? First, to ensure that a training intervention produces the payoff that is intended, strategies to transfer the learning must be carefully integrated into the instructional plan. Second, as part of this plan, the trainer, trainee, and the manager should all be involved in the transfer process. Third, management must set the example by participating in the training themselves, reinforcing and supporting the trainees in applying their new training, and limiting ineffective work processes and time pressures affecting the transfer of learning processes.

Finally, although this research is imbued with limitations, it does, however, add to the limited body of literature on transfer of learning. The results of this study serve as a springboard from which to initiate additional studies as corporations struggle to obtain a return on investments that organizations make in training. As David T. Kearns, Chief Executive Officer, Xerox Corporation stated:

“These are difficult and challenging times for American Companies. If we are going to survive them, we need the leadership of the training and development profession. Become agents of change within your organizations. Link your efforts to the strategic direction of your company. Training and development is coming of age. It is a
function that is in the mainstream and is a competitive weapon for those companies who use it wisely” (Broad, and Newstrom, 1992).
REFERENCES


Volland, Jennifer (February 2005). Quality Intervenes at a Hospital [Electronic version]. Quality Progress.

APPENDIX A

Initial Needs Assessment

(Please use additional paper if required)

PART I: Issue Overview

1. What is the problem to be addressed in training?
   - Develop a standard for departments who currently use the Scheduling Services Department to schedule their procedures.
   - We need to first identify what training needs are and then prioritize them to work on.
   - There is a potential need for more than one trainer for systems utilized. It is too much for (1) person.
   - Develop more frequent “dept” training on current issues.

2. What “observable behavior” is available to illustrate this problem?
   - There are constant requests to change/delete/add questions, preps …or how and when the procedure is to be scheduled.
   - In some areas resource “availability” ex. MFM
   - Staff are “seemingly” not retaining information and/or paying attention to basic processes received from training.
   - Each system has its own set of “specialty” issues.

PART II: History

1. Why this training, why now?
   - Customer Service issues are now coming to the forefront of our operations: (patients, physicians, physician offices, radiologist, hospital departments.
   - Staff frustration – concerned staff
   - More procedures/expectations since the early years of scheduling
2. To what do you attribute the problem?
   • Never addressed appropriately

3. Are these problems new?
   • No, just in the limelight now with “potential” loss of business per radiologist perceptions with our local competitors.

4. Have similar or other types of training been conducted before? With what results?
   • Not sure – none to my knowledge prior to June of 2004 forward

5. What is the past history regarding training? What is the culture around training?
   • I was informed that past training consisted of (1) day with the dept. trainer and (1) day with the newly implemented Team Lead. Then new hire was just placed on the floor to work – with direction from “everyone”

PART III: Outcome

1. What behaviors would you like to see employees engaging in AFTER the training that they are CURRENTLY not doing?
   • Retain information – or have a ready reference for answers they may forget.
   • Continue to express any additional training needs
   • Be open to more systematic/periodic training sessions/testing

2. If this training were optimally successful, what would the outcomes be?
   • Increased staff knowledge & understanding
   • Type of Error to decrease from (current rate)?
   • Better improved relationship between schedulers and all our customers

   ▪ What feelings/attitudes would change?
     ▪ Positive – Remove the “blaming” that currently goes on

   ▪ What knowledge/skills would be demonstrated?
     ▪ System Usage and Departmental Procedure Exceptions in Processing
• What content would be mastered?
  • Basic Scheduling, Correct Grid Placement, Correct Order Processing, Linking the information together: Order what the script states, correct data entry

• What operational results would customers (both external and internal) see?
  • Cleaner scheduling and order processing

3. How would you measure effectiveness of the training?
  • Volume of errors received as well as complaint rate for identified items

PART IV: Impacting Systems

1. What kinds of behaviors are reinforced?
  • The expectation “to be ready” on our new phone system
  • Ability to schedule and process orders & do it on a daily basis
  • Remaining focused while at work
  • Being held accountable when involved with an error

