Self-Efficacy for Employee Participation: An Exploratory Investigation

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(ABSTRACT)

This study explores self-efficacy as an explanation for individual differences in participation in a manufacturing organization with a structured participation program. Participation covers three distinct dimensions of behavior: (1) decision-making pertaining to tasks, (2) good citizenship in the form of extra effort and helping others, and (3) contributing to improvement in work processes. Self-efficacy refers to an individual's belief that he/she can successfully perform an activity in a specific situation. The project was based on an action research design in which the first phase examined the dimensionality of participation self-efficacy, the relationship between participation self-efficacy and actual ratings of participation, and the relationship between perceptions of situational factors and self-efficacy. Exploratory factor analysis found preliminary support for the three proposed dimensions of participation self-efficacy and also for a fourth communication dimension. Weak (e.g., \( r = .27 \)) and non-significant correlations were found between self-efficacy and actual participation ratings. Situational factors were examined as perceptions of barriers which were proposed to be inversely related to self-efficacy. As expected, negative correlations (ranging from \(-.28\) to \(-.45\)) were found between perceptions of situational factors and participation self-efficacy. Phase two of the project evaluated a critical thinking training program designed to increase employee participation. A Pre-test Post-test/Nonequivalent control group design was used to study the influence of training on learning self-efficacy and participation self-efficacy. ANOVA and ANCOVA found no significant differences in post-training self-efficacy between the trained group and the control group.
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CHAPTER 1

Introduction

Employee involvement or participation is a core element in current management thinking and practice. Employees participate and get involved through a range of behaviors such as making decisions, suggesting innovations, and putting forth extra effort and helping others. Participation is traditionally defined as "a process in which influence is shared among individuals who are otherwise hierarchical unequals" (Wagner, 1994). Organizations are increasingly turning to employee participation as they cope with increased competition and new customer demands.

Employee involvement or participation (referred to hereafter as participation) is considered to have a positive influence on organizational effectiveness by practitioners and academics. The traditional view is that participation increases employee motivation and commitment, and effectively taps into a broader range of employee abilities and potential. However, the published research provides only weak support for the hypothesized relationship between participation and performance (Wagner, 1994; Cotton, Vollrath, Foggatt, Lengnick-Hall, & Jennings, 1988).

Several factors contribute to the discrepancy between practitioner beliefs and research findings. First, researchers and practitioners differ in their definition of participation. The research on participation in decision making (PDM) usually defines participation as shared influence in decision making whereas practitioners incorporate a
broad range of activities under the label of participation (Wagner, 1994). Managers and employees are defining participation more broadly than the PDM research when they use it to refer to the beneficial effects of delegation, consultation, or multivariate interventions (Wagner, 1994). An example of this broad practitioner definition of participation is found in the popular literature on empowerment (Lawler, 1994).

Second, researchers often omit consideration of situational factors such as rewards or employee access to information (Lawler, 1994). Lawler (1992) argues that individuals require information, power, rewards, and ability in order to participate successfully. Organizations differ in the degree to which they support or constrain participation and this influences the participation and performance relationship (Pasmore & Fagans, 1992).

Third, individuals differ in their level of participation. Given a suggestion program or a problem solving team, many individuals respond, but others let these opportunities pass by. It cannot be assumed that individuals prefer participation over non-participation. Many people avoid rather than seek participation. For example, Neumann (1989) reported that two-thirds of a work force chose not to participate in organizational change efforts when given the opportunity.

The present study focuses on the question of why individuals, in a common context, differ in their participation behavior. Several explanations can be suggested for this phenomenon. Participation requires that individuals think critically, continuously learn new things, put forth extra effort and persist, develop new skills, and take action. Hence, variability in participation may be attributable to a variety of individual differences (e.g., cognitive ability, personality, motives, centrality of work, etc.). Self-efficacy theory offers another promising explanation as to why apparently similar individuals behave very differently in similar situations. This research project uses the theory of self-efficacy to guide the examination of differences in the participation behavior of individuals.
Specifically, the first phase of this project examined the relationship between participation and self-efficacy. The second phase of the project assessed the influence of training on self-efficacy.

**Self-Efficacy and Participation**

Self-efficacy refers to an individual’s belief that he/she is capable of successful performance in a specific situation. It is not an estimation of skills; rather, it is a judgment about what one can do with those skills (Bandura, 1986). Self-efficacy is not just a foretelling or prediction about future performance; it is a belief which orchestrates and drives performance (Gist & Mitchell, 1992). As a motivational poster says: “Whether you believe you can or you can’t, you’re right.” People with high self-efficacy think, behave, and feel differently than people with low self-efficacy (Bandura, 1986).

Self-efficacy influences individual behavior through four mechanisms: choice of activities, effort and persistence, cognitions (e.g., goals, visualizations), and affect (e.g., anxiety). Applying these ideas to participation, individuals with high self-efficacy for participation are more likely to choose those activities which require participation, put forth the effort and persistence required to confront barriers to participation, set high goals for participation, visualize themselves as successfully participating, and control their anxiety about participating. On the other hand, individuals with low self-efficacy might avoid activities which require participation, quit in response to the barriers to participation, visualize negative outcomes to their participation, or experience paralyzing anxiety.
Self-efficacy is situation specific and refers to the domain of behaviors of interest (Bandura, 1986). For example, Saks (1993) studied self-efficacy related to the domain of behavior required by entry-level accountants. He used a measurement protocol for self-efficacy in which the set of tasks required for successful performance was used to generate the items to assess self-efficacy. Similarly, the present project defines self-efficacy in terms of a specific set of activities required for successful performance. Specifically, this project studied activities required to successfully participate in an organization with a structured participation program. Here, participation self-efficacy is conceptualized as self-confidence beliefs corresponding to three dimensions of behaviors: (1) beliefs that one can make decisions on how to best do their job; (2) beliefs that one can put forth extra effort and help others; (3) beliefs that one can suggest ideas and solve problems to improve the group's work process.

Self-efficacy was originally conceptualized and tested in clinical and educational settings. These studies concluded that self-efficacy is better than past performance as a predictor of future performance and that clinical interventions which increase self-efficacy change dysfunctional behavior (Bandura, 1977). These early findings that self-efficacy is an important force driving human behavior have led to studies in organizational contexts. A review of this research indicates support for a relationship between self-efficacy and work behaviors (Sadri & Robertson, 1993). For example, relationships have been found between self-efficacy and sales behaviors (Barling & Beattie, 1983), attendance (Latham & Frayne, 1989), job performance (Saks, 1993), and suggesting ideas (Gist, 1989). In line with these findings, this project proposed that participation is determined, in part, by self-efficacy.

Given that self-efficacy is an important predictor of future behavior, what are the sources or determinants of self-efficacy judgments? First and foremost, self-efficacy
judgments reflect past experiences. Success leads to high self-efficacy and failure leads to low self-efficacy (Mitchell, Hopper, Daniels, & Falvy, 1993; Mathieu, Martineau, & Tannenbaum, 1993). Thus, it is assumed here that participation self-efficacy reflects past experiences, and the measure of self-efficacy provides a useful diagnostic tool to assess the current process of participation in the organization.

In the situation where no previous experience exists, or in a novel or changing situation, self-efficacy (SE) is a complex judgment based on three categories of beliefs (Gist & Mitchell, 1992). First, the individual considers all that is required to successfully perform the task (i.e., task beliefs). Then, the individual considers the degree to which she/he possesses what it takes to be successful (i.e., self-beliefs). Third, the individual considers the degree to which the situation supports or constrains successful performance (i.e., situational beliefs). Given the two processes of SE formation, low self-efficacy may be caused by a lack of successful experiences, beliefs that one lacks abilities or the ability to learn, or by beliefs that the situation constrains successful performance. Because of this difficulty in interpreting the source of low self-efficacy, perceptions of situational constraints are assessed along with self-efficacy.

In summary, the first phase of this project examined the relationship between self-efficacy and participation and included perceptions of situational barriers as a determinant of self-efficacy. The second phase of this project assessed a training intervention designed to increase self-efficacy. The ideas which guided the second phase are presented in the next section.

Introduction
Self-Efficacy and Training

According to self-efficacy theory, training with the objective of improving trainee performance must build self-efficacy along with providing knowledge and improving skills. Maguire (1992), a leading training practitioner, put it succinctly: "No self-efficacy, no performance." Thus, recent models of training effectiveness reflect the view that training increases self-efficacy (Saks, 1993; Mathieu et al., 1993; Frayne & Latham, 1989; Gist, 1989). This present study adopts this view that training, with the objective of improving participation, must increase participation self-efficacy.

Gist and Mitchell (1992) use their model of the determinants of self-efficacy to explain how training potentially influences self-efficacy. First, training which improves performance experiences, in turn, increases self-efficacy (Mitchell et al., 1994) Second, training which influences beliefs about learning influences self-efficacy. This learning self-efficacy is a self-belief which determines, in part, self-efficacy for performing specific activities which require learning new things. Third, training which influences perceptions about the situation influences self-efficacy. Based on these relationships suggested by Gist and Mitchell, it is expected that training can increase participation self-efficacy through three relationships: (1) training increases actual participation behaviors which in turn increases participation self-efficacy; (2) training increases beliefs about learning (i.e., learning self-efficacy) which in turn increases participation self-efficacy; (3) training influences perceptions of situational barriers which in turn affects participation self-efficacy.

Several training methods (e.g., self-management, cognitive modeling, and behavioral modeling) have been used to increase self-efficacy (Frayne & Latham, 1989; Gist, 1989; Gist, Schwoere, & Rosen, 1989). This project extends this research by
studying a training method of critical thinking and collaborative learning. The critical thinking method teaches students the process of generating ideas, clustering similar ideas, establishing a label for similar ideas, and evaluating current situations against these labeled ideas. Applying the method of critical thinking, trainees established criteria of what should be happening in an organization based on participation principles, and then evaluated the degree to which their organization met each of these criteria.

**Research Design and Research Questions**

The focus of this project was to apply the theory of self-efficacy to understand individual employee differences in participation behavior. The site for the study was an organization with a Scanlon plan - a structured approach to employee participation. Based on the action research model, the basic research strategy was to assess the current state of participation, report back to the organization, and assess an intervention designed to improve participation.

Both qualitative and quantitative methods were used during the two phases of the project. The first phase began with three months of observation and interviews of managers and employees. The researcher was employed by the organization as an intern working with the director of human resources (HR). Several times a week she spent time on the shop floor to complete these HR duties and to observe and interview employees and managers. Also, she attended a range of meetings. Frequency tallies of who spoke up in the meetings were recorded. The information gathered from the observations and interviews was systematically recorded following the site visits. Also, archival data (such as the notes from monthly and problem solving meetings) were gathered. This phase concluded with a survey which assessed (1) the individual's participation self-efficacy and
(2) the perception of situational barriers to participation. At the same time, an assessment of employee participation by their managers was collected. This survey and participation assessment information provided the baseline data required in the first step of the action research model (i.e., diagnosis and assess). This baseline information was reported to the "process review board," an employee team charged with auditing the participation process.

Based on the qualitative information and the literature, participation was conceptualized as three dimensions of behavior: (1) decision making pertaining to tasks, (2) good citizenship in the form of extra effort and helping others, and (3) contributing to improvement in work processes through making suggestions and problem solving. Participation self-efficacy was conceptualized as the individual's belief that he/she can do these participation activities. The first phase of the project was designed to explore the following questions: (1) Is participation self-efficacy a multidimensional construct? (2) Is there a relationship between participation self-efficacy and participation? (3) Do perceptions of situational barriers determine, in part, participation self-efficacy?

The second phase of the project evaluated a training intervention which was designed to increase participation self-efficacy. A survey administered at the beginning and end of training assessed learning self-efficacy, participation self-efficacy, and a self-report of the frequency of participation activities. This survey was administered to the employees in training and to a comparison group of employees not in training. This second phase was designed to explore the following question: Does training increase self-efficacy? The conceptual and empirical literature relevant to these questions is reviewed in Chapter Two.
CHAPTER 2

Literature Review

This chapter presents a review of the literature pertaining to self-efficacy and participation. It contains two major sections. The first section summarizes relevant portions of the literature on employee participation. The second section presents self-efficacy theory as an explanation of individual differences in participation behaviors.

Participation

Participation is traditionally defined as a process of shared influence of decision making, information processing, and problem solving among individuals who are hierarchical unequals (Wagner, 1994). Schuster (1990) defines employee participation as a "structured, systematic approach to the involvement of employees in group decisions affecting work and the work environment with goals that include reducing product cost, improving product quality, facilitating communication, raising morale, and reducing conflict."

Organizations are increasingly interested in employee involvement and participation. Schuster (1990) reports that major collective bargaining agreements in the steel, auto, and communications industries provide for team and group approaches to decision making. As many as 35% of all firms in the U.S. utilize forms of employee
involvement, and as much as 25% of the American work force is covered by involvement programs (Gershenfeld, 1987). Lawler, Mohrman, and Ledford (1992) surveyed Fortune 1000 companies and found that the vast majority of large firms use employee involvement practices with at least some employees, that most firms reported these practices to be successful, and that the use of these practices is accelerating. Further, the frequent use of terms such as empowerment and involvement in the business and popular press are evidence of a broad practitioner interest in the topic of participation (Ledford & Lawler, 1994). Currently popular organizational development interventions such as total quality programs and self-directed work teams are predicated on effective participation (Pasmore & Fagans, 1992).

Employee participation is viewed as a tool to foster global competitiveness, and to improve productivity and the quality of work life (Schuster, 1990). This philosophy of employee participation is believed to increase employee identification, commitment, and loyalty (Locke & Schweiger, 1979). Kanter (1983) argues that participation energizes the rank and file. The assumption of practitioners, change agents, and academics is that participation improves performance through increases in employee commitment, motivation, and effective use of skills and abilities.

