Cultivate Self-Efficacy for Personal and Organizational Effectiveness

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Human behavior is extensively motivated and regulated anticipatorily by cognitive self-influence. Among the mechanisms of self-influence, none is more focal or pervading than belief of personal efficacy. Unless people believe that they can produce desired effects and forestall undesired ones by their actions, they have little incentive to act. Whatever other factors may operate as motivators, they are rooted in the core belief that one has to power to produce desired results. That self-efficacy belief is a vital personal resource is amply documented by meta-analyses of findings from diverse spheres of functioning under laboratory and naturalistic conditions (Holden, 1991; Holden, Moncher, Schinke, & Barker, 1990; Multon, Brown, & Lent, 1991; Stajkovic & Luthans, 1998).

Perceived efficacy occupies a pivotal role in causal structures because it affects human functioning not only directly, but through its impact on other important classes of determinants. These determinants include goal aspirations, incentives and disincentives rooted in outcome expectations, and perceived impediments and opportunity structures. Figure 1 presents the structure of the causal model.

Figure 1 about here

Efficacy beliefs affect self-motivation through their impact on goals and aspirations. It is partly on the basis of efficacy beliefs that people choose what goal challenges to undertake, how much effort to invest in the endeavor, and how long to persevere in the face of difficulties (Bandura, 1997; Locke & Latham, 1990). When faced with obstacles, setbacks, and failures, those who doubt their capabilities slacken their efforts, give up, or settle for mediocre solutions. Those who have a strong belief in their capabilities redouble their effort to master the challenges.

Perceived efficacy, similarly, plays an influential role in the incentive and disincentive potential of outcome expectations. The outcomes people anticipate depend largely on their beliefs of how well they can perform in given situations. Those of high efficacy expect to gain favorable outcomes through good performance, whereas those who expect poor performances of themselves conjure up negative outcomes.

In theories of motivation founded on the incentives of cognized outcomes, such as expectancy-value theories, motivation is governed by the expectation that a given behavior will produce certain outcomes and the value placed on those outcomes. This type of theory includes only one of the two belief systems governing motivation. People act on their beliefs about what they can do, as well as on their beliefs about the likely outcomes of performance. There are countless activities which, if done well, produce valued outcomes, but they are not pursued by people who doubt they can do what it takes to succeed. They exclude entire classes of options rapidly on self-efficacy grounds without bothering to analyze their costs and benefits. Conversely, those of high efficacy expect their efforts to bring success and are not easily dissuaded by negative outcomes.

Rational models of motivation and decision making that exclude efficacy judgment, sacrifice explanatory and predictive power. Perceived self-efficacy not only sets the slate of options for consideration, but also regulates their implementation. Making a decision in no way ensures that individuals will execute the needed course of action successfully, and stick to it in the face of difficulties. A psychology of decision making requires a psychology of action grounded in enabling and sustaining efficacy beliefs. One must add a performative self to the decisional self, otherwise the decider is left stranded in thought.

Beliefs of personal efficacy shape whether people attend to the opportunities, or to the impediments that their life circumstances present and how formidable the obstacles appear. (Krueger & Dickson, 1993; 1994.) People of high efficacy focus on the opportunities worth pursuing, and view obstacles as surmountable. Through ingenuity and perseverance they figure out ways of exercising some control even in environments of limited opportunities and many constraints. Those beset with self-doubts, dwell on impediments which they view as obstacles over which they can exert little control, and easily convince themselves of the futility of effort. They achieve limited success even in environments that provide many opportunities.

Diverse Organizational Impact of Perceived Self-Efficacy

The scope of the organizational impact of perceived self-efficacy will be summarized briefly before presenting the strategies for altering efficacy belief systems. To begin with, perceived self-efficacy is an influential determinant of career choice and development. The higher the people's perceived efficacy to fulfill educational requirements and occupational roles the wider the career options they seriously consider pursuing, the greater the interest they have in them, the better they prepare themselves educationally for different occupational careers, and the greater their staying power in challenging career pursuits, (Lent, Brown, & Hackett, 1994).