2. What does the reward/recognition system look like?
  • Map Awards/Open recognition – Staff Meetings/Huddles

3. Will/For how long will training be reinforced/followed-up afterwards?
  • A set pattern to be determined – what is most effective - Open

4. What else could be impacting these behaviors OUTSIDE of the training content areas (e.g. systems, schedules, recent changes, etc)?
  • System Upgrades w/PAMS, Phone system changes, Leadership changes at each level: Assoc Admin., Director, Supervisor, Interim Training Personnel, FYI (prompt feedback when problems arise)

PART V: Interpersonal

1. What are the employees’ feelings and attitudes about training?
  • Still adjusting to receiving performance feedback (new for dept.)
  • Some welcome it/Some do not
  • Many would like the clarity to be given and not have the constant changes
2. What are the management’s feelings and attitudes about training?
   - It is too much for one individual to do.
   - It is needed.
   - Must be made manageable

3. What is the predominant leadership style?
   - Open/Supportive/Informative/Accountability

4. What is the predominant communication style?
   - Direct One-on-One with new supervisor & new director/Rounding/Memos/Tidbits/Staff Meeting

**PART VI: Training Content**

1. What content areas would you like to see in the training program?
   - Narrow down the amount of options given to schedulers (several types of procedures named differently?)
   - Limit the amount of coordination needed for patients’ care – what can just a scheduler do?
   - Systematic Updates – internal and external – promptly distributed

2. What are the areas of highest priority?
   - Per Hworks @ this point the radiology area
   - Paying more attention to order what is on the script. If in doubt direct calls to needed modality.
   - Ensure Medical Necessity Checks are being done
   - Ensure Patients are being contacted in a timely fashion
Hi, my name is Elaine Ivan, a radiology educator for Memorial Hospital. I have been asked to chair the education portion of the H Works Team for Multi Site Scheduling.

My focus is to create educational tools to assist each scheduler with the process of scheduling all radiology procedures. My main emphasis in this initial research is on the people within the system. You are, and will be, essential when making decisions about a proposed learning program. I am very interested in your thoughts of our current scheduling packages.

I respect your opinion and the time it will take to fill out this questionnaire. The purpose of this activity is to aid in the decision making process by defining all the elements, issues, facts, and features taking place in the current process. I want to understand your needs, your wants. It is an information gathering technique to provide me with a solid background of the processes you are currently involved in. I want to make you part of the solution. I know your management will support giving you some time to fill this survey out completely and honestly. Thank you, I value your input. If you would rather speak to me personally, my number at the hospital is 8291.

1. Do you feel you have a good understanding of the PHS/PAMS Systems? If not why

2. What prevents you from performing a prescribed task to standards?

3. Are job aids available and if so, are they accurate? Are they being used?

4. Are the standards reasonable? If not, why?
5. If you could change one thing in the way you perform your work, what would it be?

6. What subject(s) would you like to see training on?

7. What new technology would benefit you the most in the performance of your work?

8. Are you motivated to improve your skills and efficiency? If not why?

9. Are the orders you receive from the telephone or PAMS clear? If not why?

10. What is the most difficult radiology procedure to schedule and why?
11. What is your perception of the amount of time it takes to schedule a radiology exam? If it is time consuming, what is your perception of why?

12. Is it your practice to “lie” to the system in order to complete the scheduling process.

13. Is the scheduling process too cumbersome because the system asks too many questions or because each individual radiology department has its own requirements?

14. Please use this space and additional space to address any other issues.
APPENDIX B

PHS QA FORM

Patient name: Robinson, Victoria

Patient MR Number: 139517

Date: 4-18-05

Issue

Script stated whole body bone scan with SPECT. Patient was initially only scheduled for a bone one area.

GP NUC Med PMP

Schedules Error
APPENDIX C

Letter will be sent to participants one month prior to performing the study.