Research on employee participation goes back to the Hawthorne studies and the work of Lewin. Since then, a long stream of participation in decision making research has tested the model that participation is associated with improved performance. Contrary to the assumption that participation has a positive influence on performance, reviews of the participation research consistently conclude that only a weak relationship exists. Wagner (1994) reviewed eleven participation research reviews and found that participation (defined as "a process of influence sharing") has consistent but small effects on

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performance and satisfaction. Locke and Schweiger (1979) reported that only 20% of the studies on participation related employee participation to improved performance.

Participation research encompasses several different types of participation. Cotton et al. (1988) created five subgroups of the participation research based on the scope of influence, the timeframe, and the structure of participation: formal and direct participation in work decisions (e.g., self-managed work teams), consultative participation (e.g., Scanlon plans), short-term participation (e.g., participation in goal setting), informal participation (e.g., the relationship between the employee and the leader), and employee ownership. They concluded that some forms of participation (formal and direct participation in work decisions, informal participation, and employee ownership) exert positive effects of performance. Another classification of different types of participation research is created by considering the levels of analysis (Klein, Dansereau, & Hall, 1994). Participation and performance may be studied at three different levels: (1) participation is defined as the extent to which decision making is shared among the members of the group and examined for its relation to group performance; (2) participation in decision making is an individual-level characteristic, thus participation and performance are a function of individual differences; (3) participation is a function of individual performance relative to average group performance (e.g., the same individual participates more in one group as compared to a second group). The current project studies consultative participation and studies participation at the individual level of analysis.

As noted in Chapter One, several issues have been raised about the participation research which could explain the discrepancy between the theory and research findings. One explanation is that researchers traditionally define participation as the sharing of influence, whereas practitioners apply the concept more loosely, “referring to a wide variety of instances where employees are accorded greater personal influence” (Wagner,
For example, a recent practitioner article discussed employee involvement and empowerment as "all employees take personal responsibility for the work and for improving the effectiveness of their jobs" (Andrews, 1994). This practitioner use of the term participation possibly includes concepts typically excluded in the participation research such as delegation procedures, in which employees have full control, consultative processes, where employees generate ideas but are excluded from final idea selection, and multiple interventions which change tasks, technologies, rewards, or structure along with participation (Wagner, 1994).

A recent model of participation activities contributes to the understanding of "what is participation?" Pasmore and Fagans (1992) identify five levels of participation based on the degree to which participation requires changes to the existing power distribution and nature of the system: (1) conforming (simply joining and participating in a system), (2) contributing (helping to improve the existing system), (3) challenging (attempting to change the system slightly while retaining the existing structure and distribution of power), (4) collaborating (seeking to involve or support others who share the agenda of changing the system), and (5) creating (designing the system or transcending the system to create a better system). Pasmore and Fagans argue that organizations typically only allow conforming and contribution and rarely encourage change in the distribution of power and change of the essential nature of the system.

Two other constructs in the organizational literature are used to create a construct of participation behavior: organizational citizenship behavior and innovation behavior. Organizational citizenship behavior (OCB) has been suggested as a broader conceptualization of participation (Pasmore & Fagans, 1992). Organ (1988) conceptualized OCB as dependability, helpfulness, and conscientiousness. Van Dyne et al. (1992) reconceptualize OCB, based on civic citizenship as "all positive organizationally
relevant behaviors of individual organization members.” This version of OCB consists of three dimensions: obedience (acceptance of rules, structure, and policies), loyalty (identification with an organization as a whole), and participation (interest in organizational affairs guided by ideal standards of virtue). Participation behaviors include: keeping informed, involvement in organizational governance, attending nonrequired meetings, sharing informed opinions and new ideas with others, being willing to deliver bad news, being willing to support an unpopular view, exchanging information and ideas with co-workers, and encouraging others to participate. Van Dyne et al. (1992) created a new OCB instrument to measure their three categories of OCB (i.e., obedience, loyalty, and participation). Although they proposed one dimension of participation, they found support for three dimensions of participation: (1) compliance and social (2) self-focus (3) problem solving and change agent. Compliance and social behavior includes attending meetings, sharing information with co-workers, and going to events outside of work which benefit the organization. Self-focus behavior includes putting forth extra effort and learning new ways of doing things. Problem solving and change agent behavior includes activities such as encouraging others to generate ideas and diffusing change ideas across the organization.

A model of innovation behavior is also useful for creating a larger definition of participation behavior. Participation typically requires that employees generate innovative ideas and implement improvements. Kanter (1988) defines innovation as the production and implementation of useful ideas and views innovation as a multi-stage process. First, the individual recognizes a problem and generates a tentative solution. Next, the individual seeks support for an idea. Finally, the individual completes the idea by taking action and implementing the idea. The original participation in decision-making (PDM) concept
addressed shared influence in problem solving, and Kanter’s innovation model provides a clarification of these participation problem solving behaviors.

Based on the concepts of PDM, OCB, and innovation behaviors, participation in this project is defined as three domains of behavior: (1) decision making pertaining to tasks, (2) good citizenship in the form of extra effort and helping others, and (3) contributing improvement in work processes through idea generation and problem solving. These dimensions correspond to three different scopes of influence: a narrow job scope, influence over self-behaviors, and influence over group processes.

A second explanation for the discrepancy between conventional wisdom and research finding is the lack of consideration of the situation in the participation research. Ledford and Lawler (1994) argue that effective participation requires that employees have access to rewards, power, competence, and information. “Any intervention that is not reinforced by multiple subsystems is unlikely to have major effects on performance because it is likely to be overwhelmed by organizational subsystems that do not reinforce participation” (p. 634). Situational factors are likely to play an important role in determining in what way and to what extent an individual participates.

Research which includes perceptions of the situation is useful in understanding the situational barriers which influence participation. Scott and Bruce (1994) tested a model that organizational climate for innovation influences innovation behaviors. They proposed two dimensions of climate for innovation: organizational support for innovation (e.g., open to new ideas, willing to try new ways of doing things) and available resources (e.g., time, finances, managerial support). Their survey of employees in a research department found a positive relationship between the perception of organizational support for innovation and individual innovation. The perception of available resources was not related to innovation behaviors. This concept of individual perception of an organizational

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climate for participation is useful in creating a concept of situational barriers to participation.

A third explanation of the research findings of a weak relationship between participation and performance is that individuals differ in their response to the opportunity to participate. Since the early history of participation, researchers have searched for individual differences to explain why and when participation works. Vroom (1960) investigated the impact of personality variables on the self-reported effects of participation. He found that individuals who are low authoritarians with a high need for independence benefited the most from participative opportunities. Similarly, the model of work redesign includes individual growth need strength to explain how people react to complex challenging work (Hackman, 1991). Recent models of participation behaviors include individual differences such as cynicism (Van Dyne et al., 1994), and problem solving orientation (Scott & Bruce, 1994).

Pasmore and Fagans (1992) ask, "Why do people vary in their taste for involvement in the decisions that affect them?" and conclude that it has to do with the level of individual development and individual self-confidence. They propose five levels of individual development and self-confidence for participation: ego regressive (the system has destroyed natural inclinations to become involved); ego potential (readiness to participate in low-risk decisions); ego-prepared (readiness to take part in discussion that involve some conflict and self-definition), ego-involved (one is prepared to help change the system), and ego-committed (one is prepared to put one's future at stake to help bring about change; one develops a high level of self-efficacy). Based on these ideas, this project applied the theory of self-efficacy to understand the psychological motors which drive participation. The following section describes the theory and research on self-efficacy and participation.
Self-Efficacy and Participation

Self-efficacy theory provides an explanation as to why individuals with similar abilities perform differently in similar situations. Self-efficacy is an individual’s beliefs about his/her capability to perform an activity successfully (Bandura, 1986). It reflects the individual’s beliefs that he/she actually can do the activity given a specific situation. This section reviews the theoretical and empirical literature pertaining to self-efficacy (SE). First, the meaning, consequences, and determinants of SE are reviewed. Second, the theory and research on training interventions designed to increase self-efficacy are presented.

Bandura’s Self-Efficacy Theory. Self-efficacy is defined as the belief that one can successfully execute a specific activity. It refers to people’s judgments of their capability to perform specific tasks in specific situations. In this way, self-efficacy differs from self-esteem which is a global trait that accounts for overall performance optimism. Druckman and Bjork (1994) refer to self-efficacy as simply self-confidence and conclude that self-efficacy differs from the constructs of self-esteem, self-concept, locus of control, and learned helplessness, but that all these constructs describe the phenomenon of the “cognitive processes by which a person regulates thoughts and action to attain desired outcomes or to control events in his or her life” (p.178).

Given that the individual has the required abilities and that the situation encourages successful performance, self-efficacy beliefs influence behavior through four motivational processes: choice of activities, effort and persistence, goals and thoughts, and affect (e.g., anxiety). Individuals with high self-efficacy believe that they can successfully perform, and therefore they seek challenge, persist in the face of difficulty, set high goals, visualize positive outcomes, and manage their anxiety. Math students with high self-efficacy
continue to work on problems and correct their mistakes to a greater extent than math students of similar ability with low self-efficacy (Collins, 1982, reported in Bandura, 1990). Unemployed job seekers with high self-efficacy put more effort into job search activities than unemployed individuals with low self-efficacy (Eden & Aviram, 1993). Individuals with low self-efficacy believe they lack the capability to perform successfully. Thus, low self-efficacy is characterized by those individuals who avoid situations in which they feel threatened, quit in response to failure and criticism, create disabling thoughts, and are paralyzed by their anxiety (Bandura, 1986). This helplessness behavior pattern emerged when individuals with low computer self-efficacy were placed in a computer tutorial training situation (Gist et al., 1989). Differences in self-efficacy also explain an individual’s response to failure: individual’s with high self-efficacy persist and learn from failure; individual’s with low self-efficacy create a downward spiral in which poor performance lower self-efficacy which lead to lower performance (Lindsley, Brass, & Thomas, 1993).

According to self-efficacy theory, four sources of information form these self-efficacy beliefs: (1) previous experience, (2) vicarious experience (i.e., modeling), (3) persuasion, and (4) physiological response. The main determinant of SE is previous performance experience, which influences SE through simple attributions of performance (e.g., Mitchell et al., 1993; Mathiue et al., 1993). Successful performance strengthens self-efficacy whereas poor performance lowers self-efficacy.

The second most influential source of information is vicarious experience (i.e., modeling, observing performance). Modeling influences task clarity and provides social comparison information in which individuals can assess the level of their abilities. Behavior modeling training is associated with increased self-efficacy (Gist et al., 1989; Eden & Aviram, 1993; Falvy et al., 1994). Behavior modeling typically presents basic information

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about the steps to successful performance, demonstrates successful performance, allows
the trainee to practice the task, and provides feedback on the trainee's performance.

Persuasion and physiological response contribute, to a lesser extent, to the
formation of self-efficacy. Persuasion refers to the process where credible individuals (e.g.,
coaches, managers, trainers) present information with the purpose of convincing an
individual that he/she has the ability required for successful performance, or that he/she is
able to increase the level of effort. For example, self-efficacy is manipulated through the
presentation of information about the effort required to be successful and the difficulty of
the task (Martocchio & Dulebohn, 1994).

Gist and Mitchell's Model. Gist and Mitchell (1992) refined Bandura's hierarchy
of sources and described two processes for self-efficacy formation. First, in the situation in
which previous experience exists, self-efficacy is an automatic judgment based on whether
that past experience is perceived as a success or a failure. Second, in the situation in which
no previous experience exists, or when new information is presented, the self-efficacy
judgment is formed through processing information. In the latter situation, Gist and
Mitchell (1992) proposed that three categories of beliefs form self-efficacy judgments:
task belief, self beliefs, and system beliefs. These beliefs mediate the four sources of
information and self-efficacy. Task beliefs refer to the individual's understanding of what
is required for successful task performance. Self beliefs refer to the individual's self
knowledge and includes beliefs about the ability to maintain effort and self discipline,
perceptions of the changeability of skills, and beliefs about the ability to learn. System
beliefs refers to the individual's perceptions about the degree to which the system supports
or constrains performance.

Gist and Mitchell use the three categories of beliefs to describe a three stage
process of self-efficacy formation: First, the individual considers what is required to do
the task. Here, the individual considers all the resources which are required to be successful such as the skills and abilities required and equipment resources. Second, the individual considers the degree to which he/she possesses that which is required to be successful. Third, the individual considers the situation and the degree to which the situation constrains or supports successful performance. In this way, self-efficacy is formed by task beliefs, self-beliefs, and situational beliefs.

The research support for the Gist and Mitchell (1992) model is limited. Mitchell et al. (1994) researched the three categories of SE determinants (i.e., task beliefs, self beliefs, and situational beliefs) over time in a study using an air traffic control computer simulation study. Individuals made their self-efficacy judgments and then were asked to indicate which of the following factors they considered in forming their self-efficacy: past performance, level of alertness, desire to do well, physical comfort, level of effort, current mood, task difficulty, task complexity, task novelty, work disturbances, available resources, past experience with similar tasks, and task feedback. They found that the determinants of self-efficacy shifted over time. Past performance was the most important determinant and this remained constant across trials. Task, self, and system beliefs were initially important, but their importance rating decreased over time. Mathieu et al. (1993) used Gist and Mitchell’s model to create a model of the determinants of self-efficacy during training. Studying students in a bowling class and using structural equational modeling, they found support for the following determinants of self-efficacy: past experience, achievement motivation, choice to take class, and perceptions of situational constraints. These studies indicate preliminary support for three categories of belief which determine self-efficacy and suggest a relationship between the perceptions of situational factors in determining SE.
**Self-efficacy and Work Behavior.** Self-efficacy has been found to be related to several important outcomes in organizational settings: job performance, turnover, and job satisfaction among entry-level accountants (Saks, 1993), sales performance among insurance agents (Barling & Beattie, 1983), attendance in a unionized organization (Frayne & Latham, 1987, 1989), training performance (Gist et al., 1989, Gist et al., 1991), training satisfaction (Gist et al., 1989), and choice of developmental activities (Noe & Wilks, 1993). A meta-analysis of the research studying the relationship between self-efficacy and work behavior reports a .40 mean adjusted correlation for the relationship between self-efficacy and work related behavior (Sadri & Robertson, 1993).

