Assessing the Impact and Transfer of 5-S Training at Company XYZ:

Utilizing the Success Case Method

by

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ABSTRACT

This study utilizes Robert O. Brinkerhoff's Success Case Method to assess the impact and transfer of 5-S training at a large manufacturing plant referred to herein as Company XYZ. In 2009 5-S training was conducted at Company XYZ by the Northwest Wisconsin Manufacturing Outreach Center. This study intends to discover the impact and transfer of the 5-S training by enumerating the contributors and barriers to efficacious implementation. The report contains a brief description of Company XYZ, literature on 5-S training, performance improvement, evaluation, transfer of training and the Success Case Method. Also included is a qualitative survey and interview data. A summarization of the findings, suggestions and recommendations for further implementation of 5-S training by the researcher conclude this report.

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Chapter I: Introduction

This research project was conducted at a large manufacturing company that started operation in 1982. It now has multiple plants across the United States and several international locations. The data collected in this field study was only obtained from one manufacturing plant (hereinafter Company XYZ). This location has approximately 100 production workers and 17 support staff positions. Within the past year, two areas on the plant floor at Company XYZ went through 5-S training.

The 5-S training was exclusively for the production workers. Production management implemented the 5-S training because they wanted first and foremost to organize the work areas. They were also interested in promoting ownership, developing new attitude towards manufacturing practices, shifting from reactionary to preventative practices and looking at things in a systemic and organized way. The production management also wanted to implement 5-S training to address and reward positive improvements. Another specific concern that management hoped the 5-S training would improve was catching internal errors.

The 5-S training, administered by the Northwest Wisconsin Manufacturing Outreach Center focused on a "series of activities designed to improve workplace organization and standardization" (NWMOC, p. 1, 2009). The 5-S training produced significant results, including one area saving 142 miles per year in walking distance to tools, pallets and dumpsters. Company XYZ was interested in maintaining these results and improving performance in the areas that are not as successful at implementing the 5-S training techniques. The impact and transfer of the 5-S trainings at Company XYZ were the focus of this study. The Success Case Method was utilized to assess the impact 5-S training had on Company XYZ's workplace and how the training transferred.

The Shipping and Processing Area went through the 5-S training and based on the Production Manager's observations, were able to maintain and implement techniques at higher level than other departments in the plant that also went through training. This study provided in-depth information regarding the factors that made the 5-S training successful and identified the barriers that some were facing with the process. Company XYZ's management expressed interest in implementing 5-S training in additional areas of the plant, data gathered in this study aids in the successful implementation of the future 5-S training. The remainder of this chapter will discuss the problem statement, objectives, significance, limitations and assumptions of the study.

Statement of the Problem

The 5-S training done in two areas produced positive results for Company XYZ. However, one area has had greater success with implementing 5-S. There had been no in-depth investigation on why this gap has occurred. Therefore, the research question was identified as: How has 5-S training impacted and transferred to the workplace at Company XYZ?

Purpose of the Study

The purpose of the study was to gather data and identify the critical success factors that led to successful implementation of 5-S training at Company XYZ. After the data was collected, analyzed and themed, appropriate recommendations regarding implementation were made to the company. The objectives of the study were as follows:

1. Assess the 5-S training;
    a. Identify the factors that contribute to successful implementation and transfer of 5-S to the workplace;
    b. Identify the barriers to successful implementation of 5-S in the workplace; and

c. Document a high and low 5-S success case.

2. Identify resources needed for 5-S transfer and future implementation.

Significance of the Study

This study will produce important and relevant data regarding the impact and transfer of 5-S at Company XYZ. The management is interested in knowing what is working and what is not working for employees. The data will provide management with success stories that portray employee experiences. Additionally, data on barriers to implementation and resources needed for further 5-S implementation will be gathered. Information collected during this research project will give management a clearer picture of how 5-S is impacting the workplace and allow them to make decisions about tactics to increase the impact and transfer of 5-S. Information from this study will also indicate if additional 5-S trainings are necessary for Company XYZ.

Assumptions of the Study

The assumptions of the study include:

1. All participants in this study are in areas of the plant currently practicing 5-S.
2. Employees will give an accurate account of the 5-S training implementation.
3. This study has management buy-in and management will support and encourage employee participation and no negative repercussions will result based on information participants provide.

Definition of Terms

Northwest Manufacturing Outreach Center (NWMOC). "Located on the campus of UW-Stout Wisconsin's Polytechnic University, NWMOC provides at-your-location services by seasoned practitioners with expertise in manufacturing management. The experts at NWMOC

deliver integrated services to manufacturers in 33 northern and western Wisconsin counties" (Northwest wisconsin outreach, n.d.).

Five-s. Five S aims to "organize the workplace, to keep it neat, to clean, to maintain standardized conditions, and to maintain the discipline that is needed to do a good job. The name [5-S] comes from the first letters of the five Japanese terms, *seiri, seiton, seiso, seiketsu* and *shitsuke*, that are its dictums" (Osada, 1991, p. x).

Transfer of training. "Transfer of training is the effective and continuing application, by trainees to their jobs, of the knowledge and skills gained in training…" (Broad & Newstrom, 1992, p. 6).

The success case method (SCM). "A carefully crafted, simple and proven way of quickly finding out how well a new organizational initiative is working. Using the Success Case Method, people can get useful and accurate information about new initiatives…" (Brinkerhoff, 2003, p. viii).

Limitations of the Study

The limitations of this study included:

1. The results are only applicable to Company XYZ.
2. Participants work in different areas of the plant and perform different duties.
3. The results of the study are compiled from interview and survey data collected by employees that are in areas of the plant currently practicing 5-S at Company XYZ.
4. Some individuals in the study exercised their right to withdraw from the study.

Methodology

The remainder of this study addresses literature, methodology, results, conclusions, and recommendations as it pertains to the 5-S implementation and training at Company XYZ. Included in chapter two is a review of literature which provides information on 5-S, performance improvement, evaluation, transfer of training, and outlines the Success Case Method. Chapter three addresses data collection methods and analysis. Chapter four provides data obtained from the survey and one-on-one interviews. Chapter five concludes the study and presents the data assessment and includes recommendations for Company XYZ.

Chapter II: Literature Review

This chapter reviews foundational information and current material on 5-S, performance improvement, evaluation of training, transfer of training and the SCM. A brief history of 5-S and the benefits it can have in the workplace is outlined. In this section evaluation of training is discussed in terms of how it relates to the transfer of training. Methods and models of evaluation are identified and discussed. Lastly, the process and steps of the SCM are presented and discussed in detail.

Five S

"The 5-S program is a proven model for organizing and maintaining a production operation. It is frequently used in manufacturing operations, particularly progressive ones" (Bullington, 2003, p. 56). The 5-S program is derived from the Japanese business philosophy *kaizen* (Imai, 1997). "[*Kaizen*] means improvement… . When applied to the workplace [*kaizen*] means continuing improvement involving everyone-managers and workers alike" (Imai, 1986, p. xx). *Kaizen* techniques such as 5-S have migrated westward and are being implemented in many U.S. companies. Successful utilization of these techniques can be challenging for American companies because of a paradigm shift that must occur. *Kaizen* focuses more on human efforts while U.S. companies focus on results-based thinking. Imai (1997) notes that western managers tend to focus on innovation and instant results and states that "western managers tend to be impatient and overlook the long-term benefits *kaizen* can bring to a company. *Kaizen,* on the other hand, emphasizes human efforts, morale, communication, training, teamwork, involvement, and self-discipline- a commonsense, low-cost approach to improvement" (p. 4).

Even though the process based model is an adjustment in thinking for western companies, many have recognized that when "properly applied, *kaizen* can improve quality, reduce cost

considerably and meet customers' delivery requirements without any significant investment or introduction of new technology" (Imai, 1997, p. 20). The benefits and low cost of implementing 5-S is appealing to many companies; particularly those in the manufacturing field, where practicing 5-S has become a common standard operating procedure (Imai, 1997).

To utilize 5-S, companies must follow each step of the model. "Every part of the [5-S] process is important. Every step has the potential for opening our eyes" (Osada, 1991, p. 23). The original Japanese names for the steps are *seiri, seiton, seiso, seiketsu,* and *shitsuke* (Osada, 1991). Most western companies use English translations. While the essences of the steps are constant, translations of the names and the order of steps differ between sources. Imai (1997) refers to 5-S as *sort, straighten, scrub, systematize,* and *standardize*. NWMOC uses slightly different terminology and order, referring to 5-S as *sort*, *shine, set in order, standardize and sustain* (NWMOC, 2009, p.1). Takashi Osada is credited with being the first to formalize 5-S in the business context (Ho, et al., 1995 as cited in Gapp, Fisher & Kobayashi, 2008). Thus, his translation of the terms and order along with the original Japanese terms will be used to describe 5-S. Osada (1991) foregoes the "S" theme and describes the steps in English as *organization, neatness, standardization* and *discipline*. Each step includes important elements that are essential for successful implementation of this system.

Seiri (organization). The first step in the 5-S sequence is *seiri*. During the first step all items in the workplace are broken into categories and classified by their frequency of use. Imai (1997) asserts that it is efficient to separate items into the two categories, unnecessary and necessary. Unnecessary items consist of items that will not be used within a month and should be removed from the workplace. Necessary items remain and are worked with during the following steps.

Osada (1991) proposes a three tier system of separation and suggests that items be sorted into low, average, and high degrees of need. The items in the low category consist of things that have not been used in the past year and items that have only been used once in the past six months to one year. Items in the former timeframe should be stored at a distance and those in the latter should be disposed of. The average category consists of items that have only been used once in the last two to six months and should be stored in a central area in the workplace. High degree of need items are used on an hourly, daily or weekly basis and should be stored near the work site or carried on the person.

Both employees and managers should participate in this sorting process. Using red tags to mark items categorized as unnecessary is a common practice (Imai, 1997). If there is debate regarding the necessity of an item, a demonstration should be done to show why it needs to stay or go. Taking photographs before *seiri* and after all the unnecessary equipment is taken out is a powerful way to showcase the streamlining impact the first step of 5-S has. Osada (1991) notes that companies can also "keep some of the old tools and equipment in a special museum room---[as] a display of how primitive things used to be" (p. 192). While keeping a gallery of the old items may not be feasible for all companies, doing so is more powerful than pictures or statistics.

Seiton (neatness). In the second step of 5-S the items classified as necessary during *seiri* are organized and categorized. While the straightening process creates an aesthetically pleasing environment, it also produces practical outcomes. "*Seiton* means classifying items by use and arranging them accordingly to minimize search time and effort" (Imai, 1997, p. 68). Straightening involves designating an address, name and volume to each item. Everything should be clearly marked. If an item is not where it is suppose to be, it should be obvious at first glance. Osada (1991) asserts that "the ultimate aim of this straightening-up process is to be able to get as

much as you want of something when and where you want it" (p. 29). To accomplish this aim of the straightening phase it is helpful to ponder the "5W's and the 1H (what, when, where, why, who, and how) for every item" (p. 29).

Seiso (cleaning). Seiso involves a thorough cleaning of the workplace. This step is beneficial because it can prevent problems with machines. "Cleaning implies system maintenance and inspection. As a work area is cleaned, problems such as oil leaks or other maintenance issues become apparent before they have a chance to affect performance"(Bullington, 2003, p. 58). If this step is not done, small problems can quickly turn into large issues.

Cleaning also requires workers to become more familiar with the machines they are working with. Polishing the machinery exposes them to different viewpoints and parts of the equipment. Keeping items in the workplace clean also ensures that all safety warnings and labels are visible and not covered by any debris (Imai, 1997). Osada (1991) notes that *seiso* "can have a tremendous impact on your downtime, quality, safety, morale, and every other facet of the operation. It is the part that deserves your utmost attention" (p. 30).