Examining Factors Affecting Transfer of Learning for Centralized Medical Schedulers in a Hospital Setting

Questionnaire

You are asked to participate in a research study conducted by Elaine Ivan, Master’s Candidate from the Department of Adult Learning at Regis University. The results from this study will be contributed to a thesis study. You were selected as a participant in this study because you participated in the scheduling training.

Purpose of the Study

The purpose of this study is to seek information from schedulers concerning their experiences from the last four educational sessions facilitated by Elaine Ivan to understand factors influencing transfer of learning hoping to improve training provided in the workplace.

Procedures

If you volunteer to participate in this study, you will be asked to complete a demographic questionnaire and a questionnaire during the next staff meeting that will assist in determining which factors influence learning transfer. Please reply electronically within two weeks of receiving this request if you are interested in participating. The amount of time required to complete the two questionnaires is approximately thirty minutes.
Potential Risks and Discomforts

Only the author of this study will review the data retrieved: no risks or discomforts are identified. The results of this survey will be carefully examined and used to make decisions regarding learning transfer.

Potential Benefits to Subjects and/or to Society

The potential benefits of this study are to the schedulers and the clients they serve, and to the instructors of workplace training programs. As literature suggests, workplace-training programs have greater benefit to the employer if adult learners are able to transfer new knowledge to the workplace. The more aware an instructor is of learning transfer, the more the instructor may be willing to teach this concept enabling trainees to benefit from educational workshops.

Payment for Participation

There is no payment for participation

Confidentiality

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. The findings of this study will be included in the thesis, but there will be neither disclosure of the names of those volunteering to participate nor the institution with which these individuals are affiliated.

Participation and Withdrawal

You may choose whether or not to be in this study. If you volunteer to be in the study, you may withdraw at any time without consequences of any kind. You may also
refuse to answer any question(s) and still remain in the study. The researcher may withdraw you from the research if circumstances arise which in the opinion of the researcher warrant doing so.

Identification of Investigator

If you have any questions about the survey, please email Elaine.ivan@memhospcs.org or call 365-8291
Experiencing Factors Affecting Transfer of Learning for Centralized Medical Schedulers in a Hospital Setting

This study is seeking information from schedulers at Memorial Hospital Centralized Scheduling Department to describe factors affecting transfer of learning. As you’re going through this survey, please try to recount your workshop experiences with Elaine Ivan concerning the topics of contrast, scheduling multiple exams, mammography, and MRI from beginning to end, while providing open and honest answers to each question. In order to be most helpful to Elaine, please answer the questions with complete honesty and fairness. Please select the most appropriate answer to each question.

If you don’t believe you have enough information to respond to a particular statement, choose “No opinion/Insufficient information to reply”.

Section 1 (Demographics)

1. Educational sessions which you attended
(Please check all that apply)
- “The Do’s and Don’ts of Scheduling Contrast”
- “Scheduling Multiple procedures”
- “Smashing the Myth of Mammography”
- “The Magnetism of MRI”

2. How long have you worked in the centralized scheduling department?
- Zero to six months
- Seven months to one year
- One year to three years
- Three years to five years
- Five years to ten years
3. Which of the following best describes your position in the department?
   - Manager
   - Supervisor
   - Trainer
   - Staff scheduler

4. Which of the following best describes your current level of education?
   - High school diploma or GED
   - Completed a two-year college
   - Completed a four year college
   - Graduate level

5. Gender:
   - Male
   - Female

6. Age:
   - 18-25
   - 26-45
   - 46-55
   - 56-65

   Section II

7. Were you involved in deciding the content of the educational sessions?
   - Yes, was it helpful?
   - No, would it have been helpful, and in what way?
   - No opinion

8. Were the education sessions presented by Elaine Ivan practical?
   - Yes, explain.
   - No, explain
   - No opinion

9. Does the environment in which you work support you in your learning process?
   - Yes, in what way?
   - No
   - No opinion

10. Did management reinforce and support you in applying your new training to your job?
    - Yes, was it helpful?
    - No, would it have been helpful, and in what way?
    - No opinion
11. How comfortable are you with change and the associated effort it takes to be successful with change?
   - Comfortable, in what way?
   - Uncomfortable, in what way?
   - No opinion.