New employees receive training designed to prepare them for the occupational roles they will be performing. Those of low perceived efficacy prefer prescriptive training that tells them how to perform the roles as traditionally structured (Jones 1986; Saks, 1995). Employees of high perceived efficacy prefer training that enables them to restructure their roles innovatively by adding new elements and functions to the customary duties. Self-efficacious employees take greater initiative in their occupational self-development and generate ideas that help to improve work processes (Speier & Frese, 1997). Organizations that provide their new employees with guided mastery experiences, effective co-workers as models, and enabling performance feedback enhance employees self-efficacy, emotional well-being, satisfaction and level of productivity (Saks 1994, 1995). Other organizational practices, such as job enrichment and mutually supportive communication, also build employees' perceived efficacy to take on broader functions and a proactive work role (Parker, 1998). Self-efficacy theory provides a conceptual framework within which to study the determinants in effective work design and the mechanisms through which they enhance organizational functioning.

Worklife is increasingly structured on a team-based model in which management and operational functions are assigned to the workers themselves. A self-management work structure changes the model of supervisory managership from hierarchical control to facilitative guidance that provides the necessary resources, instructive guidance, and support that tems need

to do their work effectively (Stewart & Manz, 1995). Enabling organizational structures build managers' efficacy to operate as facilitators of productive team work (Laschruger & Shamian, 1994). The perceived collective efficacy of self-managed teams predicts the members satisfaction and productivity (Lindsley, Mathieu, Heffner, & Bass, 1994, Little & Madigan, 1994).

The development of new business ventures and the renewal of established ones depends heavily on innovativeness and entrepreuneurship. With many resourceful competitors around, viability requires continual ingenuity. Entrepreneurs have to be willing to take risks under uncertainty. Those of high efficacy focus on the opportunities worth pursuing, whereas the less self-efficacious dwell on the risks to be avoided (Kreuger & Dickson, 1993; 1994). Hence, perceived self-efficacy predicts entrepreneurship and which patent inventors are likely to start new business ventures (Chen, Greene, and Crick, 1998; Markman & Baron, 1999). Venturers who achieve high growth in companies they have founded or transformed those they bought, have a vision of what they wish to achieve, a firm belief in their efficacy to realize it, set challenging growth goals, and come up with innovative production and marketing strategies (Baum, 1994).

Effective leadership and workforces require receptivity to innovators that can improve the quality and productivity of organizations. Managers' perceived technical efficacy influences their readiness to adopt electronic technologies (Jorde-Bloom & Ford, 1988). Efficacy beliefs affect not only managers receptivity to technological innovations, but also the readiness with which employees adopt them (Hill, Smith, and Mann, 1987; McDonald & Seagall, 1992). Efficacy fostered adoption of new technologies, in turn, alters the organizational network structure and confers influence on early adopters within an organization over time (Burkardt, & Brass, 1990).

Perceived self-efficacy to fulfill occupational demands affects level of stress and physical health of employees. Those of low efficacy are stressed both emotionally and physiologically by perceived overload in which task demands exceed their perceived coping capabilities, whereas those who hold a high belief in their efficacy and that of their group are unfazed by heavy workloads (Jex & Bliese, 1999). Perceived self-efficacy must be added to the demands-control model of occupational stress to improve its predictability. High job demands with opportunity to exercise control over various facets of the work environment is unperturbing to jobholders of high perceived efficacy, but cardiovascularly stressful to those of low perceived efficacy (Schaubroeck & Merritt, 1997). Efforts to reduce occupational stressfulness by increasing job control without raising efficacy to manage the increased responsibilities will do more harm than good. For the self-efficacious, job underload can be a stressor. Indeed, employees of high efficacy are stressed by perceived underload in which they feel thwarted and frustrated by organizational constraints in developing and using their potentialities (Matsui & Onglatco, 1992). Exposure to chronic occupational stressors and with a low sense of efficacy to manage job demands and to enlist social support in times of difficulty, increases vulnerability to burnout (Brouwers & Tomic, in press a, b; Leiter, 1992). This syndrome is characterized by physical and emotional exhaustion, depersonalization of clients, lack of any sense of personal accomplishment, and occupational disengagement through cynicism about one's work.