Seiketsu (standardization). This step in 5-S has several meanings. According to Osada (1991) it involves keeping everything in a clean state. "Which, in the context of the [5-S]'s, includes other considerations such as colors, shapes, clothing, and more that give a sense of cleanliness" (p. 137). Imai (1997) suggests that *"seiketsu* means keeping one's person clean, by such means as wearing proper working clothes, safety glasses, gloves, and shoes, as well as maintaining a clean, healthy working environment" (p. 70). Another interpretation of this step is to continually work on the first three steps; meaning that procedures for the previous steps are

formalized, schedules for steps are created and other tactics to drive improvement are implemented (Bullington, 2003).

Shitsuke (discipline). The final phase of the 5-S process is *shitsuke*. This step "means self-discipline" (Imai, 1997, p. 70). The discipline phase is a way to transform bad habits into good habits and gives workers an opportunity to practice doing the right thing (Osada, 1991). The role of the manger appears essential as the structure and rules of standardizing the implementation of 5-S will determine its long term implementation. "No 5-S process for supply management will be effective without vigilant leadership" (Bullington, 2003, p. 59). However, this phase also includes personal accountability. "Managers are responsible for results, but workers are responsible for the process" (Osada, 1991, p. 167). Ways of being responsible and gauging each level of 5-S includes the following: evaluation of self, evaluation by an expert consultant, evaluation by a superior and competition among groups (Imai, 1997). Implementation of *shitsuke* is crucial. "In many ways, creating a disciplined workplace is the most important thing you can do to ensure product quality (Osada, 1991, p. 169).

Benefits of 5-s. A significant benefit of 5-S is that it saves time. (Osada, 1991). In addition to saving time 5-S can also "yield tremendous savings in terms of quality, accident prevention, productivity and in every other way" (p. 7).

Furthermore, in a recent study, Kobayashi, Fisher and Gap (2008) gathered data on 5-S training from Japan, the UK and the US. The data from all countries suggested that implementing 5-S increases productivity and efficiency. This study also concludes that the three countries look upon four aspects of 5-S in a similar way. Japan, the UK and the US view training as important and believe that organizing and cleaning equipment in the workplace is accomplished. All of the countries in the study affirmed that productivity and efficiency are

achieved with 5-S. Data from the study also concludes that the three countries view achieving better quality and safety are the main purposes of implementing 5-S.

Kobayashi, Fisher and Gap (2008) also conclude that the UK and the US have not fully embraced the 5-S philosophy. This study asserts that the two western countries view 5-S as a means to an end and this limits the full implementation and benefits. It is suggested that there should be consideration on the benefits of 5-S rather than just a focus on simplified application. The researchers in this study note that "it seems that businesses in the UK and US have not yet understood the importance of total participation in [5-S]. The development of an organizational culture aimed at achieving total participation would lead to the successful implementation of [5-S]" (Kobayashi et al., 2008, p. 260).

Performance Improvement

Human performance improvement can be used interchangeably with the terms human performance enhancement, human performance engineering and human performance consulting. (Rothwell, 1996). Human performance improvement can also be referred to simply as performance improvement, which the American Society for Training and Development currently defines as "the process of identifying and analyzing important organizational and individual performance gaps, planning for future performance improvement, designing and developing cost-effective and ethically justifiable interventions to close performance gaps, implementing the interventions, and evaluating the financial and non-financial results" ("Welcome to the," 2009). Werner and DeSimone (2009) state that "performance improvement is a particular goal of most training and HRD efforts" (p. 8).

Primary motivations for focus on performance improvement. According to Enos (2007) the primary motivations for focus on performance improvement activities in organizations

include: because the leader said so, there is money for developing or organization or team and because others are doing it. While being important and relevant factors, the primary motivations for focus on performance improvement should be viewed with caution. "The question is whether these motivations dominate the initiation of the program, and result in inadequate diagnosis of the issues or opportunities" (Enos, 2007, p. 11).

Successful incorporation of performance improvement. To successfully incorporate performance into an organization, Gill (2006) recommends utilizing the 5As of performance, which are defined as: alignment, anticipation, alliance, application and accountability. Alignment, the first term in regards to performance improvement means demonstrating that there is a connection between the performance improvement activity and increased effectiveness. Secondly, anticipation of success is important in the performance improvement process. Thirdly, an alliance between employees, supervisors and top-level executives is essential. Fourthly, application of newly learned material within days is important in this process. Lastly, accountability about what happened as a result of the performance improvement process is necessary.

Interventions increasing performance improvement. Thiagarajan (2003) asserts that "motivational interventions improve human performance by increasing the amount of commitment and persistence of performers" (p. 86). Motivation can involve monetary and nonmonetary interventions. Monetary interventions consist of pay raises, stock options, pensions and any other avenue for increasing an individual's income. Nonmonetary interventions consist of freedom within the work place, mentoring, training and job security to name a few.

Utilizing motivational interventions is an important part of increasing performance improvement. "A basic assumption in HPI stresses the importance of motivation. This formula

identifies the three components of performance: Performance=Ability X Environment X Motivation" (Thiagarajan, 2003, p. 87).

Evaluation

The Merriam-Webster Online Dictionary's definition of evaluate is "to determine the significance, worth, or condition of [,] usually by careful appraisal and study" (Merriam-Webster, 2009). Determining the significance and worth of a training through the evaluation process serves many functions. Purposes of evaluation include trainers assessing their effectiveness, assessing whether learning occurred and determining the return on investment (ROI) (Carliner, 2004). Liberman (2006) offers a concise and well-rounded description regarding the purpose of evaluation, noting that "evaluating your training program helps you to decide whether to continue offering certain training programs, improve current or future programs and validate the value of training" (p. 42).

McCain (2005) echoes some of the aforementioned reasons and further asserts that purposes for conducting evaluation include the following:

- To improve the design of the learning experience
- To determine if the objectives of the learning experience were met and to what extent
- To determine the adequacy of the content
- To assess the effectiveness and appropriateness of the instructional strategies
- To reinforce learning
- To provide feedback to the facilitator
- To determine the appropriate pace and sequence
- To provide feedback to participants on learning
- To identify which participants are experiencing success in the learning experience

- To determine business impact, the cost-benefit ratio, and the ROI for the program
- To identify the learning that is being used on the job
- To assess the on-the-job environment to support learning
- To build relationships with management
- To decide who should participate in this or future programs
- To gather data for marketing purposes (pp. 10-12)

While extensive, the above referenced list of evaluation purposes is not exhaustive (McCain, 2005). Every situation is unique and different purposes for evaluation may arise. An evaluator must identify what purpose is most relevant for their needs and must determine how the information collected will be utilized. Determining the purpose for evaluation is part of a thoroughly constructed evaluation plan. The purpose for evaluation will dictate the timing and what instruments, sources and locations are used to collect data.

Increased interest in evaluation. "In the past two decades, there has been an explosion of evaluation models and theories" (Phillips, Phillips & Hodges, 2004, p.7). There are multiple reasons for the increased interest in evaluation. Phillips and Phillips (2001) address several reasons why increased attention is being paid to this area. The first is because managers and executives who allocate funds towards training programs are demanding data on evaluation. Additionally, increased competition regarding budget allocation has heightened interest in evaluation. Also, programs frequently failing to produce the desired outcomes is a reason many organizations are using the evaluation process. Finally, executive pressure to produce return on investment reports increases interest in evaluation.

Phillips and Phillips (2001) citing *Training's* Industry Report 2000 note that increased funds for evaluation contribute to the increased interest in evaluation. Unfortunately, current

economic conditions nullify that assertion. Organizations are facing budget cuts and sadly evaluation and training are frequently the first to be eliminated (Wells, 2008). "However, evaluation becomes even more important when funds are tight" (p. 116).

Kirkpatrick's model of evaluation. Donald Kirkpatrick created a four-level evaluation model in 1975. Kirkpatrick's model is well known in the industry (McCain, 2005). "To date his model is perhaps the most popular and widely used one throughout the training community" (Liberman, 2006, p. 42). These sentiments are echoed by Wells (2008) who states that "the most popular training evaluation designs today reflect the work of Donald L. Kirkpatrick" (p. 116).

The first level of Kirkpatrick's model assesses participant's initial response. During this level data is often collected with a tool commonly called a smile sheet. This level provides a very brief overview of training outcomes. It does not provide enough information to base decisions on (McCain, 2005).

"Level two involves measuring participants' learning of facts, principles, skills, attitudes and techniques through some type of pretest or post-test---multiple choice, open-ended, verbal, demonstration, etc." (Wells, 2008, p. 116). This level answers the question: did learning take place? It also requires proof that learning took place (McCain, 2005).

The third level measures training transfer. Level three identifies if new knowledge, skills and abilities are being implemented on the job. Additionally, Kirkpatrick's third level aims to assess the extent that new techniques are being used. The third level also addresses factors in the workplace that help or hinder transfer (McCain, 2005).

The fourth level "measures results of training as they relate to such factors as sales, quality, productivity, employee turnover, etc." (Liberman, 2006, p. 42). Level four assesses the organizational impacts (Wells, 2008).

Kirkpatrick's model is the standard (McCain, 2005; Liberman, 2006; Wells, 2008). However, it is not always appropriate to implement. Wells (2008) suggests that following Kirkpatrick's four level model on inexpensive trainings providing information primarily on internal policies that do not directly impact duties or tasks is unnecessary.

Conversely, Wells (2008) also asserts that when thorough evaluations are necessary, Kirkpatrick's model lacks rigor. While Kirkpatrick's model is frequently debated and there are hundreds of alternate models available, it remains the most widely accepted model for practitioners (Phillips, Phillips & Hodges, 2001).

Making evaluation effective. Wentworth, Tompson, Vickers, Paradise, and Czarnwosky (2009) recommend ways to increase evaluation effectiveness. First, it is essential to collect data that is meaningful to leaders. Additionally, it is imperative to spend more time and money evaluating behaviors and results. Participants' reaction should not be the primary source for the evaluation data. Also, supervisors should have more responsibility for learning evaluation and be involved in tracking performance before and after the training is conducted. "When evaluating changes in behavior, use strategies such as follow-up sessions, focus groups, and participant surveys. Used with action planning and performance monitoring, these strategies are the most highly correlated with evaluation success" (p. 36). Wentworth et al. also discuss the fact that companies are not laboratories and it is nearly impossible for evaluations to prove things "beyond the shadow of a doubt" (p. 37).

Another tactic to make evaluation more effective is for evaluators to focus on metrics relating to proficiency, competency levels, customer satisfaction and employee perceptions of training. Wentworth et al. (2009) note the importance of investigating all of the evaluation tools available and state that "a robust solution can make evaluation much easier and the results more

reliable" (p. 37). Lastly, the most important factor in regards to making evaluation effective is not to give up on the process.

McCain (2005) concludes that for evaluation to be effective it must be linked to business opportunity analysis, needs analysis and learning objectives. Also, evaluation feedback must be timely. The results of evaluation must be given to the appropriate individuals in shortly after the training so decisions and changes can be made. During the design process evaluation must be continually implemented. Finally, "effectiveness of an evaluation system is contingent upon an environment that supports transfer" (p. 165).

Transfer of Training

Many companies allocate a substantial amount of money towards training activities. The American Society for Training and Development "estimates that U.S. organizations spent $134.39 billion on employee learning and development in 2007" ("Training industry faq:," 2009). Arthur, Bennett, Edens and Bell (2003) note that "training is one of the most pervasive methods for enhancing the productivity of individuals and communicating organizational goals to new personnel (p. 234).