Saks (1993) conducted a longitudinal field study of self-efficacy theory among entry-level accountants in CPA firms in which he examined the relationship between socialization training, self-efficacy and adjustment. He found self-efficacy predicted job performance, job satisfaction, intention to quit, and turnover. Saks tested two models of self-efficacy: (1) SE mediates the relationship between training and performance; (2) Initial SE moderates the relationship between training and performance. He found support for partial mediation and support for moderation. The partial mediation relationship suggests that training influences performance through the increases in self-efficacy. The moderation relationship suggests that individual differences in initial self-efficacy interact with training such that individuals with low self-efficacy benefit the most from training.

The measure of self-efficacy used by Saks is more suited to organizations than the traditional measure of self-efficacy. Typically, self-efficacy is measured for one specific behavior (e.g., suggest ideas). The individual is presented with statements about that task which describe levels of increasing difficulty (e.g., I can suggest 1 idea; I can suggest 5 ideas, etc.). The individual responds to each statement “yes or no” that he/she can successfully perform at that specific level. The measure used by Saks differs in that it is

*Literature Review*
based on job analysis and presents individuals with several statements about activities required for successful performance. Individuals respond to each activity statement by rating their self-confidence that they can successfully perform that activity. Saks used several dimensions of performance to create his self-efficacy construct, but his study created one dimension of self-efficacy by adding up across all items. The measure of self-efficacy used by Saks provides a method to assess self-efficacy for those activities which are complex, multidimensional, and not easily quantifiable. In this way, self-efficacy is specific to the task and the situation.

Gist (1989) tested a model of self-efficacy as a determinant of a participation behavior. She studied the self-efficacy for idea generation among federal government managers in a training program. Gist found a positive relationship between self-efficacy and performance in idea generation. The present project builds on this research and proposed that self-efficacy is positively related to participation behavior. Whereas Gist's study focused narrowly on one specific behavior (idea generation), this project studied a full range of participation behavior which included idea generation, decision making, and putting forth extra effort and helping others.

**Self Efficacy and Training**  Self-efficacy has important implications for the design and evaluation of training (Gist, 1987). Training with the purpose of changing behavior must increase self-efficacy along with building skills (Mague, 1992). Training which increases self-efficacy, in turn increases behavior outcomes. Self-efficacy, in part, mediates the relationship between training and performance outcomes (Mitchell et al. 1994, Saks, 1993, Mathieu et al., 1993).

Several studies have tested the model that training increases self-efficacy which in turn is associated with improved behavior. Gist (1989), in a study of cognitive modeling training designed to improve idea generation among managers, tested two relationships:
(1) training increases self-efficacy; (2) self-efficacy predicts performance in training. She used a pretest/posttest with a control group design and found that the trained group had higher mean post-test self-efficacy than a control group. She also found that self-efficacy assessed early in training predicted later training performance. Based on these results, she concluded that self-efficacy is an important cognitive outcome in effective training. Frayne and Latham (1987, 1989) studied self-management training and tested two relationships: (1) self-management training increases self-efficacy; (2) self-efficacy predicts attendance. They studied union employees in a federal organization using a pre- and post-test design with two groups (the trained group and a group to be trained later). They found that the trained group had a higher mean self-efficacy as compared to the not yet trained group. They also found a positive correlation between self-efficacy and attendance. This study assessed self-efficacy at three points in time and contributed evidence to the stability in self-efficacy increases achieved during training. Latham and Frayne (1989) replicated these results in a study of the training of the original control group. The present project builds on this research by testing the relationship that training increases participation self-efficacy. The focus on participation self-efficacy is an important contribution in moving the study of self-efficacy beyond simple behaviors (e.g., number of ideas generated, number of days absent).

**Perception of Situational Barriers as a Determinant of Self-efficacy.** Self-efficacy theory was originally tested in clinical and educational settings. One of the original studies (Bandura, 1977) demonstrated that self-efficacy influenced the snake handling behavior of snake phobics. Martzeiller and Eastman (1987) critiqued this research suggesting that self-efficacy increased simply from the changed perception of the situation (e.g., subjects knew researchers were not going to allow them to get bitten by a poisonous snake). This early argument that self-efficacy is determined in large part by perceptions of
the situation needs to be carefully considered as self-efficacy is applied in uncontrolled field settings.

Gist and Mitchell (1992) noted that the same low self-efficacy score for two individuals can reflect different sources. In an example of two computer analysts assigned to complete a report, one analyst has low self-efficacy because she believes that she lacks the required skills. Another analyst is confident in his own abilities, but has low self-efficacy because he believes that situational factors will not allow him to complete the report on time. In this way, the phrasing of the self-efficacy question “How confident are you that you can perform this task” has two components: Do I have the skills and abilities? Does the situation allow me to perform successfully? Given that all organizations have barriers to participation in varying degrees (Pasmore & Fagans, 1992), these two components become an important issue in interpreting self-efficacy.

Several studies have considered the influence of perceptions of the situation on self-efficacy. Wood and Bandura (1990) studied changes in self-efficacy among a sample of MBA students performing decision-making in a simulated organization. They created two groups by manipulating beliefs that as managers they had an influence on organizational outcomes. They found significant differences in the resiliency (stability) of self-efficacy and in performance between the groups. When individuals perceived that they had control in the situation, their self-efficacy was resilient.

Mathieu et al. (1993) researched a path model of the determinants of self-efficacy change during a college course. Perceptions of situational constraints was supported as a significant determinant of self-efficacy. They conceptualized perception of situational constraints as those factors which individuals' perceived as interfering with performance improvements. Situational constraints were measured relating to college classes (e.g.,
number of other classes, extracurricular activities) and it was suggested that this concept be applied to perceptions of situational constraints in work situations.

The current project here builds on this research and defines perception of situational barriers as beliefs about the existence of factors which inhibit successful participation (e.g., time to pursue improvements) and the belief that the individual has influence over the outcomes of participation (e.g., ideas will be seriously considered and implemented, people are willing to try new ways of doing things). This concept incorporates the ideas about organizational climate for innovation discussed previously. It is proposed that these perceptions of situational barriers determine, in part, self-efficacy.

In summary, participation in this project is defined based on the concepts of PDM, OCB, and innovation behaviors. It is proposed that participation behavior is best conceptualized as three dimensions of behaviors: making decisions about the job, helping others and putting forth extra effort, and suggesting ideas and innovations to improve the group work process. The focus of this project is on understanding why individuals differ in their participation behavior given a context with a structured participation program. The theory of self-efficacy guides the study of this question. This project proposes that self-efficacy is related to participation behavior. Participation self-efficacy is conceptualized as the individual’s belief that he/she can successfully perform a range of participation activities. Using Gist and Mitchell’s (1992) model of how individuals form their self-efficacy judgments, this project proposes that perceptions of the situational barriers determine, in part, self-efficacy. Self-efficacy theory has a major implication for the design of training: Training, with the objective of changing behavior, potentially increases self-efficacy. The current project examines the influence of training on self-efficacy. The following chapter presents the methods used in the current study.
Chapter 3

Research Method

This research project was an in-depth field study of self-efficacy and participation in a single manufacturing plant. The primary focus was on assessing employees' self-efficacy for a range of participation activities. The project was an eight month study and, as planned, it evolved over time. During this time, the researcher worked part-time for the organization as an intern in the Human Resources department. The first phase, from September to December 1994, consisted of observation, unstructured interviews, collecting archival data, and administering a baseline survey. The second phase, from January through April, 1995, consisted of assessing the influence of a training intervention designed to improve self-efficacy and employee participation. This research was planned around the action research model. The process of participation was analyzed and measured; these results were reported back to the organization; an intervention was designed to improve participation; the influence of this intervention was evaluated and reported back to the organization. Research results were reported to the organization's Vision Process Review Board, a team of employees with the objective of auditing the participation process.

Both qualitative and quantitative methods were used during the study. The first phase of analysis consisted primarily of interviews and observation in order to develop an in-depth understanding of the current process of participation in this organization. The baseline survey was designed based on this qualitative information and the theories of participation and self-efficacy. Traditional quantitative methods were used in the second
phase which evaluated the training intervention using a self-efficacy assessment survey administered at the beginning and end of the training. This chapter describes the research site, the qualitative assessment, the measures of the constructs, the data collection and the analytical procedures.

Research Site and Subjects

The site for the study was a manufacturing plant in Virginia. The plant manufactures bi-metallic barrels used to extrude plastic and employs about 200 people. The employees refer to their production style as a craft shop because the barrels are customized and not mass produced. The machines used include both manually operated and computer assisted machines. Large investments are currently being made in new equipment. The plant operates on three fixed shifts, with a few employees working special hours designed to benefit production (e.g., ten hour shifts). Older employees are generally on the day shift with the younger employees on the evening and night shift. Typically, machine operators work many overtime hours and work six or seven days a week on a regular basis. These high levels of overtime are spoken of as a reward.

The plant is organized into four production groups: three product groups (small, medium and large, and twin barrels) and the components group (the parts required by the product groups). Each production group is led by a different manager and is evaluated on output, quality, on-time production, and gross margin profit. Each of the groups has its own areas of strengths and weaknesses, history, style of meetings, and plans for future change. The twin group has a long history as an independently operating group, and they credit themselves as being the first self-contained manufacturing cell in the organization.
Twins group consistently meets their production output goals, however their on-time delivery is very poor due to sales beyond production capacity. The twins group was observed to be very cohesive and stable with group meetings characterized by high levels of employee discussion and ideas. The twins manager is the product manager with the longest tenure.

The small barrel group was almost eliminated because of low profit margins, but within the last three years a dramatic turnaround has taken place. An experienced manufacturing manager was brought in, the work flow process was redesigned based on the concept of manufacturing cells, and now this group is very profitable. During early 1994, this group had an active idea suggestion system and ten problem solving teams. A major innovation to design a rework tracking system was generated by one of these groups. By September of 1994, the written suggestion system and problem solving teams had fallen into disuse. Small barrels is considered the area of innovation and plans exist for large investments in new equipment. This group is typically emphasized in plant tours as representing innovation in the work flow process and the manager is proud of his group’s position as a pioneer and innovative group. Small barrels has a consistent production track record, although 1995 got off to a slow start. This group was the first to achieve the organizational goal of 80% on-time delivery. The monthly meetings typically review monthly charts of production, quality, and on-time delivery, and the manager presents a current topic (e.g., customer focus of the month, outdoor training). Change (e.g., quality tracking charts, new systems to expedite orders, improvements in housekeeping, changes in personnel, new equipment, and machine training) is ongoing in the small barrels group.

Medium and large barrels is the largest production group. It has less consistent production output and quality, and has higher manager turnover (about five area supervisors in the last six years). The current manager joined the organization about a year
ago and is in the process of building up trust and establishing himself. The manager encouraged the formation of employee problem solving groups but the company president warned that this had been tried before with no fruitful outcomes. Monthly meetings are typically large, and it was observed that employees vented their frustrations about the system. During March, 1995, consultants assisted managers and employees in designing changes in the work flow process in medium barrels. The employees were observed to be excited and involved in the process of changing the work flow process. This group, like all the others, has many success stories in making barrels quickly in a crisis.

The components department has been identified as the critical area in order for the organization to meet its goals. Last summer, a crisis with the operation of the furnaces resulted in the entire organization focusing on assisting the components department. The operation of each of the three production groups depends on having the component parts, and the organization’s monthly focus is to get 148 barrels out of the components area. Within the last month, the components manager of two years left, and an engineer has taken over that managerial position.

The structure of management is a traditional hierarchy, and most of the decisions affecting employees are made by management (e.g., production goals, schedules, the sequence of work, amount and kind of training required). The organization is divided into the shop floor employees (production employees, maintenance, quality inspectors, and shipping and receiving) and office personnel (administrative assistants, sales people, engineers and planners, and top management). Top management consists of the president and vice-presidents of sales, finance, manufacturing, purchasing, and human resources.

This plant employees 161 people in manufacturing positions. Six levels of manufacturing positions are hierarchically arranged based on the complexity of the machine operated. Each level corresponds to a different pay level. Tenure ranges from
twenty-two years to less than one month, with an average tenure (for production employees) of twelve years. The plant experiences very low turnover among its shop floor employees and employees speak of the organization as being the second highest paying organization in the region. Ninety-eight percent of the production employees are white males (one woman and two African-American men out of the 161 production employees). The level of education ranges from high school to community college. Employees have attended a range of training programs and speak often of past courses such as Scanlon training and Zenger Miller. Several employees have attended off-site conferences such as Scanlon Planning Associates and a recent Jack Stack "the Game of Business" seminar. Employees frequently reminisce about these adventures.

This organization has a seven year history with Scanlon plans (Markham, Scott, & Cox., 1992). The Scanlon Plan evolved during 1984-1991, and the success of the plan was tracked by the number and quality of suggestions. This current project joins the organization as a revised Scanlon plan was introduced in February 1994, called the "Vision Process." The Vision Process has two components: a participation process and a bonus formula. The bonus formula is calculated based on net operating profit and on-time delivery. Participation in the vision process centers around a series of monthly meetings in which the area manager presents the monthly focus to his group. (The focus for the last ten months is to get 148 barrels per month out of the components department.) The vision process encourages employees to make decisions on how to best do the job and on handling problems with particular barrels. Several company-wide teams meet on a range of issues (e.g., participation process review, housekeeping and safety, ISO 9000 audit, management information systems, new equipment, and design of the work flow). The production groups create problem solving groups as needed and as time permits.
This research site was selected because it was considering the implementation of a new training program based on the methods of critical thinking applied to teaching Scanlon principles. It was reported that similar training programs had dramatically increased self-confidence and employee participation (e.g., willingness to bring ideas to managers) in other organizations where it had been implemented. Because employee participation was in the early levels of development, this organization presented the opportunity to study a training intervention designed to increase self-efficacy and participation.