12. Was the training content relevant to your daily work?
   - Yes, in what way?
   - No, in what way?
   - No opinion

13. Would it have been helpful to have Elaine Ivan available after training to support your application of the training material?
   - Yes, in what way?
   - No, explain
   - No opinion

14. Were you given the opportunity and the time to use the new knowledge and skills back at your workplace?
   - Yes, in what way?
   - No, would it have been helpful, and in what way?
   - No opinion

15. Were co-workers supportive of one another and the knowledge they received from the educational setting or was there pressure from peers to resist change?
   - Yes, in what way?
   - No, in what way?
   - No opinion

17. Was the training designed and delivered professionally?
   - Yes, in what way
   - No, would it have been helpful, and in what way?
   - No opinion

18. Do you have work and time pressure in your job?
   - Yes, please explain
   - No
   - No opinion

19. In your opinion, are there ineffective work processes limiting your ability to do your job successfully?
   - Yes, what are they?
   - No
   - No opinion
20. Is the equipment adequate to perform your job successfully?
   - Yes
   - No, in what way?
   - No opinion

21. In your opinion, does your department value training?
   - Yes, in what way
   - No, why not
   - No opinion

22. What impact did your prior knowledge of scheduling radiology exams have on your ability to learn new material?
   - Impacted me a lot. In what way?
   - No impact.
   - No opinion

23. Did too much time elapse before the opportunity arose to try applying learned skills?
   - Yes
   - No
   - No opinion

24. How committed are you to using the training?
   - Very committed, in what way?
   - Not committed, why not?
   - No opinion

25. Are scheduling situations too different (because of medical history, etc.) from one another to be able to transfer one concept to another?
   - Yes
   - No, why not?
   - No opinion

26. Given the time of day the sessions were offered, were you ready and motivated to learn?
   - Yes
   - No, why not
   - No opinion
27. Were the sessions long enough to cover the material you thought you needed to learn?

☐ Yes
☐ No, why not
☐ No opinion

28. Were you able to build on your previous knowledge or skills, or did your previous knowledge and skills hinder you from learning and applying the new information?

29. In your opinion, what part of the training benefited you the most?

30. What changes do you feel need to be made in future educational sessions?

Thank you for your participation.
APPENDIX D Audit Forms

```
<table>
<thead>
<tr>
<th>MEASUREMENT</th>
<th>SUMMARY POINTS</th>
<th>AUDITOR SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ins Information (Medicare)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management Development Plan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Submitted By: ___________________________  Date: ___________________________
Reviewer: ___________________________  Date: ___________________________
Scheduler: ___________________________  Date: ___________________________
```
Quality Assurance Audit Form

[#10 Charts x Total Pts off=Base Score (base score = 500)]

Scheduler Name: __________________________
Chart Reviewer: ____________________________
Date: ___________________
Time Period: ______________________________

I. DEMOGRAPHICS
- Name: __________________________
- Address: __________________________
- Phone: __________________________
- DOB: __________________________
- Insurance: __________________________
- Provider: __________________________
- Other: __________________________

II. INS INFORMATION-MEDICARE
- Insurance Name: __________________________
- Insurance Number: __________________________
- Insurance Rate: __________________________
- Medicare: __________________________

III. INDEX INFORMATION
- Index Information: __________________________
- Index Information: __________________________
- Index Information: __________________________
- Index Information: __________________________
- Index Information: __________________________

IV. DOCUMENTATION
- Date: __________________________
- Time: __________________________
- Provider: __________________________
- Diagnosis: __________________________
- Treatment: __________________________
- Medication: __________________________
- Referral: __________________________
- Discharge: __________________________
- Case Manager: __________________________
- Social Worker: __________________________
- Consultant: __________________________
- Other: __________________________