Foundational research on the transfer of training. Research done in 1988 done by Baldwin and Ford provided original and ground breaking work on the topic of transfer of training. Broad and Newstrom (1992) note that previously mentioned work was comprehensive. Moreover, Brown and McCraken (2009) describe Baldwin and Ford's 1988 findings as "seminal work in the field" (p. 496). Ford and Baldwin's model outlined in Figure 1 separates elements into the categories of training inputs, training outputs and the conditions of transfer. Brown and McCraken (2009) state the following in regards to Ford and Baldwin's 1988 model:

The premise of their model was that these transfer elements were driven by three

key training inputs: trainee characteristics, training design factors, and work environment. These inputs were deemed to drive learning and retention of material, as one could not have transfer without first learning and retaining training content. (p. 497)

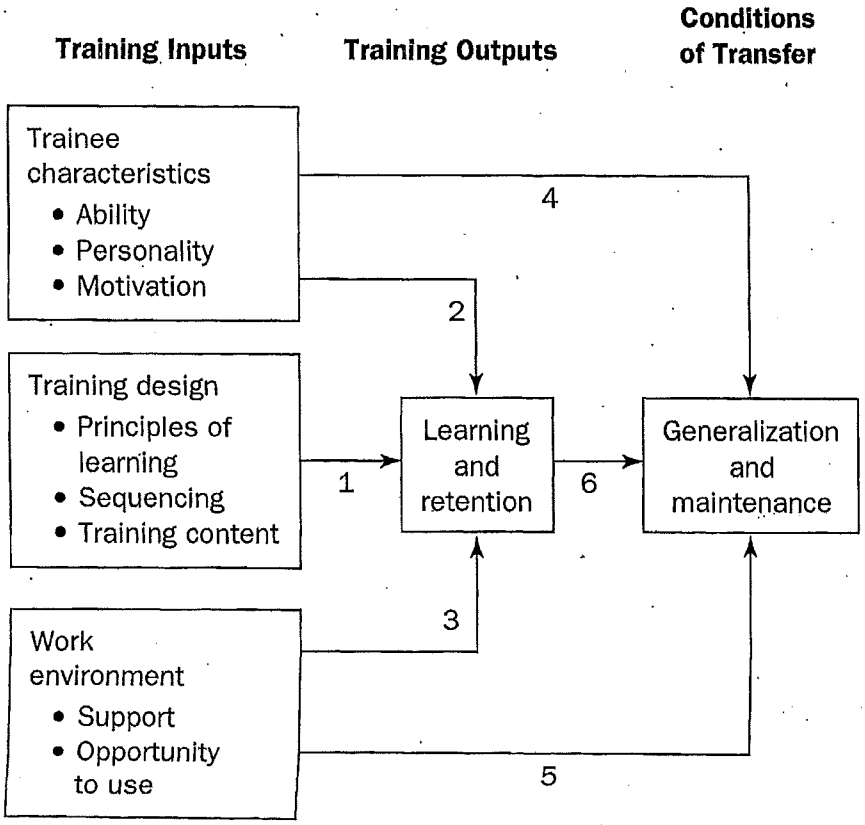

Figure 1. Baldwin & Ford's 1988 Transfer of Training Model (as cited in Werner & DeSimone, 2009).

Haskell, (2001, as cited in Clark, 2008) asserts that the transfer of learning is the ultimate goal of training but does not address what the transfer process looks like. Broad and Newstrom (1992) pose that transfer of training takes place when individuals consistently implement skills in the workplace at the same level that they were able to perform during their training. Furthermore, full transfer occurs when an increase in skill occurs as a result of practice.

If transfer does not occur the resources spent on training are wasted. Unfortunately, the transfer of training has been problematic in the past and continues to be an issue. Broad and Newstrom (1992) report that only 10 % to 30 % of trainings produce the desired performance outcome while a more recent study by Saks and Belcourt (2006 as cited in Brown & McCraken, 2009) report that less than 50 % of training expenditures transfer to the work place. Hillsman and Kupritz (2007) note that exact numerical value for training transfer is not readily available, but reference that corporate investment in training interventions and the empirical evidence regarding the lack of training transfer to work environments demonstrate the low transfer rate.

Factors impacting transfer of training. Parry, Friedman, Jones and Petrini (1990) divide factors impacting transfer of training into three categories: personal, instructional and organizational (See Table 1). The elements within each category are important and should be considered when conducting training. When properly executed these elements have the potential to serve as a contributors to successful training transfer. Conversely, not taking these elements into consideration can be detrimental. For example, failure to motivate trainees, substandard course design and poor timing of the training can hinder the transfer process.

Table 1

Factors Impacting Transfer of Training

Personal	Instructional	Organizational
Motivation	Course Design	Climate
Ability	Emphasis	Time and Timing
Attention	Instructor	Degree of Fit
Relevance	Follow-Up	

Adapted from (Parry, et al. 1990).

Causes of transfer of training failure. Clark (2008) identifies attributes for failure of transfer of training to poor organizational support. Also, a failure of creative training contributes to the failure of transfer of training. Additionally, having training provide new knowledge, skill and abilities, but failing to explain why they are relevant or important to the workers impedes the transfer of training process. Also, an inability to transfer training to different contexts in the workplace is problematic for transfer of training.

Broad and Newstrom (1992, p. 19) assessed the following transfer of training barriers:

- Lack of reinforcement on the job
- Interference from immediate (work) environment
- Non-supportive organizational culture
- Trainees' perception of impractical training programs
- Trainees' perception of irrelevant training content
- Trainees' discomfort with change and associated effort
- Separation from inspiration or support of trainer
- Trainees' perception of poorly designed/delivered training
- Pressure from peers to resist change

Broad and Newstrom's (1992) study addressed when (before, during, or after) the above referenced barriers occurred and the degree (primary and secondary). While the majority of barriers were most dominant after the training they did occur at all stages. An important conclusion of this study was that "an organization cannot wait until after a training program is over to address the transfer-of-training problem" (p. 21). This means that tactics to ensure transfer of training should be employed prior to the training, while the training is taking place and after the training is finished.

Brown and McCracken (2009) conducted a study involving 137 Canadian individuals who had participated in leadership training. Interestingly, 72 % of participants reported that they did not encounter any barriers to transfer. As previously stated, the majority of literature on the topic suggests that there is low transfer rate (Broad, 2005). Therefore, it is surprising that only 28% of participants experienced barriers to transfer. The most common barriers to transfer were linked to lack of time and unsupportive [organizational] culture issues (Brown & McCraken, 2009). Referring back to Table 1 exemplifies that the two issues identified in this study can be categorized as organizational factors (Parry, Friedman, Jones & Petrini, 1990). Organizational factors along with the other factor categories can either help the transfer of training process or serve as barriers. In this study the organizational factors are a hindrance to the transfer of training.

Tactics for transfer of training success. Sevilla and Wells (1998) recommend following five steps to increase training transfer. First, plan all training activities with the management. Another tactic is defining objectives and scope of the training. All parties should be aware of and agree on the set objectives. Step three involves reinforcement of expectations. Fourthly, evaluation of the outcome is essential and managers should base the evaluation on demonstration of skills. Lastly, it is important to reward employees and correct behavior with timely feedback.

Success Case Method

The SCM is an efficient cost-effective way to identify what is working and what is not working after training has been conducted (Brinkerhoff, 2003). "SCM combines the ancient craft of storytelling with more current evaluation approaches of naturalistic inquiry and case study" (Brinkerhoff, 2005, p. 9). Implementation of the SCM is a straightforward process involving five overall steps.

The first step is the focusing and planning stage. The goal here is to clarify and understand what the objectives of the study are. Next, an impact model that defines what success should look like must be created. Thirdly, a survey to identify the best and worst cases needs to be designed and implemented.

Success cases are individuals who are utilizing techniques that were presented in training. Non-success cases involve trainees that have encountered barriers and are not transferring training information and techniques to the workplace. Identification of both case types is usually done through an initial survey. Selecting cases can also be done through perceptions of the training or workshop leaders, rating scales on trainee performance during workshops or trainee self assessments after a workshop (Brinkerhoff, 1983).

Interviews documenting individual experiences must be conducted after identifying the success and non-success cases. Lastly, the findings are communicated and conclusions and recommendations are made based on the data gathered during the SCM process (Brinkerhoff, 2003).

Limitations of the success case method. The SCM has a very narrow scope and does not aim to portray results of all trainees. "The success-case method does not purport to produce a balanced assessment of the total results of training" (Brinkerhoff, 1983, p. 58). The SCM's usefulness is limited if the objective is to gather data reflective of all participants. If inclusivity of all participants and information on everyone's training experience is desired an alternate method should be selected. It is important to note that a success case should not be used to claim that the training was successful across the boards and a non-success case should not be used to assert that the training failed to benefit anyone.

Benefits of the success case method. The data gathered during the SCM process is useful and can serve several different purposes. Demonstrating the worth of training, identifying key success points to target information and develop quantitative surveys and informing other trainees on success case tactics are several examples of the benefits of the SCM (Brinkerhoff, 1983).

The SCM can also identify the content in a training that is being utilized the most by trainees and determine what material presented in the training is not being used in the workplace. Additionally, the SCM is capable of uncovering unintended results that training may produce. Finally, data collected during the SCM process can aid in the revision process of training programs (Brinkerhoff, 2003).

Summary

This chapter reviewed literature on 5-S, performance improvement. The importance of evaluation and transfer of training were discussed. Ideally, 5-S training results in performance improvement and transfer of training takes place. Evaluation is a way to gauge effectiveness of training. The chapter concluded by outlining the process, limitations and benefits of Brinkerhoff's Success Case Method. The subsequent chapter discusses the methodology utilized in this study.

Chapter III: Methodology

The SCM was utilized to assess the impact and transfer of 5-S training at Company XYZ. The company was selected for this study because NWMOC recently implemented 5-S training in their facility. Overall, management was pleased with the outcomes but noticed a performance gap between the two different areas that received the 5-S training. Further investigation was needed to address this issue and examine the contributors and barriers of implementation before moving ahead with 5-S training in other areas of the plant. Qualitative data obtained in this study will be presented by presenting a success case and a non-success case. Thus, fulfilling the SCM's objective of identifying what is working and what is not working (Brinkerhoff, 2003). This chapter identifies the subject selection and description, instrumentation, data collection procedures and data analysis techniques.

Implementation of the Project

This study commenced with a meeting at Company XYZ involving the researcher, research advisor, Company XYZ's Production Manager, and the two NWMOC facilitators who implemented the 5-S training. The initial meeting started with the Production Manager providing background and conducting an extensive tour of the plant. Following the tour the project timeline was discussed. The project timeline is comprised of deadlines, meeting dates, individuals necessary at each step and essential resources. See Appendix A for the project timeline created for this project.

Impact Model

The impact model (Appendix B) was developed at the first meeting. "Creating the impact model is a relatively brief but highly important step in an [SCM] study" (Brinkerhoff, 2003, p. 75). A general template of an impact model developed in a prior 5-S study was provided to the

researcher. The researcher discussed the generic model with the Production Manager to identify the desired outcomes from the 5-S training. The general impact model was then updated accordingly by the researcher utilizing the identified key elements.

Survey

A single-purpose survey was utilized in the present study. This type of survey is brief and is used to answer the following question: "Who is using it the most and least, and who is having the greatest and least success" (Brinkerhoff, 2003, p. 103)? The survey essentially acts as a screening tool to identify individuals for an interview. See Appendix D for the survey used in this study.

Subject selection and description. The population in this study consisted of 13 employees at Company XYZ that underwent the 5-S training. "For small populations (with fewer than 100 people or other units), there is little point in sampling. Survey the entire population" (Gay & Airasian, 2003, p. 113 as cited in Leedy and Ormrod, 2007, p. 207). Following the aforementioned recommendations, surveys were distributed to all 13 employees.

Instrumentation 5-s survey. The survey was modeled off of a previously developed 5-S survey. Recommendations from Brinkerhoff (2003) regarding survey creation were also used during the development process. The survey begins with an introductory paragraph explaining the purpose of the study. Names and contact information of the participants is then requested and utilized to schedule follow-up interviews. The first question on the survey asks if the participant has used 5-S tools and methods and if applicable asks for examples. The following two questions were close ended and the last questions asked for any additional comments. See Appendix D to view the survey in its entirety.