The study of a single site is a necessary condition in research on self-efficacy, a construct which explains why individuals with similar abilities perform differently in similar situations. The key research focus is the degree to which individual differences in self-efficacy explain differences in participation behavior. This focus requires an assumption that technology and the organizational context (e.g., organizational norms, reward systems, etc.) are the same for all individuals.

Qualitative Aspects

The first phase of this project was to learn the process of participation in the organization. This was accomplished through extensive observation and unstructured interviews. The researcher attended the managers’ monthly meeting, the production groups’ monthly meetings, problem solving meetings, managers’ training, the managers’ morning planning sessions, process review board meetings, sub-team meetings of the process review board, housekeeping team meetings, and a meeting with suppliers. The most helpful information came from talking with the production employees on the shop
floor, observing informal communications during shift change, observing the huddles of employees around a barrel with a problem, and following how expedited orders were communicated by planners.

During the first phase, the objective was to define and describe all the behaviors representing participation. Managers were asked to describe the participation behaviors they sought among their employees. Employees were asked to describe specific examples of their past participation. When innovations or improvements were observed, employees were asked about the idea generation and decision making process for that change. This information was organized as a list of participation behaviors. This inductively derived list was compared to the concepts from the participation literature. A conceptual map of the process of participation was developed based on both the list of observed behaviors and the concepts of participation in decision making, organizational citizenship, and innovation behaviors. This conceptual map of participation was the framework for the baseline survey of self-efficacy, barriers to participation, and the managers' assessment of participation.

In summary, the qualitative observations were a critical aspect and a driving force to this project. It was the qualitative information which pointed to the need to carefully consider perceptions of situational barriers as a determinant of self-efficacy. The qualitative information also provided ideas for the conceptualization of participation behavior and provided the job information which is the foundation for the application of self-efficacy. The qualitative phase enabled some trust building between the researcher and the employees, and also revealed that trust building in this organization is a very long term process. The discussions with employees and managers continued throughout the project; this ongoing dialogue allowed for more meaningful interpretation of the project findings.
Quantitative Methods

Quantitative data were collected in two phases. The first phase used a cross-sectional survey design and surveyed 148 production employees. Phase two used a quasi-experimental design and surveyed 40 production employees in training and 24 production employees not in training. The subjects, survey development, and administration procedures are described for each of the two phases.

Phase One. Subjects for phase one included all employees in the four production groups and the shop floor employees in the quality inspection, shipping and receiving, and maintenance departments. All three shifts were surveyed. This baseline survey was administered at the same time as an annual employment survey. The HR director released a memo which explained that these two surveys would be administered at the same session. During their regular shift, at a scheduled time, groups of employees came up to the training room to complete the two surveys. The employee was given the annual survey first; upon completion of the first survey the employee was given the baseline survey. A temporary hire handled all aspects of the annual survey; the researcher handled all administration of the baseline survey. Employees were asked to put their name or employee number on the survey and it was explained that this was to track responses over time. All production employees were male, with one exception. This survey assessed participation self-efficacy and perceptions of situational barriers to participation. In conjunction with the survey, managers also provided a rating of individual participation for different dimensions of participation. The development of these measures is described in the “Measures” section below.

Phase Two. The second phase of this project was based on a quasi-experimental design and used a pre- and post-training survey along with a control group. This design is
based on Cook and Campbell's (1979) Pre-test Posttest/Nonequivalent control group design. The group to be trained was formed by signing up those employees on the process review board and by allowing employees to sign up for training. A control group was formed to be representative of the trained group (e.g., the trained group represented all four production groups and two shifts and thus the control group included all groups and two shifts). A survey was administered at the beginning and end of training to the 40 production employees in training and 24 production employees not in training. Like the baseline survey, employees were asked to put their name or employee number on the survey. The first training survey was administered after the introduction to training objectives and the guidelines for the class were reviewed. Self-efficacy research typically assesses self-efficacy after the student is introduced to the training content. In this way, the student has more information on which to base their self-efficacy judgments. The post training survey was administered during the fifth week of training. The control group consisted of 24 production employees not in training who completed the survey at the same time as the trained group. (The control group completed both the pre- and post-survey.) Those individuals in the control group were hand delivered a survey and given an envelope in which to place the completed survey. Instructions were given that the researcher would pick up the completed survey the following day.

The objective of the quasi-experimental design is to make inferences of causation within field settings. Threats to this inference include the effects of history, selection bias, and the effects of instrumentation (Cook & Campbell, 1979). The strength of this design includes pre- and post-measures to study if changes occur, and the use of a control group to support that changes occurred in trained individuals which did not occur in those not trained. History effects argue that other events occurring at the same time as training explain any measured changes. At the same time as training, medium barrel production
was working with consultants to redesign their work flow and this created an air of change. Evidence of history effects should be indicated by changes in the control group.

Selection bias may explain training effects due to pre-existing differences of the trained individuals as compared to those individuals not in training. The group of individuals to be trained was formed by first, including all employees on the process review board, second, through a first come first serve sign up process, and third, by the researcher walking through the plant and asking employees if they would like to sign up. Thus, there is a selection bias that individuals in training are more likely to participate in a company-wide team and volunteer for activities. Bias from self-selection was reduced because all employees must complete the training and must accrue 25 hours of training in order to be eligible for a pay raise. Evidence of initial differences between the training and control group is provided by analysis of the differences on initial survey responses. This analysis is presented in Chapter 4.

Instrumentation effects occur when differences between the control and trained group result from differences in testing such as differences in survey administration. The trained group had introductory information about training before completing the surveys, while the control group had very little information about the training program. The trained group took their surveys in the group classroom setting while the control group completed their surveys at their work centers. Ceiling effects are also an instrumentation problem. Very clearly, high self-efficacy was often reported and ceiling effects are a noted issue in self-efficacy assessment (Gist & Mitchell, 1992).

Mortality was not an issue in this training in that all production employees stayed in the training. Attendance was required in order to log in training hours, and all employees wanted to complete the required 25 hours of training.
Small sample size is a limitation of this study, although this is typical in training studies in field settings. The self-efficacy and training research of Gist (1989) and Latham and Frayne (1989) found meaningful effects with small sample sizes. Both studies used 60 subjects divided into a trained group and control group. Low sample size influences the power of the design, which indicates how likely it is to detect change. Training evaluators are warned that little is to be gained from evaluation designs with inadequate power. According to the table of statistical power for training research (Sackett & Mullen, 1993), expecting to detect an effect size = .2, using ANCOVA, with a sample of 60 (total subjects available for study, control and trained), and a correlation between pretest and posttest of .7, yields statistical power value of .41. This is interpreted that with a total available N of 60 and a .7 pretest-posttest correlation, the power to detect a small effect size (i.e., .2) is .41. Power in the range of .85 and above is preferred. Sackett and Mullen (1993) conclude that they see no solutions for combating the low statistical power of training experimental designs in settings where N is constrained. The development of the measures used in the training surveys are described in the next section.

Measures

This section describes the development of the measures used in phase one and phase two of this project. This section first presents the measures assessed in both phase one and phase two (participation self-efficacy, actual participation) and then describes perception of situational factors (assessed in phase 1) and learning self-efficacy (assessed in phase 2).
Participation Self-efficacy (SE-DECN, SE-HELP, SE-IDEA). Several measurement protocols have been established to assess self-efficacy (Lee & Bobko, 1994). Typically, items reflecting increasingly difficult performance levels are presented. The respondent indicates “yes” or “no” in response to the question “Can you do this level of performance?” This is appropriate for tasks which can be quantified and organized by increasing levels of difficulty (e.g., bowling, computer simulations, word processing performance). A different measurement protocol was used by Saks (1993) in a study of entry-level accountants. His measure of self-efficacy was based on job analysis and the respondent was presented with a list of related activities. Using a scale of 0 (no confidence) to 10 (complete confidence), the individual responds for each activity “How confident are you that you can successfully perform this activity?” This measurement protocol was used to create an assessment of participation self-efficacy. The Saks (1993) protocol was used because participation is not easily quantified or organized by increasing levels of difficulty as required by other SE assessment protocols.

Based on observations and interviews of employees and managers, a list of critical behaviors for participation was created. These critical behaviors were organized according to the dimensions of participation established in the literature: decision making within a narrow job scope, extra-effort and helping others, and innovation and problem solving. Out of an original list of about forty critical behaviors, nineteen items were retained for use on the pilot instrument. These items were selected with the objective of including items which would capture differences in self-efficacy within individuals and between individuals. Each of these statements was written in the format: “I can ……” followed by a specific description of the participation activity. For example, “I can put forth extra effort during critical times. I can make decisions on how to best do my job. I can bring problems to the attention of my manager.” Each statement had to represent a behavior; thus, a
statement like “I can understand financial information” was discarded. Also, items were
selected for which it was believed that all employees had equal opportunities to perform.
Thus, any items which were done by just a few employees, such as going off-site to
customer locations, were not included. Based on the pilot of the instrument, conducted
during the employee monthly meetings, a few items were eliminated because of a lack of
understanding of terms such as cross-training and manufacturing variance. The items for
the measure of participation self-efficacy on the training survey were kept the same as the
baseline measure with a few items added to further describe behaviors in decision making.

In order to develop scores for the three dimensions of participation self-efficacy,
the appropriate items were combined and averaged. The appropriate items were
determined by the a priori categorization of items, intercorrelations, and the results of
exploratory factor analysis. The initial extraction method was iterated principal factor
analysis with squared multiple correlation on the diagonal. The proportion criteria is used
to determine the number of factors retained. This method examines the cumulative
percentages of the variance extracted by successive factors. The factoring should not stop
until the extracted factors account for at least 95 percent of the variance (Hair et al.,
1984). An oblique rotation is used which allows the factors to be partially correlated with
each other. The factor loadings of .40 are considered significant and are reported (Hair et
al., 1984). The analyses of the intercorrelations and factor analysis, and discussion of the
formation of the participation self-efficacy scales are reported in Chapter 4. (Items for the
measure of these scales are presented in Appendix B.)

Participation (PART-DECN, PART-HELP, PART-IDEA, PARTOVR). At
the same time that the employees completed the baseline survey, the managers provided a
rating of each individual’s participation on the job. A rating scale was used in which the
manager was asked to make ratings comparing the employee’s participation to other
individuals in the department. The manager was asked to consider the participation of all employees in the organization and to rate each of his or her employees using a scale of 1 to 5 with anchors as 1 = among the weakest (bottom 15%), 3 = typical, acceptable, and 5 = among the very best (top 15%). (See survey instrument in Appendix A.) Nine items were used to create three scales for actual participation (PARTDECN, PARTIDEA, PARTHELP). Sample items include: “How good is this person at recognizing and correcting problems encountered on the job? How much has this person contributed to ideas and efforts to improve the work process? How well has this person responded when extra effort is required?” One item was used to assess overall participation (PARTOVR): “Overall, how involved is this person in participating in the Vision Process?” (The items for this measure are listed in Appendix B.) To assess the actual participation for all employees, five managers provided ratings of their employees. Interrater reliability was not assessed as multiple raters were not an option. Further discussion of the development of these scales is reported in Chapter 4.

In the training phase, participation was assessed through a self-report by trainees. Instructions were given to think back to the last four weeks and indicate the frequency of participation activities. Items include: “How many times in the last four weeks did you make decisions about how to best do your job? How many times in the last four weeks did you bring problems to the attention of your group? How many times in the last four weeks did you suggest ideas about making improvements?” Two items assessed participation for idea generating (PARTIDEA), two items assessed participation in decision making (PARTDECN), and one item assessed participation in helping (PARTHELP), and one item assessed participation related to communication (PARTCOM). (The items used to create these scales are presented in Appendix B.) The means and standard deviations of these items are presented in Chapter 4.
This decision to shift to a self-assessment by employees rather than the managers' assessment was based on several factors. In the context of this organization, to introduce participation ratings by managers would have been a significantly more powerful intervention than the training intervention. During the baseline phase, the managers' assessment was to be kept secret, but several employees found out about this. The managers indicated their discomfort with rating, complained that the ratings were not fair, and asked that no results be reported which used the managers' ratings. As the purpose of this survey was to report to the employee Process Review Board, results were needed which could be openly discussed. Also, employees may be better raters of their participation activities rather than managers. (When a manager was asked who suggested a major innovation in his group, he did not know.) Finally, it is expected that a self-report of behavior is more likely to be related to self-efficacy as compared to a manager's assessment of participation. This lenient (less stringent) test of the self-efficacy and participation relationship is appropriate in this exploratory study.

**Situational Factors (ORGSUPRT and SITBARS)** Based on the observations and interviews in the early phase of the project, it seemed likely that individuals' perceived that many barriers existed to limit participation on the job. For example, employees reported that their past ideas had not been seriously considered, and that time was not adequate to pursue ideas for improvement. Two situational factors were studied. First, a scale of individual perceptions about the organization's support of participation was created. This is based on the concept of climate for innovation (Scott & Bruce, 1994). This scale was created with six statements about organizational support for participation. The individual responded with a 5 point format (5=strongly disagree to 1=strongly agree). The scale was reverse scored (strongly disagree = 5, etc.) so that higher scores are interpreted as the perception of barriers. These statements explored the degree to which
individuals perceived that their organization encourages creativity, treats people with respect, values employee participation, listens to the needs of employees, encourages participation, and is open to change. This scale is labeled ORGSUPRT. (The items are listed in Appendix B.)