V. PHONES
- Phone: __________________________
- Phone: __________________________
- Phone: __________________________
- Phone: __________________________
- Phone: __________________________

ACCURACY RATE __________
ERROR RATE __________

Total Pts Off =
Base SCORE = 500 points

218-00
Quality Assurance Audit Form

[#4 Charts= Total Pts off/Base Score (base score =200 )

Scheduler Name: ________________________________
Chart Reviewer: ________________________________
Date: ________________________________
Time Period: ________________________________

I. DEMOGRAPHICS

| Patient Identified correctly / DOB 3pts. | 48 |
| Proper Searching (duplication/orders/procedures) |
| 8 Rights to an order (if applicable) |

II. INS INFORMATION-MEDICARE

| Insurance Name/Codes 2pts. | 24 |
| 4 Hour Window |
| Age |

III. INDEX INFORMATION

| Prep Information 3pts. | 84 |
| Hints/Questions/Prep information |
| Procedure Comments |
| Appropriate Placement of Order |
| Faxback (complete in PHS/PAMS) |
| All listed Dx - including ICD-9 Codes/Spelled correctly |
| Correct Procedure |

IV. DOCUMENTATION

| Initials 1pt. | 24 |
| Date |
| Frequency |
| Contact Name & Number |
| Insurance Name |
| PCA notes |

V. PHONES

| Appropriate Facility directions 1pts. | 20 |
| Fx of Ready State |
| Maintains Patient Engagement |
| Speaks Clearly/Professional |
| HIPAA Compliant (leaving messages) |

ACCURACY RATE______
ERROR RATE______

Total Pts Off ______
Base SCORE 200 points
<table>
<thead>
<tr>
<th>Procedure Name / Comments / Reminder</th>
<th>Apt Date &amp; Time</th>
<th>Apt Time</th>
<th>Procedure Name / Comments / Reminder</th>
<th>Apt Date &amp; Time</th>
<th>Apt Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOOD GUST</td>
<td>11/8/95 10:00 am</td>
<td>10:20</td>
<td>ANTHALASIA, CMONIC SEQUELAE</td>
<td>11/8/95 10:20</td>
<td></td>
</tr>
<tr>
<td>SINUS 2 VENT DRAIN AGNOS GASHMEL LATERAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLOOD GUST</td>
<td>11/8/95 10:30 am</td>
<td>10:30</td>
<td>ANTHALASIA, CMONIC SEQUELAE</td>
<td>11/8/95 10:30</td>
<td></td>
</tr>
<tr>
<td>PNEUM LNP X $$ATTM X$$ OF $$L$$ $$THUMB$$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLOOD GUST</td>
<td>11/8/95 11:00 am</td>
<td>11:00</td>
<td>ANTHALASIA, CMONIC SEQUELAE</td>
<td>11/8/95 11:00</td>
<td></td>
</tr>
<tr>
<td>SPRC, LUMBAR SUBAURAL, LST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPINE, CHORD IN X RAGAN, DFF FT SCREENED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XRAY, DIGITAL CERVICAL, SPINE</td>
<td>11/8/95 1:00 pm</td>
<td>1:00</td>
<td>QNH 80400, ANTHALASIA 849.80</td>
<td>12/11/95 25 $$Y$$</td>
<td></td>
</tr>
<tr>
<td>COLORECTAL PEO, TESTING SINGLETON FIRST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XRAY, DIGITAL CERVICAL, SPINE</td>
<td>11/8/95 2:00 pm</td>
<td>2:00</td>
<td>QNH 80400, ANTHALASIA 849.80</td>
<td>12/11/95 25 $$Y$$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

OBSERVATION OF SCHEDULING SESSION

Name of the Observer___________________________________

Date___________________________________________________

Time___________________________________________________

1. **How well did scheduler utilize the scheduling package?**
   
   _____ Very good: Proficiently went through each screen. Asked all appropriate questions. Reviewed all demographics. **Scheduled correct patient and procedure.** Looked up physician and determined it was a legal order. Read all of patient preparations. Scheduled the procedure at the correct location. Scheduled the procedure for the first available appointment. Looked in patient activity. Completed the order in PAMS and sent a confirmation to the doctor’s office.
   