Data collection procedure. Upon completion the participants were asked to mail the surveys to the University of Wisconsin-Stout using a pre-paid envelope included with the survey. Initially there was an extremely low response rate. The researcher discussed the issue with the Production Manager and arrangements were made for the researcher to travel to Company XYZ to retrieve additional surveys.

Data analysis procedure. A spreadsheet designed by Samsonova (2007) was utilized to enter and weigh the data. The spreadsheet gauges participant intent to implement 5-S. The open-ended questions were assessed by the researcher using the scale developed by Samsonova (2007) and categorized as negative or as positive. After the survey data was entered into the spreadsheet three high success cases and three low success cases were identified. Individuals in the former and latter categories were selected for an in-depth interview.

Interview

Brinkerhoff (2003) notes that the interview is the heart of the SCM process and notes that interview looks "for a few stories to tell--- those few that will help you and others learn about how well a program or change is working and how you can make it work better" (p. 133). In addition to documenting credible stories, the interview in the present study aimed to identify the impact 5-S is having and allowed the researcher to probe participants further and identify contributors and barriers that individuals were experiencing.

Subject selection and description. The above referenced spreadsheet identified three high cases and three low cases. The list of individuals in the high and low categories was randomized and given to the production manager. Interviews were scheduled around the participants work schedules by the production manager and conducted by the researcher onsite at Company XYZ.

Data collection procedure. The interview data intended to consist of six individuals that were categorized as high or low after analyzing survey responses with Samsonova's (2007) spreadsheet. However, only five interviews were conducted because during the interview process one individual exercised their right to withdraw from the study. The interviews were scheduled by the Production Manager to fit participant's schedules. The interviews were conducted one day at Company XYZ. A private boardroom was utilized to insure confidentiality.

Data analysis procedure. After the interview data was collected the researcher refined notes and themed the data into the following categories: impacts, contributors and barriers. The data was then separated into the previously mentioned categories. The data from one high success case and one low success case were utilized to write credible stories that portray what is working with 5-S and what can be improved upon (Brinkerhoff, 2003). The interview data was also used to identify leaderships role in 5-S transfer to the workplace, use of training, specific applications, and factors at Company XYZ impacting 5-S transfer. Additionally, the interview data was compiled into a section consisting of employee suggestions to improve 5-S transfer and the success of future implementation. Fictitious names were used in the final report to maintain the participants' anonymity.

Limitations

Success case method. Utilization of the SCM limits this study because it "does not purport to produce a balanced assessment of the total results of training" (Brinkerhoff, 1983, p. 58). The SCM provides an important snapshot of barriers, contributors and impact and transfer of 5-S at Company XYZ; however this methodology lacks the ability to portray a panoramic view of the situation.

Population size. In reference to population sizes, Leedy and Ormrod (2007) state that, "the basic rule is, *the larger the sample, the better*" (p. 207). The population in the present study was very small and coupled with individuals exercising their right to withdraw was undoubtedly a limiting factor in this study.

Self reported data. In regards to self reported data, Cook and Campbell (1979 as cited in Yu, n.d.) conclude that "subjects (a) tend to report what they believe the researcher expects to see, or (b) report what reflects positively on their own abilities, knowledge, beliefs, or opinions" (Yu, n.d., para. 1). An additional issue with self-reporting data is that the individual's memories of happenings on the job may not actually portray the exact facts of what happens.

Another limitation includes the possibility of human error when the data is being entered in to the spreadsheet. Researcher bias when scoring the qualitative data on the initial survey may limit the study. Lastly, the initial low response rate resulted in the researcher contacting the production manager and requesting that they remind participants to complete the survey. Despite distribution of the consent form and individuals withdrawing, it is believed that there was significant pressure from management to complete the survey.

Summary

To summarize, assessing the impact and transfer of 5-S training at Company XYZ utilizing the SCM included several phases. First, an impact model outlining the desired results was made. Second a survey was created and distributed to a population including all employees that underwent training on 5-S. The data was assessed using a database constructed by Samsonova (2007) and interviews with individuals falling in high and low categories were conducted. Data was themed and appropriately presented in story format. The utilization of the

SCM in this study aimed to gather useful qualitative data which will be presented in the next chapter.

Chapter IV: Results

Robert Brinkerhoff's (2003) SCM was utilized to assess the impact and transfer of 5-S training at Company XYZ. Creation of an impact model commenced the study. A brief survey containing four questions to gauge participants' perceptions of the 5-S training and how they were using the techniques on the job followed. Surveys were analyzed and people falling into high and low success cases were interviewed. This chapter presents the qualitative data obtained through the surveys and interviews.

5-S Survey Analysis

The 5-S survey was distributed to 13 individuals. Eleven surveys were returned. One survey was discarded because the same individual submitted two surveys. In this instance only the responses and comments from the second survey the individual turned in were included in the study. The response rate for the survey was 76.92%. Two individuals exercised their right to withdraw.

Eight surveys were analyzed. Three were classified as success cases, two qualified as medium success cases and three fell into the low success category. The initial survey consisted of four questions. The participants were asked to check the box located next to the remark that they identified with. The first question stated: "I have used 5-S tools and methods." and asked participants to mark the appropriate response. Six participants, (75%) responded "Yes, with clearly positive results." One participant (12.5%) marked "Yes, but I haven't experienced any discernable results yet." One participant (12.5 %) responded "No, not yet, but I expect to use 5-S tools and methods." No participants marked the following choice: "I don't have any plans to use 5-S tools and methods."

Comments written by participants in response to the first survey question include the following:

- Positive results: structure in my work area. Quicker setups. Easier for my coworkers to be trained and locate tools or tooling.
- Lack of time has caused setbacks in implementation.
- 50/50 some things could stand to be changed. Some things work like supplies being kept in boxes. But tools need to be reassessed on location.
- Staging area was easy to get to place mat and tools were ready to go. (Lately had to look for tools and staging area got over run by shipping and 200 m staging.)
- Our work areas have stayed much more organized.
- We have streamlined our shipping/receiving department which makes us more efficient and productive.

The second question was: "Which statement best represents your feelings about your company's management commitment to 5-S training implementation and transfer to workplace process." Five participants (62.5%) checked "I think my company's management has a sincere interest and is fully committed to help employees apply 5-S knowledge and skills." The option of "I think my company's management means well, but has not fully committed to the process." was selected by two (25%) participants. One individual (12.5 %) checked "I think my company's management sees this process as little more than an administrative requirement." Zero responses for "I think my company's management has no commitment at all to this process." were received. A written in comment for this question was, "They have put more effort in us filling out these surveys then 5-S itself."

The third question asked: "Which statement best represents your own commitment to 5-S implementation and transfer to workplace process." Four people (50%) marked "I have a sincere interest and am fully committed to applying 5-S knowledge and skills." The other half answered "I am positive, but have not committed fully to the process yet." No responses were received for the following two options: "I think this process is little more than an administrative requirement." and "I have no commitment at all to this process."

An open ended question requesting additional comments regarding 5-S concluded the survey and produced the following remarks:

- The Company must realize that they need to give time to allow 5-S to happen. This means down time for a greater result and better efficiency in the long run.
- I know there is much more that can be done. These changes are necessary to bring this company and its employees to a level that will move us in a positive direction. Not enough leadership pushing this process. Management slow to react until it becomes an issue. Things aren't going quickly or fast enough to meet deadlines!

5-S Interview Analysis

Six individuals consisting of three high success cases and three low success cases were selected for interviews by the researcher. Due to extenuating circumstances, two of the selected individuals were not available for interviews and the Production Manager provided two alternate individuals had been involved with the 5-S training to participate. One of the alternate candidates exercised their right to withdraw from the study. Therefore, five interviews were conducted. The data from the interviews was self-reported and broken down into the following categories: impacts, contributors, barriers, ideas for implementing new 5-S projects and resources needed to

implement 5-S. Sub-categories were assigned for each section. The following information portrays the qualitative data collected during the interview process.

Impacts. The impacts of 5-S include 1) Productivity, 2) Saves time, 3) Organization/Cleanliness, and 4) Safety.

1) Productivity
    - There is an increase in productivity (5 shipments per week before 5-S, 15 shipments per week after 5-S).
    - Streamlined routes.
    - This area is more efficient because of 5-S.
    - Five-S will help transition into the new territory that we are entering with new projects.
    - Overall it has definitely improved productivity.
    - There is an increase in flexibility because space is cleared out and different projects can be done in the extra space that was created.
    - Overall it has helped us get things out faster. We have been able to turn things around quick. When you're cleaner and more organized things go faster.
2) Saves Time
    - Saved time.
    - 5-S helped decrease lag time.
    - I don't have to waste time telling people things because it is clearly marked.
    - Utilize time better.
    - Saves Time.
    - Saves time and time is money.

- Saves a lot of time.
- It used to be messy and wasting time looking for things that weren't there- that was a big plus for us, time waste was just cut in half.
- Saves time. Less time looking for things.
- This has saved time and kind of helps out.
- Some of the changes we made save us time because we are not unnecessarily going back and forth.
- It's hard to look back and think about how we did things before, but I know that there is a lot less wasted time.

3) Organization/Cleanliness

- I throw stuff away according to the six month rule. If something has not been used in that timeframe I get rid of instead of letting it sit around.
- I throw things out a lot more after 5-S and this reduces clutter.
- Expectations at the beginning were to get more organized and 5-S did that.
- I have learned to organize better after the 5-S training.
- Organization-how to keep things more accessible.
- Using a lot more of the organizational skills.
- 5-S improved organization.
- People are more aware of the expectations they have on them. They know where to put parts.
- It has improved our housekeeping a lot.
- The area just looks nicer than it did before. It still gets messy once in a while, but not nearly as much as before.

- The work environment is cleaner.
- We don't have the clutter. Definitely less clutter, it just seems more professional too.

4) Safety

- There is an increase in safety because the work area is not as crowded.
- Pallets have been moved and this has made our work area safer.

Contributors. Contributors to 5-S impact and transfer include: 1) Support from management, 2) Ownership, 3) Cooperative employees, and 4) Continual modification of 5-S.

1) Support from management

- Support from Production Manager has been a contributor to successful implementation.
- Upper management is still supportive, it hasn't been swept under the rug, but sometimes it might seem like it's forgotten about.
- Upper management is supportive but if 5-S is going to be implemented companywide more stress needs to be put on it.
- The Production Manager's support has helped me with 5-S.

2) Ownership

- One big positive is the fact that people take more pride because they had a big hand in the reorganizing.
- People set things up how they wanted and there is ownership.
- Increased sense of pride because the workspace looks professional.

3) Cooperative employees

- Workers and management being supportive helps with 5-S.

- There is a lot of teamwork; people are engaged in the process.
- Good people. Good people that we work with. The ones that are doing it, they realize how it has helped the departments and in turn we help each other.
- The other departments doing 5-S helped my department also.

4) Continual modification of 5-S

- We're working on modifying the process so it works well for my department and the whole plant. We're working to un-clutter things and streamline things. It's pretty good now, but we still need to work on it.
- 5-S is evolving and the process keeps changing according to current needs.
- Minor changes they could implement themselves, more 5-S training might be a waste.

Barriers. The barriers to 5-S were divided into the following subcategories: 1) Time, 2) Lack of support from leadership, 3) Inconsistency, 4) Motivation, and 5) Resistant employees.

1) Time

- Not much has changed. There are a lot of things that need to be change, but we have not had the opportunity or the time to go through and implement everything in my area.
- Time restraints are the biggest problem.
- Not enough to time.
- Time constraints. Throughout the day things get scattered and you run out of time to put them back in order.
- We need time at the end of the day to implement 5-S.

- People need to take the time and understand that it is an important thing to do and this would make everyone's life a little easier.
- Time constraints are barriers.
- Need time at the end of the day to do it.