A second scale was created to measure specific barriers to participation. Four statements were used with a 5 point response format (5=strongly disagree to 1=strongly agree). These statements explored individuals' perceptions about the degree to which suggestions are implemented, suggestions are seriously considered, adequate time is available to pursue improvement, and people are willing to try new ways of doing things. This scale is labeled SITBARS. (The items are listed in Appendix B.)

**Learning Self-efficacy (SE-LEARN).** Based on the job analysis method of designing a self-efficacy measure, the critical behaviors required in the Vision Process training were collected through several sources: observation of critical thinking training in other organizations, attendance in two “train the trainers” workshops given by the designer of the Vision Process training, discussions with the designer and trainer of the Vision Process training. These critical behaviors include: critical thinking, problem solving, reading aloud to the class, making suggestions to improve the class, encouraging others in the class to speak up, learning in a group, learning how to learn, reading information in the training manual, brainstorming ideas, creating comparison charts, and expressing ideas and thoughts in class. Several behaviors in training are similar to participation behaviors on the job (e.g., communicating, problem solving and idea generating, encouraging others, helping others). (The items for this scale are listed in Appendix B.)

This measure was pilot tested on a group in another manufacturing organization in the area which currently has similar critical thinking training underway. Inspection of the responses from this sample (about 20 trainees) indicated meaningful differences in learning
self-efficacy responses between individuals. Sometimes, a very wide range of self-efficacy across items within individuals occurred, possibly as a literal interpretation of the instruction to “use the full range of the scale.” This instruction was removed.

Training Intervention

The training intervention consisted of five modules, each taking approximately four hours. The first module introduced the idea of traditional management compared to high performance management. The class used the techniques of brainstorming, reading articles aloud, working in learning teams, creating lists and categories, and analyzing the current situation in the organization based on those criteria. The next four modules used the process of learning established in the first module to explore each of the four principles of Scanlon Plans: identity, participation, equity, and competence. In each of these modules, the class worked in learning groups, explored what should be happening in an organization based on Scanlon principles, established the criteria to evaluate the degree to which Scanlon principles are applied, and evaluated the current organization based on those criteria. The training was conducted in 2 hour sessions in groups of 20 people. The training met for the first three weeks of February, skipped the last week of February, and met the first four weeks of March. No specific training objectives were set for the training program.

The researcher met on several occasions with the training consultant who designed the Vision Process training program, Ed Vitale, to clarify what this training was designed to change. These discussions used the framework of Gist and Mitchell’s model of training which influences self-efficacy through performance experiences and three categories of SE

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determinants (i.e., task, self, and situation) Vitale argued that the training was designed to increase learning self-efficacy (e.g., self-confidence that one can learn how to learn), and participation self-efficacy (e.g., self-confidence that one can bring problems to managers, solve problems, communicate between departments, help and encourage others, and generate ideas). The training was designed to increase participation activities, which in turn increases participation self-efficacy.

Analyses

As described in the first chapter, the purpose of phase one of the study was to explore the relationship between self-efficacy and participation, while phase two explored the relationship between training and self-efficacy. This section discusses the analytical techniques used to test these relationships.

Research Question One. The initial question in phase one addressed the issue of the dimensionality of participation self-efficacy. Empirical evidence for the conceptual map of three dimensions of participation self-efficacy was drawn from two analyses. First, the item correlations were inspected to determine whether they reflect the hypothesized dimensions. In general, within dimension item correlations would be expected to be higher than item correlations across dimensions. Second, item correlations were factor analyzed using an iterated principle factor method with an oblique rotation. It is expected that the items created to measure the three dimensions significantly load on the appropriate factor. With n=148, and items=19, the sample is smaller than desirable for confidence in results. However, the analysis should provide some useful evidence of the dimensionality of participation self-efficacy. It is expected that the proportion criteria will indicate that three

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factors explain at least 95 percent of the common variance. It is expected that the a priori factors will load on the appropriate factor.

**Research Question Two.** The second research question in phase one addressed the relationship between participation self-efficacy and the corresponding participation behavior. It is hypothesized that self-efficacy for good citizenship in the form of extra effort and helping others (SE-HELP) is positively related to actual participation in extra effort and helping others (PART-HELP); that self-efficacy for decision making (SE-DECN) is positively related to actual participation in decision making (PART-DECN); that self-efficacy for contributing to improvements in work processes (SE-IDEA) is positively related to actual participation in improving work processes (PART-IDEA).

Also, it is hypothesized that the overall measure of participation (PARTOVR) is positively related to the three dimensions of participation self-efficacy. Empirical evidence for these relationships are drawn from analyses of the correlations between SE-HELP and PART-HELP, SE-IDEAS and PART-IDEA, and SE-DECN and PART-DECN. The hypothesized relationships will be supported by positive correlations.

**Research Question Three.** The third question in phase one addressed the relationship between the perception of situational factors and participation self-efficacy. It is hypothesized that the two scales of situational factors (ORGSUPRT and SITBARS) are inversely related to dimensions of participation self-efficacy (SE-IDEA, SE-DECN, SE-HELP). Empirical support for the hypothesized relationship will be analyzed by the correlation between the scales of situational barriers (ORGSUPRT and SITBARS) and the participation dimensions (SE-HELP, SE-IDEA, SE-DECN). The hypothesized relationships will be supported by negative correlations.

**Research Question Four.** Phase two addressed research question 4 which examined the influence of the training intervention to increase individuals’ self-efficacy. It
is hypothesized that training is associated with increases in learning self-efficacy (SE-LEARN) and participation self-efficacy (SE-HELP, SE-DECN, SE-IDEAS). Empirical support for this hypothesis is based on the analysis comparing SE-LEARN, SE-HELP, SE-DECN, SE-IDEAS of the trained group to the untrained group. A pre-test post-test nonequivalent control group design is analyzed using ANOVA (differences between groups in self-efficacy and gain scores) and ANCOVA (using the initial self-efficacy as a covariate). Based on the discussion of statistical procedures by Cook and Campbell (1979), this analysis is designed to answer the following four questions.

First, how similar are the control group and trained group on initial self-efficacy? It is expected that ANOVA of the initial self-efficacy between the trained and control groups indicates no significant differences.

Second, does the trained group have a higher post-training self-efficacy than the control group? It is expected that inspection of the group means indicates a significantly higher level of post-training self-efficacy for the trained group. ANOVA of the post training self-efficacy is expected to indicate that the trained group is significantly higher than the control group.

Third, after accounting for initial differences in self-efficacy, does the trained group predict higher self-efficacy than the control group? It is expected that the ANCOVA, will indicate that (after accounting for differences in initial self-efficacy) that the trained group is higher in post-training self-efficacy as compared to the control group.

Fourth, is training associated with changes in self-efficacy? Cook and Campbell (1979) warn against the use of gain score analysis, because it omits analysis of variation which is assessed by ANCOVA, and it omits the influence of initial differences. However, they argue that ANOVA based on difference scores is useful for testing the hypothesis that training is associated with gains/changes in variables. Here, gain score analysis can provide
evidence that self-efficacy increased to a greater extent in the trained group than in the control group. The results of the empirical tests of these hypotheses are reported in Chapter 4.
Chapter 4

Results

This chapter presents the results of the analyses of dimensionality and hypothesis tests. The results are presented in the order the questions and hypotheses were given in Chapter 3. This chapter also includes the details of the development of the scales. The data and interpretations of the statistical tests are provided in this chapter, whereas the implications of these results for the four research questions are presented in Chapter 5.

Dimensionality of Participation Self-Efficacy

The first research question addressed the dimensionality of self-efficacy to participate. Specifically, the conceptual map of participation self-efficacy as three dimensions was examined: (1) self-confidence to make decisions about the job (SE-DECN); (2) self-confidence to help others and put forth extra effort (SE-HELP); (3) self-confidence to generate ideas and solve problems to improve group processes (SE-IDEA). This three dimensional concept was evaluated by inspection of the intercorrelations between participation self-efficacy items and by exploratory factor analysis of those items (N=148). (A test of the concept requires confirmatory factor analysis, thus this analysis is just exploratory.)
The intercorrelations, means, and standard deviations of the self-efficacy items are presented in Table 1. The correlation between the decision making items (8,9) is .69, and as expected, is higher than their correlation with items of the other two dimensions. The items for the other two dimensions do not demonstrate this pattern of higher intercorrelation relative to the correlations with items of other dimensions.

Insert Table 1 about here

Dimensionality was also assessed using exploratory factor analysis. As discussed in Chapter 3, the initial extraction method was iterated principal factor analysis with squared multiple correlations on the diagonal. Using the proportion criterion, four factors were retained. Examination of the eigenvalues of the reduced correlation matrix showed that 4 factors accounted for 100% of the common variance. A Harris-Kaiser rotation was used which allows for correlation between the factors. The factor loadings greater than .4 are significant and reported in Table 2.

Insert Table 2 about here

The factor analysis partially supports the hypothesis of three dimensions of participation self-efficacy. Most of the idea generating items (except #1 and #4) load on the first factor, the decision making items load on a second factor, and most of the helping items (except #2) load on a third factor. A fourth factor is indicated which includes items which relate to communication (#1, 2, 4). As noted in chapter 4, because of the sample size (n=148) these results must be interpreted with caution. (The rule of thumb for factor analysis requires 10 subjects for each item).
In summary, based on the intercorrelations and factor analysis, the results of the analyses indicate preliminary support for four distinct dimensions to participation self-efficacy. Based on these analyses, four scales of participation self-efficacy were created (SE-DECN, SE-HELP, SE-IDEA, SE-COMM). Appendix B lists the items which were used to create each of these scales. The Cronbach coefficient alpha for the scales are: .91 (SE-IDEA), .70 (SE-HELP), and .77 (SE-COMM). As mentioned previously, SE-DECN is a two item scale with an intercorrelation of .69. The means and the standard deviations for the self-efficacy scales are reported in Table 5.

**Participation Self-Efficacy and Actual Participation Ratings.** Research question 2 addressed the relationship between participation self-efficacy and actual participation. That is, do employees with high self-efficacy actually participate to a greater extent than employees with low self-efficacy? Hypothesis 2 is evaluated by examining the correlations between the dimensions of self-efficacy and corresponding measures of actual participation as rated by managers, as well as the overall assessment of participation. The number of observations for these correlations is 140. Eight individuals did not put their name on their survey, so that their data were not matched with the managers’ assessment.

As discussed in Chapter 3, scales for participation were to be created based on the a priori items designed to assess the three dimensions of participation behavior. Also, a one item measure is used to assess overall participation. The item correlations for participation ratings are reported in Table 3, and an exploratory factor analysis of the participation items is reported in Table 4. (Factor analysis was conducted as described for the self-efficacy items.) Inspection of the intercorrelations and the factor loadings does not support distinct dimensions based on the a priori items. However, factor analysis does indicate two dimensions, one of which includes the items of the citizenship dimension (i.e., helping, extra effort, and volunteering for activities). Based on this information, the
participation scales were created as follows: (1) overall participation was assessed with a single item (PARTOV); (2) a citizenship dimension was formed using the a priori item which loaded on factor two (PARTHELP); (3) a third scale was formed by combining the remaining items (PARTSUM). This revises the a priori items basically by combining the decision making and idea generating items into one dimension. (Appendix B lists the items used to create the scales.)

Reliability of ratings is typically supported by information on interrater reliability, stability of ratings, and internal consistency. In this context, multiple raters and test-retest were not viable options, thus no information is reported about interrater reliability and stability. Internal consistency is indicated by the coefficient alphas of .80 (participation in helping and extra effort) and .87 (summed scale of participation in decision making and idea generation). The means and standard deviations for the participation scales are reported in Table 5.

Insert Table 3 about here

Insert Table 4 about here

The correlations between the self-efficacy scales and participation scales are presented in Table 5. It was hypothesized that the self-efficacy dimensions are positively related to the corresponding actual participation rating. The correlation between SEHELP and participation in helping is .19, p>.05. The correlations between the overall measure of participation and SEIDEA, SEHELP, SEDECN, and SECOMM are .27 (p>.01), .27
(p>.01), .18 (p>.05), and .28 (p>.01) respectively. The correlations between the self-efficacy dimensions (SEIDEA, SEDECN, SECOMM) and the third participation scale (PARTSUM) are .20 (p>.05), .16 (ns), and .26 (p>.01). In summary, phase 1 data indicates marginal support for the hypotheses that self-efficacy is positively related to actual participation.

Insert Table 5 about here

Situational Factors and Self-Efficacy. Research question 3 addressed the influence of the perceptions of situational factors in determining participation self-efficacy. Hypothesis 3 predicted a negative relationship between perceptions of situational factors and participation self-efficacy. Individuals who perceive situational barriers to participation are hypothesized to have lower self-efficacy.

The scales for situational factors were created based on the a priorily defined items, as described in Chapter 3. The items were conceptualized as two situational factors: perceptions of organizational support for participation (e.g., creativity encouraged, open to change), and perceptions of specific barriers to participation (e.g., time available, consideration of ideas). Exploratory factor analysis supported that the organizational support items comprise one factor. Based on this analysis, the scales (ORGSUPRT, SITBARS) were created based on the a priorily items. The coefficient alpha for ORGSUPRT is .85. The coefficient alpha for the SITBARS scale is .70.

The correlations between the self-efficacy scales and the two situational factor scales are reported in Table 5. As hypothesized all of the correlations are significantly negative. The correlations range from r=-.28 to -.45 and all are significant at p>.01. (Note that the number of observation for SITBARS is 142. Six individuals skipped the last page
of the survey.) These correlations indicate support for hypothesis 3, that perceptions of situational barriers are negatively associated with self-efficacy.