   _____ Good: Competently went through each screen. Looked up physician and determined it was a legal order. Scheduled the appointment but did not verify demographics. **Read all patient preparations.** Completed the order in PAMS and sent a confirmation to the doctors office. Scheduled the procedure at the correct location. Scheduled the procedure at the first available appointment. Did not look at patient activity.
   
   _____ Below Average: Scheduled the procedure without an order or a valid order. Scheduled the procedure at the wrong location. **Did not read patient preparations.** Did not look at patient activity. Did not send confirmation to the doctor’s office. Put the order on the grid whenever and wherever.

2. **How long did it take the scheduler to complete the scheduling task?** (The average is three minutes and under.)___________________.

3. **Did they have to deviate from the standard protocol to make something work?** _______ Describe what they did _________________

______________________________.
4. Did they have to call for help? Whom did they call?

5. What was the level of noise and distraction in the work environment?

6. Was the department well maintained?

7. Did the scheduler utilize a job aid during this task? If he/she did, what was it?

8. Did the scheduler ask all the appropriate questions prompted by the scheduling package? If not, what did he/she miss?

9. Was the scheduler able to multitask, i.e. was he able to interact with the client and schedule the procedure at the same time?

10. Please note any other pertinent observations at this time.
GLOSSARY

Several terms are used throughout this documentation. This section defines some terms used frequently in this paper.

Transfer of Learning (learning transfer):

The effective application by trainees to their jobs of knowledge and skills gained as a result of attending an educational program.

Centralized scheduling:

A department specialized to handle all the aspects of scheduling for an institution.

Schedulers:

A person who uses computer hardware to arrange jobs to be done by a department in an appropriate order.

Decentralized System:

The process of breaking apart a centralized scheduling process in subunits, so that each department is responsible for scheduling their own procedures.

Physician:

A person licensed to practice medicine; a medical doctor.

Patient:

A client for medical services.

Ancillary Department

A department who assists or serves another person or department, i.e., a physician.

Patient Preparations

Material or actions given to a patient to ready them for a medical procedure.
Imaging Procedures:
Exams performed in a radiology department

Radiology:
The branch of medicine that deals with the use of radioactive substances in diagnosis and treatment of disease

Radiologist:
A medical specialist who uses radioactive substances and x-rays in the treatment of disease

Radiographer (technologist):
A person who makes radiographs

Contrast
A substance used to help improve the visualization of structures in the human body.

Diagnostic imaging modalities
Specialized suites that perform a specific radiology procedure such as MRI, CT, Mammography, Medical Sonography, Nuclear Medicine, and Diagnostic Radiology.

Workplace training:
Instructional experiences provided primarily by employers for employees, designed to develop new skills and knowledge that are expected to be applied immediately upon (or within a short time after) arrival on or return to the job. (Broad, Newstrom, 1992, p. 5)
Instructional Design:
Systematic instructional planning including needs assessment, development, evaluation, implementation, and maintenance of materials and programs.

www.ibstpi.org/glossary.htm

Instructional Problem
An identified problem that can be solved through instruction.

Needs Assessment:
Identifies gaps in results, places them in order of priority, and selects the most important for closure or reduction (Rothwell, & Kazanas, 1998, p. 55).

Learner Analysis:
The process of identifying characteristics of the targeted learners (Rothwell & Kazanas, 1998, p. 81).

Mammography:
A diagnostic procedure to detect abnormalities by the use of X-rays

MRI:
The use of nuclear magnetic resonance of protons to produce proton density images (Magnetic Resonance Imaging).