2) Lack of support from leadership

- No support. It seems like they are just trying to go through the motions. Because without stopping and implementing it throughout the plant, I don't see it being very successful or anything being accomplished.
- Not much support for managers.

3) Inconsistency

- Over the weekend things get messy from other shifts, it takes till Wednesday to get things back in order.
- It's frustrating that other areas don't do 5-S. It's like I have to do more work than other people if I try to do 5-S. Other people are reaping the benefits of me working harder and I'm not getting anything for it. It's frustrating.
- Other areas that have not been trained interfere with the standard operating procedures in my department.
- Include everyone in the process; don't just let each shift do their own thing.
- Have everyone that works in a specific area work on it.
- Having everyone from all the shifts come in for the training would be beneficial.
- We only have one shift that makes it a lot easier. When we started we had three shifts. Having one shift makes implementing it easier.

- Tools were supposed to be kept in the boxes, but some of the equipment varies and does not get put back.

4) Motivation

- Overtime we get lackadaisical. When it first started we were gung ho about it.
- Lack of motivation is preventing the 5-S from being kept up in that area.
- 5-S will probably stay the way it currently is, people try to make an effort but after a while it dwindles off.
- We need everyone to follow through for it to be beneficial. Getting people to follow through is difficult.

5) Resistant employees

- Implementing 5-S throughout the whole plant would be a waste of time and money because some people get set in their ways and they just are not going to change.
- The biggest obstacle in other areas is the employees themselves. There is group of guys that have been here a very long time and they do not like to change things.
- In order to change the culture of the plant some people may not fit.
- There are some people that are going to oppose anything we do and they might need to move on.

Necessary resources for 5-s transfer and future implementation. Interviewees identified the following elements as necessary for successful 5-S transfer: 1) Time/standardizes schedule, 2) Leadership Support, 3) Motivational incentives, and 4) Consistency/inclusivity.

1) Time/standardized schedule

- Need more time a standard schedule for time to do 5-S would help.

- We need time at the end of the day to implement 5-S.

2) Leadership support

- Support from management for other 5-S training.
- Upper management is supportive but if 5-S is going to be implemented companywide more stress needs to be put on it.

3) Motivational incentives

- I think a bonus would be great.
- Having someone come in randomly and check up on the process would help.
- Competition between groups drives people.
- Small bonuses $25-$50 for following through on 5-S procedures.

4) Consistency/inclusivity

- Include everyone in the process; don't just let each shift do their own thing.
- Have everyone that works in a specific area work on it.
- Having everyone from all the shifts come in for the training would be beneficial.
- Having everyone involved.
- Have a standardized flowchart after the whole plant has gone through 5-S.

Success Stories

High success story of Jon. Jon stated several times that implementation of 5-S has streamlined the routes in the plant and has made things flow better than before. He also said that using 5-S allows him to utilize his time better and saves him time. In addition, using 5-S increases throughput in Jon's area and he has a better handle on the product going through the plant. Jon feels like his environment is much less chaotic and that things are now uniform after transferring 5-S techniques to the workplace. He is really happy with the outcomes of 5-S and

said it worked well for his whole department. Jon started using the 5-S techniques when the trainers were still there and continued to use them after they left. He feels like 5-S increased productivity in his department because they do not waste time looking for things like they used to.

In Jon's opinion, doing the 5-S training was the best thing that happened in his department. Furthermore, the individual in this high success case asserts that 5-S was the best thing that happened to the whole plant. He feels like it really helped everything go through the plant better and they have less rejects. Jon says that his numbers speak for themselves; he has less lost parts, better communication within the departments, definitely. Jon said that 5-S has worked really good for him and his department. Jon remarked that he could not say anything bad about 5-S, except that the trainers could have stuck around a little longer and done a few more. Jon feels that they should do other departments and said that would really benefit the company.

Elements that helped Jon transfer 5-S techniques to the workplace included "good co-workers" and "support from management". Even with all the success that Jon has had with the 5-S process, he sometimes feels a lack of motivation to do it. He thinks that having random checks, competitions between workgroups or small bonuses could help keep the motivation levels up.

Low success story of Joe. Joe sees the value of 5-S and said that it saves time and he spends less time looking for things. He also discussed how the organizational techniques have made things more accessible. However, Joe feels as though not much has changed. He said that there are a lot of things that need to be changed, but he has not had the opportunity or the time to go through and implement everything in his area. Joe does not feel like he has much support from management. He said it seems like they are just trying to go through the motions. Joe said

that unless they stop and implement 5-S throughout the plant, he does not see it being very successful or anything being accomplished.

Joe feels frustrated with the inconsistency and it is really hard for him when his coworkers and other departments do not do 5-S. He said that it is difficult to get motivated to spend the time to do 5-S. Right now when he tries to transfer to 5-S techniques to the workplace he feels like he is doing extra work and not reaping any benefits from it. Joe thinks that for 5-S to be successful, standard operating procedures need to be established and all shifts need to come in for a training so they are aware of the expectations. Joe also believes that for 5-S to transfer to the workplace management needs to stress the importance of the process and allow them time to do it.

Presentation

The researcher provided an executive summary (Appendix G) to the Production Manager of Company XYZ. Information on the survey, interviews and researcher recommendations were included in the executive summary. A presentation to follow up on the results was conducted. The researcher, research advisor, NWMOC trainers and the Production Manager were in attendance.

Summary

This chapter began by discussing the 5-S survey. The return rate and percentages of individuals responding to each question was documented. Comments from the survey were presented. The interview process was discussed. The responses were themed and put into categories and subcategories. One high success case and one low success case was presented. The following chapter concludes this report and consists of the researcher's recommendations for Company XYZ in regards to 5-S impact and transfer.

Chapter V: Discussion

Chapter 1 commenced this study and consisted of an introduction to Company XYZ, the statement of the problem, purpose of the study, significance of the study and definition of terms. Chapter 2 reviewed relevant literature on 5-S, performance improvement, evaluation, transfer of training and the SCM. Chapter 3 outlined the methodology utilized for this research project. The data from the surveys and interviews were presented in Chapter 4. The fifth and final chapter reiterates the statement of the problem, purpose of the study, and limitations. Conclusions and the researcher's recommendation are also included in the present chapter.

Statement of the Problem and Purpose of the Study

Two areas of Company XYZ went through 5-S training done in two areas. While management felt that they were experiencing positive results, they also noticed that there was a gap occurring between the areas. There had been no in-depth investigation on why this gap has occurred. Therefore, the research question was identified as: How has 5-S training impacted and transferred to the workplace at Company XYZ? The purpose of the study was to collect data and identify the success factors that led to efficacious implementation of 5-S training at Company XYZ. The objectives of the study were as follows:

1. Assess the 5-S training;
    a. Identify the factors that contribute to successful implementation and transfer of 5-S to the workplace;
    b. Identify the barriers to successful implementation of 5-S in the workplace; and
    c. Document high and low 5-S success cases.
2. Identify resources needed for 5-S transfer and future implementation.

Limitations

One of the limitations of this study is that the results are only applicable to Company XYZ. Another limitation was that participants work in different areas of the plant and perform different duties. Not having a 100% response rate was limiting because this study focused on a small population. Also, having individuals in the study exercise their right to withdraw from the study was a limiting factor. Finally, this study consisted of self-reported which can be problematic because interviewees may have the tendency to say what they think the researcher wants to hear or what their managers would like to hear.

Conclusions

This study found that barriers to 5-S transfer include time, lack of support from leadership, inconsistency, motivation, and resistant employees. Contributors to 5-S impact and transfer include support from leadership, ownership, cooperative employees, and continual modification of 5-S. It is concluded that teamwork, leadership support and ownership are the factors that are creating the gap between the departments. The preceding factors are present in the areas that are successfully implementing 5-S and lacking in the areas that are struggling with the training transfer.

Leadership's role in 5-s transfer to the workplace. This study found that there was a gap in employee perception of leadership support. Leadership support was identified as a contributor to 5-S transfer by some individuals and as a barrier by others. The employees that transferred 5-S skills to the workplace reported a very high level of support from leadership, specifically the Production Manager. Individuals struggling to transfer 5-S techniques to the workplace did not feel that same support.

Use of training. A very prominent theme that surfaced during this study through the survey and interview process was that use and transfer of 5-S techniques to the workplace saved time. This is in line with Osada (1991) who lists saving time as one of the benefits of 5-S. This improved organization was also reported as occurring when participants use 5-S. Organization was included in the impact model for this project and the Production Manager felt that it was a very important outcome.

Specific applications. Company XYZ rearranged where they store parts and streamlined routes. Streamlining was identified as a desired outcome and listed in the impact model. Company XYZ is entering new territory and has contracted projects that they have never done before. Employees feel that applying 5-S techniques will aide in the transition to this new territory.

Creating mobile cabinets was a specific application that has been very helpful. Using the cabinets is the easiest 5-S technique for some employees to follow because it works well and was a significant improvement.

Factors at company xyz impacting 5-s transfer. The employees at Company XYZ have not entirely embraced 5-S. Each department is approaching it differently. This finding is congruent with a previously reviewed study on 5-S concluding that, "it seems that businesses in the UK and US have not yet understood the importance of total participation in [5-S]. The development of an organizational culture aimed at achieving total participation would lead to the successful implementation of [5-S]" (Kobayashi et al., 2008, p. 260).

Participants' suggestions. The following comments are participants' suggestions to increase transfer and for further 5-S trainings:

- Training is necessary for 5-S success.

- Support from management is needed for other 5-S training.
- More training, I wish they could have swept through the whole plant.
- We need Motivation.
- A "spy" from another department could come in and check. The department that "loses" could buy pizza from the winning team. Small bonuses of $25-$50 to motivate people to do 5-S. If we save the company money- it would be nice to get a little bonus. Team bonuses, working as a team to do the 5-S process.
- Everyone needs to be part of the process.
- Need more time a standard schedule for time to do 5-S would help.
- It needs to be all at once. Don't try to do a little bit here, a little bit there. Dedicating a week to the process and implementing the techniques throughout the plant.
- Include everyone in the process; don't just let each shift do their own thing.
- Having someone come in randomly and check up on the process would help.
- Competition between groups drives people.
- Having everyone involved.
- Have a standardized flowchart after the whole plant has gone through 5-S.
- The 5-S process as it is now could stand to be modified.
- The tooling needs to be in a more neutral location.
- Need time at the end of the day to do it.
- The biggest obstacle in other areas is the employees themselves. There is a group of guys that have been here a very long time and they do not like to change things.
- In order to change the culture of the plant some people may not fit. There are some people that are going to oppose anything we do and they might need to move on.

- Upper management is supportive but if 5-S is going to be implemented companywide more stress needs to be put on it.

The employee comments listed above are consistent with an abundance of information found in the literature review. The suggestions regarding the need for evaluation and competition mirror Imai's (1997) assertion that ways of being responsible and gauging each level of 5-S includes: evaluation of self, evaluation by an expert consultant, evaluation by a superior and competition among groups.

The remarks about the need for leadership are also consistent with the reviewed literature, which "no 5-S process for supply management will be effective without vigilant leadership" (Bullington, 2003, p. 59). Thiagarajan (2003) asserts that "motivational interventions improve human performance by increasing the amount of commitment and persistence of performers" (p. 86). The need for motivational incentives was noted by multiple participants in this study. The barriers to transfer that are reflected in the employee suggestions fit with Broad and McCraken's (2009) study where it was concluded that the most common barriers to transfer were linked to lack of time and unsupportive [organizational] culture issues.

Recommendations

The following recommendations take the relevant literature, the impact model and the qualitative data from the surveys and interviews into consideration.

- Allow a specific amount of time (i.e. 30 minutes) minutes at the end of each shift to implement 5-S practices.
- Provide consistent leadership support in all areas.
- Continually modify the process: allow the people who work on the machines to have input in this process.