**Training and self-efficacy.** Research question 4 in phase 2 of the project addressed the relationship between training and self-efficacy. Does training increase participation self-efficacy and learning self-efficacy?

The scales for participation self-efficacy were created based on the items used for the scales in phase 1. The list of the items used to create the scales in phase 2 are reported in appendix B. The Cronbach’s coefficient alphas for this sample are: .86 (SE-HELP), .86 (SE-DECN), .89 (SEIDEA), .88 (SE-COMM). These coefficients were calculated on the pretest data. The coefficient alphas for the same scales using the posttest data are: .74 (SE-HELP), .85 (SE-DECN), .69 (SEIDEA), and .85 (SECOMM). The internal reliability of SEIDEA and SE-HELP decreased from the pre-test to the post-test.

As discussed in Chapter 3, the learning self-efficacy scale was created by summing and averaging all the items relating to training activities. In other words, one dimension of learning self-efficacy was conceptualized. The intercorrelations for the items assessing self-efficacy related to training are reported in Table 6. These correlations are based on 64 observations and use the data from the pre-test survey. The intercorrelations do not indicate any patterns indicating more than one dimension and thus the original a priori plan to combine all the items was used to create the learning self-efficacy scale. The coefficient alpha for this SE-LEARN (pre-test data) is .91 The coefficient alpha for SE-LEARN (assessed using post-test items) is .93.

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Insert Table 6 about here

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Hypothesis 4 was tested by exploring four questions: (1) Were there initial differences between the trained group and the control group? (2) Were there differences in post test self-efficacy? (3) After accounting for initial differences between the control group and trained group, does the trained group predict higher self-efficacy than the control group? (4) Is training associated with gains/changes in self-efficacy? The analyses conducted to answer these questions are described (N=40 subjects in training; 24 subjects in the control group). Means and standard deviations of the trained group and control group pretest and posttest scales are presented in Table 7.

Insert Table 7 about here

ANOVAs of the initial self-efficacies were conducted to test for differences between the groups. As expected, the results of this ANOVA for differences between learning self-efficacy of the trained and control groups showed no initial differences. Similarly, an ANOVA for the differences in the four participation self-efficacy scales (SE-IDEA, SE-HELP, SE-DECN, SECMM) indicated no significant differences between groups.

ANOVAs of the post training self-efficacies were conducted to test that differences existed between the trained and control groups. It was expected that ANOVA would indicate significant differences in post training learning self-efficacy, and all four dimensions of participation self-efficacy. Contrary to what was expected, ANOVA for all five variables indicated no significant differences. Similarly, ANCOVA, in which the initial self-efficacy was entered as a covariate, indicated no significant differences between groups when controlling for initial differences in self-efficacy. ANOVA of the gain scores
were analyzed and, again, indicated that no significant differences existed between the trained and the control groups.

In conclusion, the results of all the analyses failed to support the hypothesis that training increased SE-LEARN, SE-IDEA, SE-HELP, SE-DECN, and SE-COMM. The statistical tests did not approach significance. Possible explanations for these results are presented in the discussion section.

**Self-Efficacy and Actual Participation (phase 2).** The data from phase 2 provided a second test of the relationship between self-efficacy (assessed during the pre-test) and actual participation (assessed as a self-report during the post-test). These correlations between self-efficacy dimensions and actual participation are reported in Table 8. Actual participation scales were created by combining the a priori items (two items assessed decision making; two items assessed idea generating) and using one item scales (participation in helping, participation in communication). The correlations were calculated combining responses of the trained and control group (N=64). A weak positive correlation was found between SE-DECN and PARTDECN (r=.26, p>.05). Nonsignificant correlations were found between SEIDEA and PARTIDEA (r=.19, ns), SEHELP and PARTHELP (r=.06, ns), and SECOM and PARTCOM (r=.21, ns). In conclusion, the phase two data do not support hypothesis 2.

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Insert Table 8 about here

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Further interpretation and discussion of these results and the implications of this data for the four research questions is presented in Chapter 5.
Chapter 5

Summary and Conclusions

The purpose of this chapter is to review and summarize the empirical and subjective observations of the study, discuss possible interpretations of the findings in light of the limitations of the research, and offer some suggestions for future research.

Dimensionality of Participation Self-Efficacy

The first proposition advanced and tested here was that the broad label of "employee participation" covers three distinct dimensions of behavior on the job: (1) Decision making pertaining to tasks, (2) good citizenship in the form of extra effort and helping others, and (3) contributing to improvement in work processes. The responses to the self-efficacy items on the initial employee survey provide preliminary evidence to support this conceptual map of worker participation. Employee beliefs regarding whether they could successfully perform various activities varied substantially across the three types of behavior as evidenced by the item correlations and factor analysis results. Casual observations and discussions also support this conclusion. Employees typically felt very confident about how best to perform their jobs. As one employee responded, "Well, I've been doing it for twenty years." Moreover, requests for extra effort from the employees
were readily accepted, but the same enthusiasm and self-confidence were not displayed for innovation, idea generating, and solving problems related to improving the process.

However, given the small sample and the idiosyncrasies of the organization, whether similar results would be obtained elsewhere is open to question. Employee participation in this organization proved to be difficult to observe and measure. The initial plan was to develop one measure of participation from employee behavior during meetings, but it was found that most meetings used a broadcast format (i.e., communication is one-way from manager to employees). Also, it was thought that the researcher could observe and measure participation in problem-solving groups, but time and production demands did not allow for problem-solving focus groups. During the first monthly meeting of the managers the researcher attended, the president of the company warned a manager about encouraging unsupervised problem-solving groups as they just generated a list of activities for managers to do.

Observation of day-to-day operations on the shop floor indicated that participation in this organization is mostly focused around solving problems with specific barrels and employees making decisions about how to best do their job. The employees are not closely supervised in how they do their jobs; the second and third shifts mostly operate without a supervisor present. A typical observation of participation was a group of employees huddled around a barrel with a problem. Problems were regularly brought to managers and other support personnel (e.g., engineers and planners); suggestions were made to managers and co-workers informally. Two success stories of problems solved by employee suggestions were told. In one case, a problem solving team created a system to track rework problems using the computer and this was implemented across the organization. The second case involved employees’ request for an improved machine lubricant—the manager acted upon this suggestion and it had major benefits. During the monthly group

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meetings, employees typically listened to the presentation of monthly results, but spoke up when issues with a specific barrel came up. Discussions with employees indicated that they viewed participation, in large part, to be the extra-effort during the end of the month rush and putting in large amounts of overtime. However, employees do serve on a wide range of company wide teams and employee input is typically obtained in selection decisions and buying decisions.

Observations and discussion support the findings that different levels of self-efficacy exist for different domains of participation. For example, typically employees and managers display high self-confidence in their capability to put forth extra effort by setting and meeting very challenging production goals. Managers report on these successes as examples of employees' "heroic" efforts. Also, the employees typically have considerable work experience and are very confident about making decisions about how to best do their jobs and how to solve problems with a particular barrel. This decision making on job tasks and problem solving on particular problems with barrels is highly encouraged in the organization. The comments from managers indicate this support of employee decision making pertaining to tasks. One manager emphasized the importance of this employee decision making by saying "My job is to stay out of the way of the employees." Another manager said, "This is the easiest job I've ever had. The employees make all the decisions on how to do their jobs. They bring problems to my attention, and we talk things over, but they make the decisions about how to do things."

Contrasted to this high self-confidence for participation as effort and task decision making, lower self-confidence was indicated for activities relating to idea generating and problem solving to improve group processes. Responding to researcher questions about making suggestions for improvement, employees typically responded with an example of how their suggestions had not been considered or implemented. Recently however,

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following a weekend workshop on changing the workflow, an employee indicated high self-confidence about idea generating by saying proudly, “All the ideas to change the workflow were generated by employees.”

Self-Efficacy and Participation

A second focus of this project was on self-efficacy theory as an explanation of individual differences in participation, specifically, whether there is a relationship between self-efficacy and participation. It was hypothesized that each participation self-efficacy dimension would be positively associated with the corresponding behavior as observed by the managers. The correlations indicated a weak positive relationship between the self-efficacy dimensions and managerial assessments of participation for two dimensions (idea generation and helping others), and no support for a relationship between self-efficacy and the actual participation in the decision making dimension. Weak positive relationships were also found between the self-efficacy dimensions and the overall assessment of participation. In phase 2, it was expected that a stronger relationship would be found between self-efficacy and participation by using self-report assessment of participation. Stronger relationships were not found. Thus, these results at best provide mixed support for the relationship between self-efficacy and participation.

This weak relationship is not completely surprising. Gist and Mitchell (1992) found that for complex behaviors, such as participation, self-efficacy is typically less accurate (i.e., less predictive of performance). This may be because with complex behaviors, individuals have more difficulty in forming their self-efficacy judgments. Clearly, more research is needed to understand self-efficacy for complex behaviors in organizations.

Summary & Conclusions
The phenomenon of fundamental interest in this study was the difference between individuals in their participation behavior. As anticipated, it was clearly observed that individuals participate differently. Employees put forth different levels of extra effort and discussed these differences (e.g., “I work two machines while others work one machine”). Individuals differed in their willingness to work overtime. Some employees resisted the participation activities which required them to interact with others (e.g., tours, meeting with consultants or suppliers, company wide teams) and seem to prefer activities which kept them on their own turf. Typical comments were “I want to participate by doing my job” and “I’d rather be working at my machine.” On the other hand, many employees readily participate in the many meetings and on company-wide teams. This organization has a continuing stream of activities in which employees are asked to participate: meetings with suppliers, ongoing tours, meetings which review annual survey data, teams to make buying decisions on equipment, housekeeping and safety teams, vision process review board, ISO 9000, meetings to play “the game of business,” off-site seminars, meetings about changing the work flow, and train the trainer sessions. Employees also differ in their outspokenness in meetings and on the shop floor. A few employees continually look for solutions to problems in the work process.

While differences in employee participation were observed, these differences were not successfully captured in measurement. The original strategy to measure participation in monthly and problem solving meetings and as suggestions was discarded. Rather, an instrument was designed for managers to assess employees participation. The form was designed to be easy to use and to take about 3 minutes per employee. However, managers complained that it was not fair to assess individuals because each individual made their own unique contribution, that the assessment took too much time, and that employees were not to receive any information based on these ratings. On a 1 to 5 scale, managers
mostly used the 3 and 4 range, and rarely used the highest score, 5. Indeed, out of the entire plant, only 1 employee was rated as being in the top 15% overall in participation. The managers were clearly uncomfortable providing meaningful ratings on differences in employee participation. (The organization currently does not individually appraise the performance of production employees.)

The organization is currently not tracking individual participation and no indication was found of managers making mental notes about who participates and in what way. For example, a new quality chart was posted for tracking quality problems. Questions asked of the quality manager and quality department employees indicated different sources for the idea. The manager said that his employees must have come up with the idea; the employees said that the VP said to do it that way. Successes in problem solving were not celebrated. (Making the production numbers was celebrated with pizza each month.) Moreover, no manager supervised the second and third shifts and this made it difficult to make assessments about participation. In summary, this project attempted two methods of assessing actual participation behavior, neither of which received support from the managers and employees, and both of which provided limited information.

Do the observations and discussions support the weak relationship found between self-efficacy dimensions and actual participation? Were there any indications that low self-efficacy was associated with low participation? No one stated directly that “I have low confidence in my capabilities to participate.” But they did talk often about negative past experiences such as “I suggested an idea and nothing happened,” and “I suggested this and the manager said do it my way.”

It is important to clarify that self-efficacy was interpreted as including two components: (1) I have the capabilities to participate in an activity; (2) the situation allows me to successfully participate in the activity. In the pilot surveys, comments were made
that there is a difference between beliefs that one has the skill and ability to participate, and being allowed to participate in the current situation. Individuals indicated confusion on how to respond about their self-confidence to participate. A typical comment was, “I am confident about my ability to participate, but the situation does not allow it.” An example of this situation is in the item “I can learn how to operate a new machine.” Individuals may believe they can learn a new machine, but there must be an opening at a new machine in order to learn how to use it. Comments and observations indicated the importance of this perception of situational barriers (e.g., time, consideration given to ideas, organization’s openness to change) as a major factor in individual’s beliefs about participation.

In conclusion, this project found mixed support for a weak positive relationship between self-efficacy and participation. The measure of participation proved to be difficult and no measure was obtained which captured the differences in participation in individuals as observed. Low self-efficacy to participate was indicated in that individuals often discussed failure experiences (in the participation domain of idea generation and problem solving especially). The frequent discussions by employees of situational barriers to participation led to an exploration of the relationship between self-efficacy and perceptions of situational barriers and this is explored in research question 3.

Situational Barriers

Research question 3 asked “Is self-efficacy to participate determined in part by perceptions of situational barriers?” Based on the model of Gist and Mitchell (1992) and the discussions with employees, it was proposed that perceptions of situational barriers are negatively associated with dimensions of self-efficacy. Gist and Mitchell (1992) suggest
that situational beliefs are one of three categories of determinants of self-efficacy, and thus low self-efficacy can be determined either by beliefs that one lacks the ability or by beliefs that the situation does not allow one to perform successfully. This latter condition was how employees in this organization typically discussed and wrote comments about their participation self-efficacy. As hypothesized the data indicated a strong negative correlation between the scales of the perception of situational barriers and the scales of the dimensions of self-efficacy. These high correlations could be attributed to the use of percept-percept measures; however, factor analysis supports that these are distinct constructs.

The phase one survey provides some indications as to the perceptions of barriers, but this survey does not fully capture the extent to which employees discussed barriers. For example, during an informal discussion with employees after the baseline survey, these employees were complaining about a lack of time for problem solving. The survey results indicated that the majority of employees agreed that they had enough time to pursue problem solving, yet here was a group of employees saying otherwise. When asked why they were willing to say these things, but not to indicate these thoughts on the survey, the response came back that there was extreme discomfort with any name being associated with these comments.