- Stress the importance of 5-S practices to all shifts and maintain consistent expectations.
- Reiterate the positive outcomes that 5-S implementation has and reasons why it is important to utilize 5-S techniques to individuals that are resistant to change.
- Conduct random inspections.
- Foster teamwork by having competitions between departments.
- Provide motivational incentives to individuals and teams that implement 5-S practices.
- Conduct 5-S trainings in other parts of the plant.
    - Wait till there is adequate time for the training and have employees from all shifts attend the training.

Following these recommendations will be beneficial to Company XYZ. It will aid in improving their current 5-S efforts. Adhering to the recommendations above will be helpful in eliminating the gap between the department that is successfully transferring 5-S techniques and the department that is currently struggling. Also, referring to these recommendations will ensure that future 5-S trainings have an efficacious impact and transfer to the workplace.

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Appendix A: Project Timeline

#	Action	Dates	Participants	Resources needed
1.	• Initial meeting with Company XYZ • Obtain background information on the company • Focus and plan the study • Develop an impact model with Production Manager • Cover process of Success Case Method • Obtain relevant information • Discuss another meeting time for survey deployment	October 8	• Researcher • Research Project Advisor • 5-S Trainers • Production Manager	• Preliminary timeline • Preliminary impact models • Sample survey materials
2.	• Finalized survey • Finalized interview questions • Approval to commence study	October 12 - 16	• Researcher	• Finalized Survey • Finalized Interview Questions • IRB approval
3.	• Travel to company • Deliver surveys	October 26	• Researcher • Production Manager	• Time to deploy surveys
	• Analyze	November 2-	• Researcher	

	surveys	6		
4.	• One-on-one interviews at company	The week of November 9th	• Researcher • Employees • Production Manager Consent	• Interview questions • Private room to conduct interviews
5.	• Analyze interviews	November 10-13	• Researcher	
6.	• Present findings to company	Week of December 7, 2009	• Researcher • Research Project Advisor • Company	

Appendix B: Impact Model

5-S Training Impact Model
Company XYZ

Participants	Key Knowledge and Skills	Critical Applications	Key Results
• Production Workers	• Look at things in a systemic and organized way (**MAYBE**) • *Organize Work area(s)* • New attitude towards manufacturing practices-shift from reactionary to preventative • Ownership	• Address and or reward positive improvements • Minimize external mistakes by using PCAR (internal catch system)	• *Quality on site* • *Increasing overall efficiency and consistency* • Increase overall effectiveness • Improved safety • Reducing costs • Minimal wastes • Achieve shorter lead times • Improving the existing good manufacturing practices • Streamline (organizing processes, operational flow) • Increase production capacity
* *Notes **very** important element for the organization*			

Appendix C: Implied Consent

Consent to Participate in UW-Stout Approved Research

Project Title:

Assessing the Impact and Transfer of 5-S Training at Company XYZ: Utilizing the Success Case Method

Description:

This research study will examine the impact and implementation of the 5-S training. The purpose of the data collection is to construct a picture of the current state of implementation; after analysis, practical recommendations for improving the implementation and transfer to the workplace will be made. The method of data collection being used is the Success Case Method, developed by Robert O. Brinkerhoff. This method utilizes two data collection instruments: a survey and an interview. All employees are asked to complete the survey, upon completion of the survey 6-12 employees will be asked to participate in a one-on-one interview. The final report will document areas of successful implementation of the trainings as well as areas that may present a challenge to the implementation and transfer of the training.

Risks and Benefits:

The study focuses strictly on the overall impact and transfer of the 5-S training; it is not concerned with individual performance of employees. The benefits of the study include self-reflection on the current state of training transfer and implementation; as well as results that may be used to facilitate and improve the implementation process.

Time Commitment:

The initial survey should take between 10-20 minutes to complete; a one-on-one interview should take between 30-45 minutes.

Confidentiality:

Your name will not be included with any of your responses; fictitious names will be used in all reports. Completed surveys and interview notes will be destroyed at the completion of this project.

Right to Withdraw:

Your participation in this study is entirely voluntary. You may choose not to participate without any adverse consequences to you. Should you choose to participate and later wish to withdraw from the study, you may discontinue your participation at that time without incurring adverse consequences.

IRB Approval:
This study has been reviewed and approved by The University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have questions or concerns regarding this study please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.
If you have questions or concerns regarding this study please contact the Researcher or Research Advisor.

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Statement of Consent:

By completing the following survey: 5-S Training Impact Survey, you agree to participate in the project entitled: Assessing the Impact and Transfer of 5-S Training at Company XYZ: Utilizing the Success Case Method.

Please keep this form for your records.

Appendix D: Survey

This research has been approved by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46.

5-S Training Impact and Transfer Survey
Company XYZ

Thank you for giving your time to complete this brief survey. The purpose of the study is to assess the impact of the 5-S training and identify critical factors that facilitate its successful implementation and transfer to the workplace.

After completing the survey you might be asked to participate in a one-on-one in-depth interview to provide the researcher with more insights about implementation of 5-S training at your workplace. Therefore, your name and content information is required. Your name and contact information **will not** be used in any documents or reports. The information is only needed to contact you for the potential interview.

Please read each question carefully and answer them to the best of your knowledge. Should you have any questions or need clarification about the questions please feel free to ask the researcher for assistance.

Contact Information: (*Will be kept confidential)*

A. Name:_____

B. Please check one of the following boxes to indicate your preferred way to be contacted if you are selected for an in-depth interview.

☐ Phone (Please provide your phone number): (_____)-_____-_____

☐ E-mail (Please provide your e-mail address): _____@_____

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1. I have used 5-S tools and methods (Please check the appropriate box and follow the instructions).

a. ☐ Yes, with clearly positive results (Please provide an example).

b. ☐ Yes, but I haven't experienced any discernable results yet (Please provide an example).

c. ☐ Not yet, but I expect to use 5-S tools and methods (Please specify).

d. ☐ I don't have any plans to use 5-S tools and methods (please explain why).

2. **Which statement best represents your feelings about your company's management commitment to 5-S training implementation and transfer to workplace process? (Please check the appropriate box).**

a. ☐ I think my company's management has a sincere interest and is fully committed to help employees apply 5-S knowledge and skills.

b. ☐ I think my company's management means well, but has not fully committed to the process.

c. ☐ I think my company's management sees this process as little more than an administrative requirement.

d. ☐ I think my company's management has no commitment at all to this process.

3. **Which statement best represents your own commitment to 5-S implementation and transfer to workplace process (Please check the appropriate box).**

a. ☐ I have a sincere interest and am fully committed to applying 5-S knowledge and skills.

b. ☐ I am positive, but have not committed fully to the process yet.

c. ☐ I think this process is little more than an administrative requirement.

d. ☐ I have no commitment at all to this process.

4. Please use the space below and the attached blank page for any additional comments about the 5-S training.

Appendix E: Interview Protocol

Company XYZ Formative Evaluation: Interview Protocol

"This research has been approved by the UW Stout IRB as required by the Code of Federal regulations Title 45 Part 46."

Opening explanation:

First, I would like to thank you for taking the time and giving me the opportunity to conduct this interview. The reason for this interview is to assist Company XYZ in assessing the 5-S trainings. I would like to focus on the important factors that facilitate the trainings successful implementation and transfer to the workplace. I will be asking you questions to gather more information about your position and how the 5-S training impacted you in the workplace.

Like the survey you previously completed, information you provide today will be kept strictly confidential. Your name will not be used in the report and all identifying notes that are taken today will be destroyed when at the end of this project.

This interview will take approximately 30-45 minutes. Do you have any questions for me before we begin?

Questions that will be used in both Success Case Interviews and Non-Success Case Interviews	
▪ What is your job title? ▪ What are the specific duties of your job? ▪ What do you think you learned from the 5-S training that you are using in your work? ▪ Has anything changed in the work environment because of using this knowledge?	
Questions for Success Case Interviews	**Questions for Non-Success Case Interviews**
After completing the 5-s training, do you feel it was an appropriate training for your company?	Can you give me some examples of barriers that get in the way when you try to implement the knowledge, skills and abilities presented in the 5-S training?
Do you feel that the 5-S training met its objectives and worked for your company?	If successful implementation of 5-S training techniques were to occur, how would you recommend the process be carried out?
What did you learn in the 5-S training that you are using on the job?	Are there any other comments, suggestions or anything else you would like to say regarding the 5-S training?
When did you start implementing the knowledge, skills and abilities that were presented in the 5-S training?	
What good did it do? (value) (Probe: Increased productivity, creativity, customer satisfaction)	
What were some positive outcomes? (Probe: process, communication, decision making, product development)	

Questions for Success Case Interviews	Questions for Non-Success Case Questions
What helped you to utilize and implement the knowledge, skills and abilities that you were exposed to in the 5-S training?	
If you were to implement the 5-S training elsewhere what resources would you need?	
Do you have any suggestions that could improve the impact and transfer of the 5-S training in the workplace?	

This concludes our interview. Thank you again for agreeing to participate in this study. Results of the study will be compiled by early December and a written report will be given at that time. Again, as a reminder none of your personal information will be used in the report. If you have any questions or concerns about the study, please feel free to contact me- my contact information can be found on the implied consent forms distributed with the survey.

Appendix F: Survey Results

5- S Survey Results

Total: 8
5-S Success Cases:
High: 3
Medium: 2 (1 duplicate survey discarded)
Low: 3

1. I have used 5-S tools and methods.

a) Yes, with clearly positive results. 6 (75%)

b) Yes, but I haven't experienced any discernable results yet. 1 (12.5 %)

c) Not yet, but I expect to use 5-S tools and methods. 1 (12.5 %)

d) I don't have any plans to use 5-S tools and methods. 0

- Positive results: structure in my work area. Quicker setups. Easier for my coworkers to be trained and locate tools or tooling.
- Lack of time has caused setbacks in implementation
- 50/50 some things could stand to be changed. Some things work like supplies being kept in boxes. But tools need to be reassessed on location.
- Staging area was easy to get to place mat and tools were ready to go. (Lately had to look for tools and staging area got over run by shipping and 200m staging.
- Our work areas have stayed much more organized
- We have streamlined our shipping/receiving department which makes us more efficient and productive

2. Which statement best represents your feelings about your company's management commitment to 5-S training implementation and transfer to workplace process.

a) I think my company's management has a sincere interest and is fully committed to help employees apply 5-S knowledge and skills. 5 (62.5 %)

b) I think my company's management means well, but has not fully committed to the process. 2 (25%)

c) I think my company's management sees this process as little more than an administrative requirement. 1 (12.5 %)

d) I think my company's management has no commitment at all to this process. 0

- They have put more effort in us filling out these surveys then 5-S itself.

3. Which statement best represents your own commitment to 5-S implementation and transfer to workplace process (Please check the appropriate box).

a) I have a sincere interest and am fully committed to applying 5-S knowledge and skills. 4 (50%)

b) I am positive, but have not committed fully to the process yet. 4 (50%)

c) I think this process is little more than an administrative requirement. 0

d) I have no commitment at all to this process. 0

*One survey checked both I have a sincere interest and am fully committed to applying 5-S knowledge and skills **and** I am positive, but have not committed fully to the process yet. The latter was used.

4. Please use the space below and the attached blank page for any additional comments about the 5-S training.

- The Company must realize that they need to give time to allow 5-S to happen. This means down time for a greater result and better efficiency in the long run.

- I know there is much more that can be done. These changes are necessary to bring this company and its employees to a level that will move us in a positive direction. Not enough leadership pushing this process. Management slow to react until it becomes an issue. Things aren't going quickly or fast enough to meet deadlines!

Appendix G: Executive Summary

University of Wisconsin Stout

Assessing the Impact and Transfer of 5-S Training at Company XYZ: Utilizing the Success Case Method

Executive Summary

Researcher: Lori Cruz

Advisor: Dr. Renee Surdick

Company XYZ went through a 5-S training provided by the Northwest Manufacturing Outreach Center (NWMOC) within the past year. This study assessed the impact and transfer of 5-S training. The Success Case Method was utilized to assess the impact and transfer. This method involves an interview which uncovers success cases. The question that needs to be answered is: How has the 5-S training transferred to the workplace at Company XYZ?

The purpose of the study was to assess the critical success factors that contributed to the successful implementation 5-S trainings at Company XYZ. The assessed data then allowed practical recommendations to be made for the company. The following were the objectives of the study:

1. Assess the 5-S training;
    a. Identify the factors that contribute to the successful implementation and transfer of 5-S to the workplace;
    b. Identify the barriers to successful implementation of 5-S in the workplace; and
    c. Document high and low 5-S success cases.
2. Identify resources needed for 5-S transfer and future implementation.

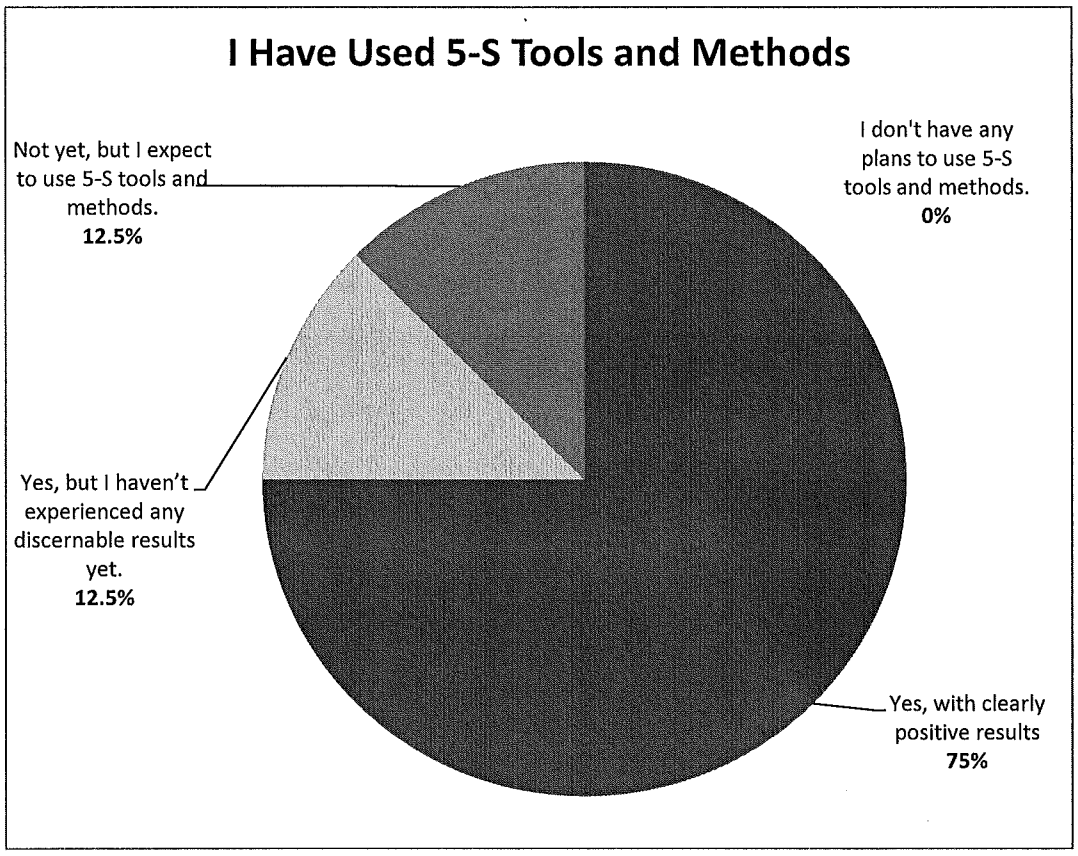
An impact model was made to identify the desired outcomes of the training.

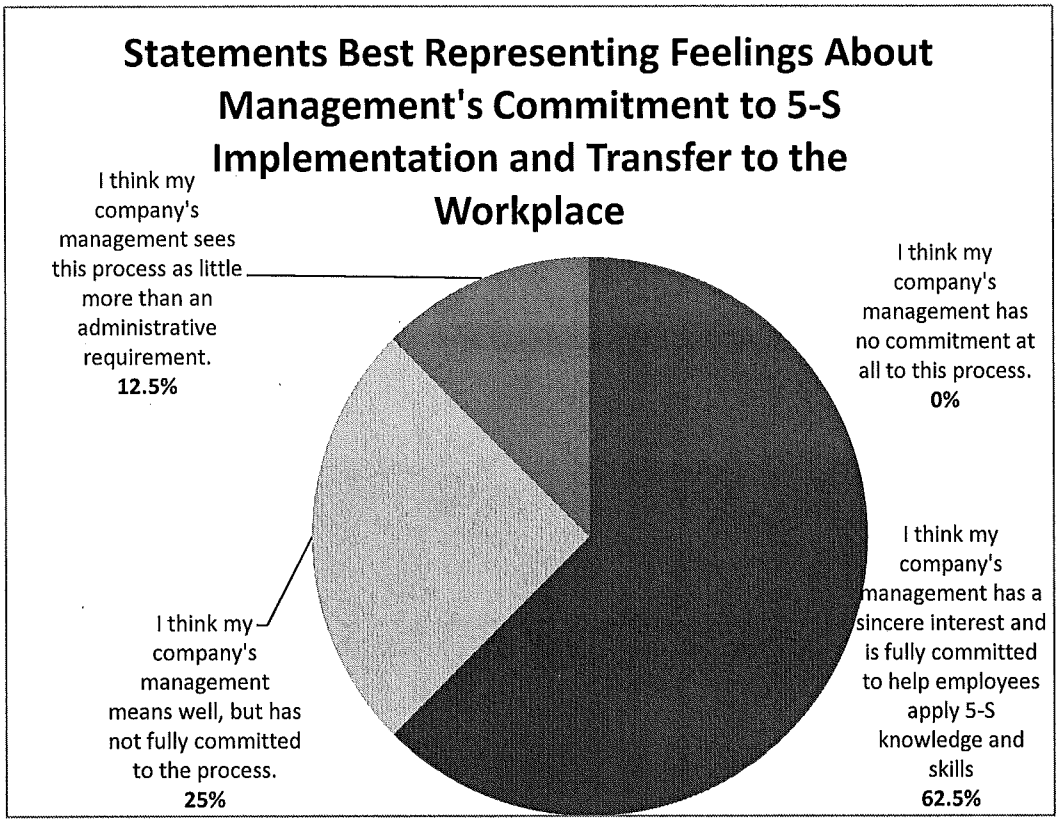
5-S Training Impact Model

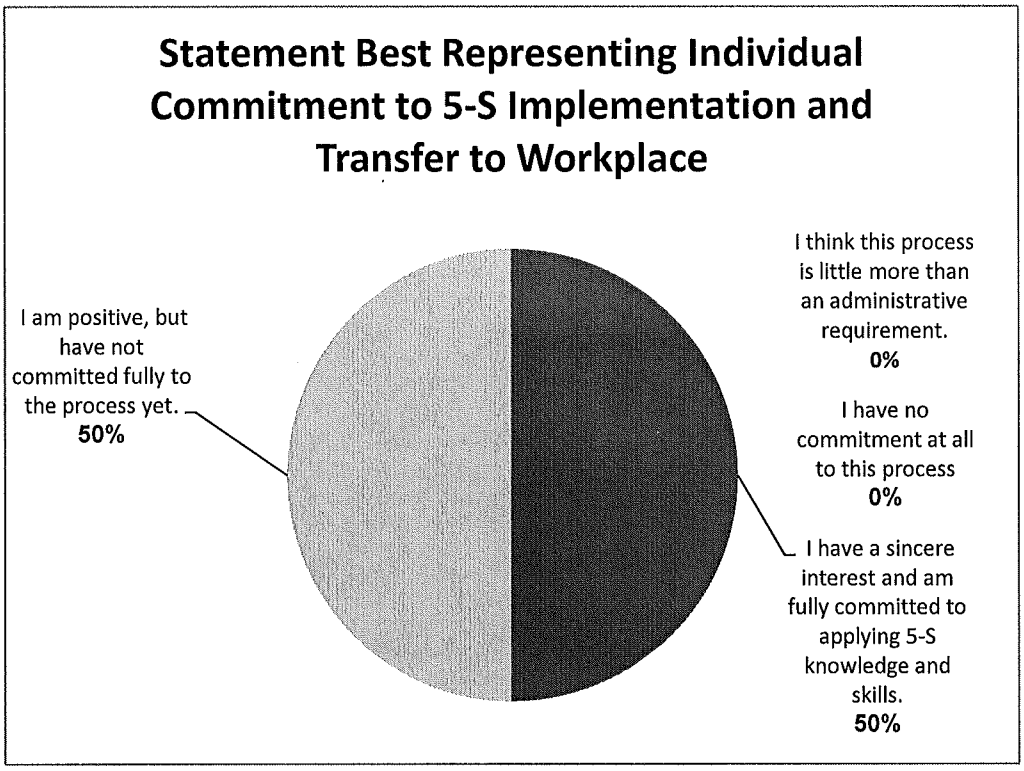
Participants	Key Knowledge and Skills	Critical Applications	Key Results
• Production Workers	• Look at things in a systemic and organized way (**MAYBE**) • *Organize Work area(s)* • New attitude towards manufacturing practices-shift from reactionary to preventative • Ownership	• Address and or reward positive improvements • Minimize external mistakes by using PCAR (internal catch system)	• *Quality on site* • *Increasing overall efficiency and consistency* • Increase overall effectiveness • Improved safety • Reducing costs • Minimal wastes • Achieve shorter lead times • Improving the existing good manufacturing practices • Streamline (organizing processes, operational flow) • Increase production capacity
* *Notes **very** important element for the organization*			

Survey Results

Of the 13 employees that were surveyed regarding the 5-S training, 10 responded to the survey- a return rate of 76.92%. Two individuals exercised their right to withdraw. The survey results show that 75% of the participants have used 5-S techniques. More than half believe that management is committed to 5-S and half of the participants are sincerely interested and committed to using 5-S.




Statements Best Representing Feelings About Management's Commitment to 5-S Implementation and Transfer to the Workplace
I think my company's management sees this process as little more than an administrative requirement.
12.5%
I think my company's management has no commitment at all to this process.
0%
I think my company's management means well, but has not fully committed to the process.
25%
I think my company's management has a sincere interest and is fully committed to help employees apply 5-S knowledge and skills
62.5%



Interview Results

The interview results were grouped into five categories: impacts, contributors, barriers, ideas for implementing new 5-S trainings and resources needed to implement 5-S. Most of the categories were then put into subsections and qualitative data from the interviews is presented. *Impacts.* The impacts of 5-S include 1) Productivity, 2) Saves time, 3) Organization/Cleanliness, and 4) Safety.

5) Productivity
   - There is an increase in productivity (5 shipments per week before 5-S, 15 shipments per week after 5-S).
   - Streamlined routes.
   - This area is more efficient because of 5-S.
   - Five-S will help transition into the new territory that we are entering with new projects.
   - Overall it has definitely improved productivity.
   - There is an increase in flexibility because space is cleared out and different projects can be done in the extra space that was created.
   - Overall it has helped us get things out faster. We have been able to turn things around quick. When you're cleaner and more organized things go faster.

6) Saves Time
   - Saved time.
   - 5-S helped decrease lag time.
   - I don't have to waste time telling people things because it is clearly marked.
   - Utilize time better.
   - Saves Time.
   - Saves time and time is money.
   - Saves a lot of time.
   - It used to be messy and wasting time looking for things that weren't there- that was a big plus for us, time waste was just cut in half.
   - Saves time. Less time looking for things.
   - This has saved time and kind of helps out.
   - Some of the changes we made save us time because we are not unnecessarily going back and forth.
   - It's hard to look back and think about how we did things before, but I know that there is a lot less wasted time.