In conclusion, the empirical data and observations support that self-efficacy was negatively associated with the perception of situational barriers. The perception of the existence of situational barriers to participation was associated with lower self-efficacy. The implication of these findings is that low self-efficacy may not be a problem to be solved by training, but is more appropriately addressed through other organizational change interventions which influence perceptions about the situation. The influence of training on increasing self-efficacy is explored in research question 4.
Training and Self-Efficacy

The organization was selected as a research site in large part because it provided the opportunity to study the relationship between training and self-efficacy. Research question four addressed the view that training with the objective of changing behavior should increase self-efficacy. Two different self-efficacies were studied: the self-efficacy related to the activities in training and participation self-efficacy. It was expected that learning self-efficacy would show significant increases because learning how to learn and change in beliefs about learning are main objectives of this critical thinking training. The data did not support, nor was there any evidence that training increased learning self-efficacy or participation self-efficacy.

These results were disappointing, but are consistent with the researcher’s observation of the training. While the employees appeared to enjoy training and had favorable comments to say about training, the kind of “light bulb” effect (self-efficacy dramatically increasing) that the researcher heard trainees speak of at previous critical thinking training sites did not seem to go off here. Anticipating a dramatic increase in self-efficacy about sharing ideas, the designer of training predicted that the number of comments written on the surveys would increase pre and post training. Contrary to this expectation, trainees did not write any comments whereas the control group wrote about 10 comments. It was expected that behavior changes would be exhibited during training such as increased levels of speaking up, sharing ideas, involvement in idea generating, and encouraging others. Changes of this type did not occur.

The researcher sat in as a training observer and participated in the group learning. Differences in individual behavior in group learning were observed. For example, some individuals took a leadership role and directed the task; most individuals focused more or
less on the task and contributed their thoughts, some individuals contributed by quietly working on the task (answering the written questions, reading), and some individuals were detached and sat back. None of the trainees was observed to change behavior within groups during training.

One likely explanation as to why learning self-efficacy and participation self-efficacy did not increase is that the average self-efficacy of the training group was high to begin with (average SEs 8 or higher) and perhaps there was no room for improvement. For example, many trainees commented that this material was not new and they reminisced about their past Scanlon training, trips to Scanlon conferences, and past Zenger Miller training. Because the training group was self-selected, and high self-efficacy is associated with the choice for development activities (Noe & Wilks, 1993), the individuals who avoided signing up for training may be the ones with low self-efficacy who would benefit the most from training. For example, it is known among employees that reading aloud is a core idea in this class and this could reduce the likelihood of individuals with low self-efficacy in their reading ability from signing up. Research supports that individuals with initial low self-efficacy benefit the most from training (Saks, 1993) and a future area of research is on training recruitment methods to attract individuals with low self-efficacy into the appropriate training.

A second possible explanation for the lack of support for the hypothesis is the low motivation of respondents. Trainees were not enthused about the pre-survey and that interest and cooperation diminished on the post-test. Evidence of this declining interest is offered by the change in the internal reliabilities of the self-efficacy scales.

Summary & Conclusions

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Suggestions for Future Research

As stated in Chapter 3, this research was an in depth case study of a single organization and based on an action research design. Within this organization, this research project was designed to be one cycle of the action research model (i.e., assess, plan, do, evaluate). Future research in this organization could continue in this action research cycle. The current data (objective and subjective) provide a basis for more intensive diagnosis (assessment) — i.e., the next cycle would begin with intensive analysis of findings — and perhaps new hypotheses regarding appropriate interventions. One starting point is for the organization to clarify the participation behaviors which are believed to be related to group performance, to create a system to track the occurrence of those behaviors, and to gather evidence of the benefit of those behaviors. This focus on identifying and monitoring a specific set of effective behaviors should correspond to halting the current state of unrelated and constantly changing activities. (As one employee wryly commented during one week in which four different consultants were in the organization, “We have to keep producing to pay for all the consultants.”)

From a measurement point of view, extensions of this study should explore further the dimensionality of participation self-efficacy and extend the measurement of participation self-efficacy to other sites with structured participation programs. Recall that only partial confidence is placed in the results of the factor analysis of the participation self-efficacy and other samples are required to confirm these factors.

If the concept of self-efficacy is to be useful in work organizations, both in research and practice, more research is needed to further understand what people are considering when they form their self-efficacy judgments. For example, when individuals report their participation self-efficacy, are they providing an automatic response based

Summary & Conclusions
mostly on past experience, or are they forming a complex judgment based on task beliefs, self beliefs, and system beliefs? Is one role of an intervention to shift individuals out of an automatic processing of self-efficacy into a complex judgment in which they consider new information and reformulate their self-efficacy? As noted in the review of the literature, little research has been conducted to test Gist and Mitchell’s model of self-efficacy formation.

More research is required to establish self-efficacy as a practical construct for complex behavior in actual organizational settings. How should individuals respond when they believe they have the capability, but the situation does not allow successful participation? Bandura (1986) argues that individuals with high self-efficacy persist and succeed in spite of situational barriers. Alternatively, Gist and Mitchell (1992) argue that the perception of the situational barriers lowers self-efficacy. The former argument is an interaction between the perception of the situation and initial self-efficacy in determining performance. The latter is a relationship that perceptions determine self-efficacy. The results of this study found empirical support for a relationship between perceptions of barriers and self-efficacy. Future research could directly study the two relationships. In the face of situational barriers, does self-efficacy predict successful performance? In the face of situational barriers, do individuals lower their self-efficacy? This relationship between situational barriers and self-efficacy is an issue which the designer of the critical thinking training program is currently dealing with. Is there any purpose, and is it possibly detrimental, to increase self-efficacy in training when strong situational barriers exist in the organization which prevents the successful performance which the self-efficacy training is designed to encourage?

Organizational research has found strong support that training increases self-efficacy (e.g., Saks, 1993; Eden & Aviram, 1993; Frayne & Latham, 1989; Gist, 1989;
Gist et al. 1991; Mitchell et al., 1993). Research in this stream typically studies training which is focused on a specific set of tasks (e.g., accounting tasks, job search tasks, attendance behaviors, idea generation, salary negotiation, bowling, air traffic control simulation). This study did not find this relationship between training and self-efficacy. The training in this study, rather than focusing on a set of tasks, focused on understanding of Scanlon Plan principles. Future research is needed to establish possible boundary conditions wherein training is not associated with increases in self-efficacy. For example, Gist (1987), suggested research on the probable low influence of lecture methods on self-efficacy. Past experience is the strongest determinant of self-efficacy and future research is needed which establishes training methods which increase self-efficacy in situations where practice and performing the activity are not feasible.

The purpose of this research project was to explore self-efficacy theory as a possible explanation for individual differences in participation. A conceptual map of participation self-efficacy as three dimensions was partially supported. This demonstrates the potential application of self-efficacy theory for complex behaviors in organizational settings. However, further study is needed to understand the influence of perceptions of the situation (1) in determining self-efficacy and (2) on the accuracy of self-efficacy predicting future performance. The key tasks remain to demonstrate that self-efficacy predicts performance for complex behaviors, to understand the sources of self-efficacy judgments, to understand how to interpret the meaning of self-efficacy responses within organizational settings, and to design interventions which influence self-efficacy.
REFERENCES


References


References


APPENDIX A

Survey Instruments
Participation in the Vision Process

Your Name: ____________________________

(Your responses are completely confidential.)

Section One.
This section lists many ways employees can get involved in the Vision Process. I am interested in how confident you are in your ability to successfully perform each of these activities. I'm interested in your beliefs about whether you can actually do these activities.
For each of the activities given below, please indicate how confident you are in your ability to successfully perform that activity. The self-confidence scale ranges from 0 to 10. Please use the full range of the scale.

Write a number in the blank beside each statement, based on the following scale:

How confident are you that you can do the activity?

0 1 2 3 4 5 6 7 8 9 10
NO CONFIDENCE AT ALL
COMPLETE CONFIDENCE

___ I can share new ideas for improvement with my coworkers.
___ I can speak up during my area's regular meetings.
___ I can pass along information to the next shift.
___ I can express my thoughts and opinions about how to improve my area.
___ I can put forth extra effort during critical production times.
___ I can help others complete their jobs.
___ I can learn to operate a new machine.
___ I can make decisions on how to best do my job.
___ I can bring problems about the quality of a barrel to the attention of my manager.
___ I can suggest ideas to improve on-time delivery.
Please continue to write a number in the blank beside each statement, based on the following scale:

How confident are you that you can do the activity?

0  1  2  3  4  5  6  7  8  9  10
NO CONFIDENCE
COMPLETE CONFIDENCE
AT ALL

____ I can participate in a problem solving team (sometimes called focus groups).

____ I can encourage my coworkers to generate ideas.

____ I can suggest ideas about changing the work flow process.

____ I can participate on company-wide teams (for example, the process review board, housekeeping and safety, the ISO 9000 audit team).

____ I can take ownership of my ideas to make it happen.

____ I can frequently make creative suggestions to coworkers.

____ I can encourage others to speak up at meetings.
Section Two.
This section lists several statements about the Vision Process and the way we do things at Xaloy. I am interested in your perception about whether the statement is an accurate description of the current situation at Xaloy.

For each of the statements given below, please indicate the extent to which you agree or disagree that this statement.

Use the following scale to indicate the degree to which you agree or disagree that each statement accurately describes the situation at Xaloy.

SD = strongly disagree  
D = disagree  
N = neither agree nor disagree  
A = agree  
SA = strongly agree

Creativity is encouraged at Xaloy.  
SD  D  N  A  SA

Xaloy treats people with respect.  
SD  D  N  A  SA

Xaloy listens to the needs of their customers.  
SD  D  N  A  SA

Employee participation in decision making is highly valued at Xaloy.  
SD  D  N  A  SA

Xaloy listens to the needs of their employees.  
SD  D  N  A  SA

The Vision Process encourages participation in decision making.  
SD  D  N  A  SA

Xaloy is open and responsive to change.  
SD  D  N  A  SA

Xaloy listens to the needs of its investors.  
SD  D  N  A  SA

Appendix A: Survey Instruments

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Section Three.
This section explores your beliefs about whether your participation can make a difference to your group's performance.

Please use the following scale to indicate the degree to which you agree or disagree with each of the following statements.

SD = strongly disagree
D = disagree
N = neither agree nor disagree
A = agree
SA = strongly agree

Suggestions for improvement have a good chance of being implemented.
SD  D  N  A   SA

The Vision Process provides a vehicle for me to do something about problems.
SD  D  N  A   SA

What I do really makes a difference to my group's performance.
SD  D  N  A   SA

Participation in the Vision Process is important to my group's success.
SD  D  N  A   SA

Suggestions for improvement will be seriously considered.
SD  D  N  A   SA

People at Xaloy are willing to try new ways of doing things.
SD  D  N  A   SA

I can improve my group's performance by changing the way I do things.
SD  D  N  A   SA

There is adequate time available to pursue ideas for improvement here.
SD  D  N  A   SA

Appendix A: Survey Instruments
EMPLOYEE PARTICIPATION ASSESSMENT FORM

SUGGESTIONS TO RATERS:

We are asking you to assess the level of participation of the people who work for you. These assessments will serve as a critical measure in the exploration of the following questions: (1) What is the process of participation at Xaloy? (2) Why do individuals differ in their participation? (3) What is the relationship between participation and group performance? The ratings must give a true picture of each employee in order for this study to have any value. You should try to give the most accurate ratings possible for each worker.

These rating are strictly confidential and will not affect the person being rated in any way. The ratings will be used for this research project only. Only summary information will be reported.

Rate each worker according to the level of participation he has exhibited over the past six months. Think in terms of his usual or typical performance.

USING THE MATRIX FORMAT:

A matrix form has been designed to simplify the process of assessing the level of participation among your employees:

- Enter the name of each of your employees in the left-hand column.
- Use the next column to indicate the shift typically worked by that employee.
- Assess each employee using the 10 items (see the following page). Use the rating scale and enter your 1 through 5 rating in the matrix column corresponding to each item.
- If possible, please try to assess your employees in one or two sittings.
DIRECTIONS: For each of the items, think about the different levels of participation that you have observed among employees. Use the 1 through 5 scale below to rate the person on each of the items in comparison to other employees. Enter your 1 through 5 rating in the corresponding column in the matrix. If the item does not apply or you cannot rate it, put an "X" in the answer space.

1------------------2------------------3------------------4------------------5
Among the weakest (bottom 15%) Typical; Acceptable Among the very best (top 15%)

COMPARÉD TO OTHER EMPLOYEES ...

1. How good is this person at recognizing and correcting problems encountered on the job?

2. How good is this person in bringing problems to his team?

3. How much has this person contributed to ideas and efforts to improve the work process?

4. How much does this person encourage others to take part in problem solving?

5. How responsible is this person in "owning the problem", meaning that the person responds and actively implements improvements?

6. How frequently has this person accepted or volunteered for activities that are not required, but help the company?

7. How much does this person help co-workers with job problems?

8. How well has this person responded when extra effort is required to do the job?

9. How well does this person actively influence the decision making within his area of competence?

10. Overall, how involved is this person in participating in the Vision Process?

Appendix A: Survey Instruments
Training Effectiveness Survey 2

Your Name: __________________________ -OR- Employee Number: ____________________

Your name or number is used only to match your responses today with your responses later in training. Using this technique, I can explore the changes associated with training. No names will be recorded or reported. Your survey responses will be combined with the surveys from the other 60 people in training; it is a summary of this data which will be reported to your Process Review Board. Thank you for participating in the survey.

Section One: Your Self-Confidence about Learning Activities

This section lists many of the learning activities in this training program. I am interested in how confident you are that you can successfully perform each of these activities. I'm exploring your beliefs about whether you can do these activities in the current training situation.

For each of the activities given below, please indicate how confident you are that you can successfully perform that activity. The self-confidence scale ranges from 0 (you have no confidence at all that you can do that activity) to 10 (you are completely confident that you can successfully perform that activity).

Write a number in the blank beside each statement, based on the following scale:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO CONFIDENCE AT ALL</td>
<td>COMPLETE CONFIDENCE</td>
<td></td>
<td></td>
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</tbody>
</table>

___ I can learn how to learn.

___ I can learn to think critically.

___ I can read the information in my training manual.

___ I can learn new ways to solve problems.

___ I can learn new ways to read.

___ I can brainstorm ideas.

___ I can create charts to compare and organize information.

___ I can write down my suggestions on how to improve the class.

___ I can express my thoughts and ideas in class.

___ I can learn to manage information.

___ I can learn by working in a group.

___ I can encourage others to speak up in class.
**Section Two:** The following section lists many activities on the job. I am interested in how confident you are that you can successfully perform these activities in your current job. I am exploring your beliefs about whether you can do these activities in your current job.

Write a number in the blank beside each statement, based on the following scale:

<table>
<thead>
<tr>
<th>How confident are you that you can do the activity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>NO CONFIDENCE AT ALL</td>
</tr>
</tbody>
</table>

- ___ I can put forth extra effort during critical times.
- ___ I can make decisions on how to best do my job.
- ___ I can bring problems to the attention of my manager.
- ___ I can bring problems to the attention of my group.
- ___ I can suggest ideas about how to do my job better.
- ___ I can express my thoughts about ways to make improvements.
- ___ I can share new ideas with my co-workers.
- ___ I can take ownership of my ideas to make it happen.
- ___ I can speak up during meetings.
- ___ I can pass information along to my co-workers.
- ___ I can share information with people from other departments.
- ___ I can share information with people from other shifts.
- ___ I can encourage my co-workers to generate ideas.
- ___ I can encourage my co-workers to speak up during meetings.
- ___ I can encourage my co-workers to participate in the Vision Process.
- ___ I can learn new ways of doing things in my job.
- ___ I can help others to complete their jobs.
- ___ I can learn to use new technologies (for example, new computerized equipment).
**Section Three:** This section explores how often you participated in several activities during the last four weeks. *To answer this section, think back on your work experiences during the last four weeks.* Please use the following scale to indicate how many times you performed each activity during the last four weeks.

| How many times in the last four weeks did you do the following activities? |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Not at = 0 times             | Several Occasions = 8 to 15 times |
| Once or twice = 1 or 2 times | Very Frequently = 16 to 25 times |
| A few times = 3 to 7 times   | Almost Daily = 26 or more times |

**How many times in the last four weeks did you make decisions about how to best do your job?**

| How many times in the last four weeks did you bring problems to the attention of your group? |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Not at = 0 times             | Several Occasions = 8 to 15 times |
| Once or twice = 1 or 2 times | Very Frequently = 16 to 25 times |
| A few times = 3 to 7 times   | Almost Daily = 26 or more times |

**How many times in the last four weeks did you make suggestions for improvements?**

| How many times in the last four weeks did you speak up during meetings? |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Not at = 0 times             | Several Occasions = 8 to 15 times |
| Once or twice = 1 or 2 times | Very Frequently = 16 to 25 times |
| A few times = 3 to 7 times   | Almost Daily = 26 or more times |

**How many times in the last four weeks did you learn something new (for example, learn to use a different machine, or learn new technologies)?**

<table>
<thead>
<tr>
<th>How many times in the last four weeks did you encourage your co-workers to participate in the Vision Process?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at = 0 times</td>
</tr>
<tr>
<td>Once or twice = 1 or 2 times</td>
</tr>
<tr>
<td>A few times = 3 to 7 times</td>
</tr>
</tbody>
</table>

**How many times in the last four weeks did you take action to implement ideas?**

<table>
<thead>
<tr>
<th>Comments?</th>
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</thead>
</table>

>&gt;&gt;&gt;&gt; Please Continue on to the Back Page &gt;&gt;&gt;&gt;

Appendix A: Survey Instruments 81
Section Four: Several statements are listed which describe factors which possibly influence participation in the Vision Process. Please circle the response which indicates the degree to which you agree or disagree with the following statements.

There is adequate time to pursue ideas for improvement.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

There are adequate financial resources to pursue ideas for improvement.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

There is adequate support from management to pursue ideas for improvement.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

My suggestions will be seriously considered.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

My suggestions have been implemented in the past.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Increased participation in the Vision Process will result in larger bonus payouts.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Currently, the Vision Process is working effectively.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

My effort to solve problems is valued by managers.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

My effort to solve problems is encouraged by my co-workers.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

I can make improvements in the way I do things.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

What I do really makes a difference to my group's performance.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

I can participate in the Vision Process, even if it requires overcoming barriers and facing challenging situations.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Participation in the Vision Process is important to my group's success.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

The Vision Process provides a vehicle for me to do something about problems.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Appendix A: Survey Instruments
APPENDIX B

Scale Items for Measures
Scale Items for Phase 1 Measures
(numbers refer to location of item on employee survey)

Participation Self-Efficacy: decision-making dimension (SE-DECN)
8. I can make decisions on how to best do my job.
9. I can bring problems about the quality of a barrel to the attention of my manager.

Participation Self-Efficacy: good citizenship dimension (SE-HELP)
3. I can pass along information to the next shift.
5. I can put forth extra effort during critical production times.
6. I can help others complete their jobs.
7. I can learn to operate a new machine.

Participation Self-Efficacy: idea generating and problem solving dimension (SE-IDEA)
10. I can suggest ideas to improve on-time delivery.
11. I can participate in a problem solving team (sometimes called focus groups.)
12. I can encourage my coworkers to generate ideas.
13. I can suggest ideas about changing the work flow process.
14. I can participate on company-wide teams (for example, the process review board, housekeeping and safety, the ISO 9000 audit team).
15. I can take ownership of my ideas to make it happen.
16. I can frequently make creative suggestions to coworkers.
17. I can encourage others to speak up at meetings.

Participation Self-Efficacy: communication dimension (SE-COMM)
1. I can share new ideas for improvement with my coworkers.
2. I can speak up during my area's regular meetings.
4. I can express my thoughts and opinions about how to improve my area.

Appendix B: Scale Items
Scale Items for Actual Participation Rating
(numbers refer to location of item on managers' assessment instrument)

Actual Participation - Summed Scale (PARTSUM)
1. How good is this person at recognizing and correcting problems encountered on the job?
2. How good is this person in bringing problems to his team?
3. How much has this person contributed to ideas and efforts to improve the work process?
4. How much does this person encourage others to take part in problem solving?
5. How responsible is this person in "owning the problem", meaning that the person responds and actively implements improvements?
9. How well does this person actively influence the decision making within his area of competence?

Actual Participation - Citizenship (PART-HELP)
6. How frequently has this person accepted or volunteered for activities that are not required, but help the company?
7. How much does this person help co-workers with job problems?
8. How well has this person responded when extra effort is required to do the job?

Actual Participation - Overall (PARTOVR)
10. Overall, how involved is this person in participating in the Vision Process.
**Items for Measures of Situational Factors (Phase 1 survey)**
(Numbers refer to location of the item of the survey.)

**Perceived Organization Support (ORGSUPRT)**
1. Creativity is encouraged at (organization name).
2. (Organization name) treats people with respect.
4. Employee participation in decision making is highly valued at (organization name).
5. (Organization name) listens to the needs of their employees
6. The vision process encourages participation in decision making.
7. (Organization name) is open and responsive to change.

**Perception of Situational Barriers (SITBARS)**
1. Suggestions for improvement have a good chance of being implemented.
5. Suggestions for improvement will be seriously considered.
6. People at (organization name) are willing to try new ways of doing things.
8. There is adequate time available to pursue ideas for improvement here.
Items for Measures of Self-Efficacy (Phase 2 employee survey)

Learning Self-Efficacy (SE-LEARN)
1. I can learn how to learn.
2. I can learn to think critically.
3. I can read the information in my training manual.
4. I can learn new ways to solve problems.
5. I can learn new ways to read.
6. I can brainstorm ideas.
7. I can create charts to compare and organize information.
8. I can write down my suggestions on how to improve the class.
9. I can express my thoughts and ideas in class.
10. I can learn to manage information.
11. I can learn by working in a group.
12. I can encourage others to speak up in class.

Participation Self-Efficacy: Idea generation dimension (SE-IDEA)
I can suggest ideas about how to do my job better.
I can express my thoughts about ways to make improvements.
I can take ownership of my ideas to make it happen.

Participation Self-Efficacy: Decision-making dimension (SE-DECN)
I can make decisions on how to best do my job.
I can bring problems to the attention of my manager.
I can bring problems to the attention of my group.

Participation Self-Efficacy: good citizenship dimension (SE-HELP)
I can put forth extra effort during critical times.
I can learn new ways of doing things in my job.
I can help others to complete their jobs.
I can learn to use new technologies (for example, new computerized equipment).

Participation Self-Efficacy: communication dimension (SE-CMM)
I can speak up during meetings.
I can share information with people from other departments.
I can share information with people from other shifts.
I can share new ideas with my co-workers.
Items for Measure of Actual Participation (Phase 2)

Actual Participation: Idea generation dimension (PARTIDEA)
How many times in the last four weeks did you make suggestions for improvements?
How many times in the last four weeks did you take action to implement ideas?

Actual Participation: Decision Making (PARTDECN)
How many times in the last four weeks did you make decisions about how to best do your job?
How many times in the last month did you bring problems to the attention of your group?

Actual Participation: good citizenship (PARTHELP)
How many time in the last four weeks did you learn something new (for example, learn to use a different machine, or learn new technologies)?

Actual Participation: communication dimension (PARTCOM)
How many times in the last four weeks did you speak up during meetings?
APPENDIX C

Tables
### Table 1. Intercorrelations of Participation Self-Efficacy Dimensions

<table>
<thead>
<tr>
<th>LABEL</th>
<th>ITEM</th>
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<th>16</th>
<th>17</th>
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</thead>
<tbody>
<tr>
<td>SE-IDEA 1</td>
<td>Share new ideas</td>
<td>45</td>
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<tr>
<td>SE-HELP 2</td>
<td>Speak up in meetings</td>
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**Mean**  
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**S.D.** 2.21 2.76 2.71 2.54 1.83 2.16 2.71 2.02 2.10 2.50 2.66 2.52 2.60 3.04 2.73 2.41 2.98

All correlations are significant at p > .01. 
All correlations are multiplied by 100 
N = 148
Table 2. Factor Structure for Participation Self-Efficacy

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<th>FACTOR4</th>
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Values are multiplied by 100 and rounded to nearest integer.
Values greater than 40 are significant, and thus included.
Table 3. Intercorrelations of Actual Participation Items

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N=130; All p > .01
All correlations are multiplied by 100.
Table 4. Factor Structure for Ratings of Actual Participation

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Values are multiplied by 100 and rounded to nearest integer. Values greater than 40 are significant, and thus included.
Table 5. Correlations between Dimensions of Self-Efficacy, Participation Ratings, and Perceptions of Situational Factor

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* p > .05
** p > .01
All correlations are multiplied by 100
Table 6. Intercorrelation of Learning Self-Efficacy Items (Phase 2)

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**MEAN**
- 8.59
- 8.2
- 9.28
- 8.81
- 8.18
- 8.37
- 7.10
- 7.65
- 8.15
- 7.97
- 8.51
- 6.89

**SD**
- 1.65
- 1.68
- 1.23
- 1.34
- 1.91
- 1.67
- 1.95
- 2.18
- 2.09
- 1.81
- 1.55
- 2.52

All correlation values are multiplied by 100 and rounded to the nearest integer.
All correlations are significant (p>.01) unless indicated with a * (p>.05) or ns (not significant).
N = 64
Table 7. Means of Pre-test and Post-test Self-Efficacies (by trained and control group)

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Table 8. Correlations of Participation Self-Efficacy Scales and Actual Participation (Phase 2)

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Mean
- 8.85 8.97 8.82 9.15 8.34 8.62 7.99 8.34 2.19 2.19 3.43 3.33 2.15 2.66 2.56 3.06

SD
- 1.34 1.15 1.35 1.10 1.81 1.23 2.05 1.86 1.39 1.31 0.94 1.27 0.89 1.16 1.14 1.38

N= 64
Correlation values are multiplied by 100 and rounded to the nearest integer.
** = p > .01
* = p > .05
VITA

Personal Information

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Education

Ph.D. Human Resource Management/ Organization Behavior
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B.S. Microbiology – University of Southwestern Louisiana, 1981.

Work Experience

December, 1987 - June, 1989 AT&T Account Executive—Houston, Texas
May, 1981 - January, 1986 City of Lafayette Water Services—Laboratory Technician
– Lafayette, Louisiana

Courses Taught

Management Theory and Practice

Personnel/Human Resource Management

Organizational Behavior
Projects

Member of a team with the purpose of surveying all university departments to evaluate the program accessibility to disabled individuals. Designed an in depth questionnaire which determined the critical program attributes which might potentially create barriers to disabled individuals.

**Graduate Research Assistant** (September, 1989 - May, 1995)
(Personnel Services, The Barringer Center, Professor Robert Madigan)
Contributed to the following projects: analysis of TQM survey; evaluation of a Life Crisis Training Program; coordinator of the annual Barringer Center conference; coordinator of the Managerial Application course; coordinator for televised MBA course.

Professional Affiliations:

- National Academy of Management
- Southern Management Association

Service

**Student Board Member**, Valleys of Virginia ASTD (American Society for Training and Development)

Lisa J. Calmire