7) Organization/Cleanliness
   - I throw stuff away according to the six month rule. If something has not been used in that timeframe I get rid of instead of letting it sit around.
   - I throw things out a lot more after 5-S and this reduces clutter.
   - Expectations at the beginning were to get more organized and 5-S did that.
   - I have learned to organize better after the 5-S training.
   - Organization-how to keep things more accessible.
   - Using a lot more of the organizational skills.
   - 5-S improved organization.
   - People are more aware of the expectations they have on them. They know where to put parts.
   - It has improved our housekeeping a lot.
   - The area just looks nicer than it did before. It still gets messy once in a while, but not nearly as much as before.
   - The work environment is cleaner.
   - We don't have the clutter. Definitely less clutter, it just seems more professional too.

8) Safety
   - There is an increase in safety because the work area is not as crowded.
   - Pallets have been moved and this has made our work area safer.

Contributors. Contributors to 5-S impact and transfer include: 1) Support from management, 2) Ownership, 3) Cooperative employees, and 4) Continual modification of 5-S.

5) Support from management
   - Support from Production Manager has been a contributor to successful implementation.

- Upper management is still supportive, it hasn't been swept under the rug, but sometimes it might seem like it's forgotten about.
- Upper management is supportive but if 5-S is going to be implemented companywide more stress needs to be put on it.
- The Production Manager's support has helped me with 5-S.

6) Ownership
   - One big positive is the fact that people take more pride because they had a big hand in the reorganizing.
   - People set things up how they wanted and there is ownership.
   - Increased sense of pride because the workspace looks professional.
7) Cooperative employees
   - Workers and management being supportive helps with 5-S.
   - There is a lot of teamwork; people are engaged in the process.
   - Good people. Good people that we work with. The ones that are doing it, they realize how it has helped the departments and in turn we help each other.
   - The other departments doing 5-S helped my department also.
8) Continual modification of 5-S
   - We're working on modifying the process so it works well for my department and the whole plant. We're working to un-clutter things and streamline things. It's pretty good now, but we still need to work on it.
   - 5-S is evolving and the process keeps changing according to current needs.
   - Minor changes they could implement themselves, more 5-S training might be a waste.

Barriers. Barriers to 5-S were divided into the following subcategories: 1) Time, 2) Lack of support from management, 3) Inconsistency, 4) Motivation, and 5) Resistant employees.

6) Time
   - Not much has changed. There are a lot of things that need to be change, but we have not had the opportunity or the time to go through and implement everything in my area.
   - Time restraints are the biggest problem.
   - Not enough to time.
   - Time constraints. Throughout the day things get scattered and you run out of time to put them back in order.
   - We need time at the end of the day to implement 5-S.
   - People need to take the time and understand that it is an important thing to do and this would make everyone's life a little easier.
   - Time constraints are barriers.
   - Need time at the end of the day to do it.
7) Lack of support from management
   - No support. It seems like they are just trying to go through the motions. Because without stopping and implementing it throughout the plant, I don't see it being very successful or anything being accomplished.
   - Not much support for managers.

8) Inconsistency
    - Over the weekend things get messy from other shifts, it takes till Wednesday to get things back in order.
    - It's frustrating that other areas don't do 5-S. It's like I have to do more work than other people if I try to do 5-S. Other people are reaping the benefits of me working harder and I'm not getting anything for it. It's frustrating.
    - Other areas that have not been trained interfere with the standard operating procedures in my department.
    - Include everyone in the process; don't just let each shift do their own thing.
    - Have everyone that works in a specific area work on it.
    - Having everyone from all the shifts come in for the training would be beneficial.
    - We only have one shift that makes it a lot easier. When we started we had three shifts. Having one shift makes implementing it easier.
    - Tools were supposed to be kept in the boxes, but some of the equipment varies and does not get put back.
9) Motivation
    - Overtime we get lackadaisical. When it first started we were gung ho about it.
    - Lack of motivation is preventing the 5-S from being kept up in that area.
    - 5-S will probably stay the way it currently is, people try to make an effort but after a while it dwindles off.
    - We need everyone to follow through for it to be beneficial. Getting people to follow through is difficult.
10) Resistant employees
    - Implementing 5-S throughout the whole plant would be a waste of time and money because some people get set in their ways and they just are not going to change.
    - The biggest obstacle in other areas is the employees themselves. There is a group of guys that have been here a very long time and they do not like to change things.
    - In order to change the culture of the plant some people may not fit.
    - There are some people that are going to oppose anything we do and they might need to move on.

Necessary resources for 5-s transfer and future implementation. Interviewees identified the following elements as necessary for successful 5-S transfer: 1) Time/standardizes schedule, 2) Managerial Support, 3) Motivational incentives, and 4) Consistency/inclusivity.

1) Time/standardized schedule
    - Need more time a standard schedule for time to do 5-S would help.
    - We need time at the end of the day to implement 5-S.
2) Managerial support
    - Support from management for other 5-S training.
    - Upper management is supportive but if 5-S is going to be implemented companywide more stress needs to be put on it.

3) Motivational incentives
    - I think a bonus would be great.

- Having someone come in randomly and check up on the process would help.
- Competition between groups drives people.
- Small bonuses $25-$50 for following through on 5-S procedures.

4) Consistency/inclusivity
   - Include everyone in the process; don't just let each shift do their own thing.
   - Have everyone that works in a specific area work on it.
   - Having everyone from all the shifts come in for the training would be beneficial.
   - Having everyone involved.
   - Have a standardized flowchart after the whole plant has gone through 5-S.

Success Stories

High success story of Jon. Jon stated several times that implementation of 5-S has streamlined the routes in the plant and has made things flow better than before. He also said that using 5-S allows him to utilize his time better and saves him time. In addition, using 5-S increases throughput in Jon's area and he has a better handle on the product going through the plant. John feels like his environment is much less chaotic and that things are now uniform after transferring 5-S techniques to the workplace. He is really happy with the outcomes of 5-S and said it worked well for his whole department. Jon started using the 5-S techniques when the trainers were still there and continued to use them after they left. He feels like 5-S increased productivity in his department because they do not waste time looking for things like they used to.

In Jon's opinion, doing the 5-S training was the best thing that happened in his department. Furthermore, the individual in this high success case asserts that 5-S was the best thing that happened to the whole plant. He feels like it really helped everything go through the plant better and they have less rejects. Jon says that his numbers speak for themselves; he has less lost parts, better communication within the departments, definitely. Jon said that 5-S has worked really good for him and his department. Jon remarked that he could not say anything bad about it, except that the trainers could have stuck around a little longer and done a few more. Jon feels that they should do other departments and said that would really benefit the company.

Elements that helped Jon transfer 5-S techniques to the workplace included "good co-workers" and "support from management". Even with all the success that Jon has had with the 5-S process, he sometimes feels a lack of motivation to do it. He thinks that having random checks, competitions between workgroups or small bonuses could help keep the motivation levels up.

Low success story of Joe. Joe sees the value of 5-S and said that it saves time and he spends less time looking for things. He also discussed how the organizational techniques have made things more accessible. However, Joe feels as though not much has changed. He said that there are a lot of things that need to be changed, but he has not had the opportunity or the time to go through and implement everything in his area. Joe does not feel like he has much support from management. He said it seems like they are just trying to go through the motions. Joe said that unless they stop and implement 5-S throughout the plant, he does not see it being very successful or anything being accomplished.

Joe feels frustrated with the inconsistency and it is really hard for him when his coworkers and other departments do not do 5-S. He said that it is hard to get motivated to spend the time to do 5-S. Right now when he tries to transfer to 5-S techniques to the workplace he feels like he is doing extra work and not reaping any benefits from it. Joe thinks that for 5-S to be successful standard operating procedures need to be established and all shifts need to come in for a training so they are aware of the expectations. Joe also believes that for 5-S to transfer to the workplace management needs to stress the importance of the process and allow them time to do it.

Conclusions

This study found that barriers to 5-S transfer include time, lack of support from leadership, inconsistency, motivation, and resistant employees. Contributors to 5-S impact and transfer include support from leadership, ownership, cooperative employees, and continual modification of 5-S. It is concluded that teamwork, leadership support and ownership are the factors that are creating the gap between the departments. The preceding factors are present in the areas that are successfully implementing 5-S and lacking in the areas that are struggling with the training transfer.

Leadership's role in 5-S transfer to the workplace. This study found that there was a gap in employee perception of leadership support. Leadership support was identified as a contributor to 5-S transfer by some individuals and as a barrier by others. The employees that transferred 5-S skills to the workplace reported a very high level of support from leadership, specifically the Production Manager. Individuals struggling to transfer 5-S techniques to the workplace did not feel that same support.

Use of training. A very prominent theme that surfaced during this study through the survey and interview process was that use and transfer of 5-S techniques to the workplace saved time. This improved organization was also reported as occurring when participants use 5-S. Organization was included in the impact model for this project and the Production Manager felt that it was a very important outcome.

Specific applications. Company XYZ rearranged where they store parts and streamlined routes. Streamlining was identified as a desired outcome and listed in the impact model. Company XYZ is entering new territory and has contracted projects that they have never done before. Employees feel that applying 5-S techniques will aide in the transition to this new territory.

Creating mobile cabinets was a specific application that has been very helpful. Using the cabinets is the easiest 5-S technique for some employees to follow because it works well and was a significant improvement.

Participants' suggestions to increase transfer and for further 5-S trainings.

- Training is necessary for 5-S success.
- Support from management is needed for other 5-S training.
- More training, I wish they could have swept through the whole plant.
- We need Motivation.
- A "spy" from another department could come in and check. The department that "loses" could buy pizza from the winning team. Small bonuses of $25-$50 to motivate people to do 5-S. If we save the company money- it would be nice to get a little bonus. Team bonuses, working as a team to do the 5-S process.

- Everyone needs to be part of the process.
- Need more time a standard schedule for time to do 5-S would help.
- It needs to be all at once. Don't try to do a little bit here, a little bit there. Dedicating a week to the process and implementing the techniques throughout the plant.
- Include everyone in the process; don't just let each shift do their own thing.
- Having someone come in randomly and check up on the process would help.
- Competition between groups drives people.
- Having everyone involved.
- Have a standardized flowchart after the whole plant has gone through 5-S.
- The 5-S process as it is now could stand to be modified.
- The tooling needs to be in a more neutral location.
- Need time at the end of the day to do it.
- The biggest obstacle in other areas is the employees themselves. There is a group of guys that have been here a very long time and they do not like to change things.
- In order to change the culture of the plant some people may not fit. There are some people that are going to oppose anything we do and they might need to move on.
- Upper management is supportive but if 5-S is going to be implemented companywide more stress needs to be put on it.

Recommendations

The following recommendations take the relevant literature, the impact model and the qualitative data from the surveys and interviews into consideration.

- Allow a specific amount of time (i.e. 30 minutes) at the end of each shift to implement 5-S practices.
- Provide consistent leadership support in all areas.
- Continually modify the process: allow the people who work on the machines to have input in this process.
- Stress the importance of 5-S practices to all shifts and maintain consistent expectations.
- Reiterate the positive outcomes that 5-S implementation has and reasons why it is important to utilize 5-S techniques to individuals that are resistant to change.
- Conduct random inspections.
- Foster teamwork by having competitions between departments.
- Provide motivational incentives to individuals and teams that implement 5-S practices.
- Conduct 5-S trainings in other parts of the plant.
    - Wait till there is adequate time for the training and have employees from all shifts attend the training.

Following these recommendations will be beneficial to Company XYZ. It will aid in improving their current 5-S efforts. Adhering to the recommendations above will be helpful in eliminating the gap between the department that is successfully transferring 5-S techniques and the department that is currently struggling. Also, referring to these recommendations will ensure that future 5-S trainings have an efficacious impact and transfer to the workplace.