A resilient sense of efficacy provides the necessary staying power in the tortuous pursuit innovation and excellence. Yet the very undaunted self-efficacy that breeds success in tough ventures may perpetuate adherence to courses of action that hold little prospect of eventual success. Thus, for example, managers of high perceived efficacy are more prone that those of low efficacy to escalate commitment to unproductive ventures (Whyte & Saks, 1999; Whyte, Saks, & Hook, 1997), and to remain wedded to previously successful practices despite altered realities that place them at competitive disadvantage (Audia, Locke, & Smith, in press). The corrective for the perils of success is not enfeeblement of personal efficacy. Such a disenabling remedy would undermine aspiration, innovation, and human accomplishments in endeavors presenting tough odds. Individuals who are highly assured in their capabilities and the effectiveness of their strategies are disinclined to seek discordant information that would suggest the need for corrective adjustments. The challenge is to preserve the considerable functional value of resilient self-efficacy, but to institute information monitoring and social feedback systems that can help to identify practices that are beyond the point of utility.

It is easy to achieve veridical judgment. Simply punish optimism. The motivational belief system that fosters accomplishments in difficult endeavors combines realism about tough odds, but optimism that through self-development and perseverant effort one can beat those odds. We study intensively the risks of overconfidence, but ignore the prevalent personal and social costs of underconfidence. This bias probably stems from the fact that the costs of lost opportunities and underdeveloped potentialities are deferred and less noticeable than those of venturesome missteps. The heavy selective focus on the risk of overconfidence stands in stark contrast to the entrepreneurial spirit driving the modern workplace in our rapidly changing world.

The functional value of verdical self-appraisal depends on the nature of the venture. In activities where the margins of error are narrow and missteps can produce costly or injurious consequences, one is best served by veridical efficacy appraisal. It is a different matter when difficult accomplishments can produce substantial personal or social benefits and the personal costs involve time, effort, and expendable resources. People have to decide whether to invest their efforts and resources in ventures that are difficult to fulfill, and how much hardship they are willing to endure in formidable pursuits that may have huge payoffs but are strewn with obstacles and uncertainties. Turning visions into realities is an arduous process with uncertain outcomes. Societies enjoy the considerable benefits of the eventual accomplishments in the arts, sciences and technologies of its persisters and risk takers. Realists trade on the merchandizable products that flow from the creations of innovative persisters. To paraphrase the astute observation of George Bernard Shaw, since reasonable people adapt to the world and unreasonable ones try to to alter it, human progress depends on the unreasonable ones.

Given the generality and centrality of the self-efficacy mechanism in the causal structures governing diverse aspects of organizational functioning, programs aimed at developing a resilient sense of efficacy can yield significant dividends in performance accomplishments and personal well-being. The strategies for developing and strengthening beliefs of personal efficacy are addressed in the sections that follow. Social cognitive theory lends itself readily to personal and social applications, which are extensively reviewed elsewhere (Bandura, 1986; 1997). The

present chapter summarizes the relevant principles of change and provides some examples in the organizational field for purposes of illustration.

Sources of Self-Efficacy

Self-efficacy beliefs are constructed from four principal sources of information: they include enactive mastery experiences; vicarious experiences that alter efficacy beliefs through transmission of competencies and comparison with the attainment of others; verbal persuasion and allied types of social influences that one possesses certain capabilities; and physiological and affective states from which people partly judge their capableness, strength, and vulnerability to dysfunction. Any given influence, may operate through one or more of these forms of efficacy conveyance.

Information for judging personal efficacy, whether conveyed enactively, vicariously, persuasively, or somatically is not inherently informative. It is only raw data. Experiences become instructive through cognitive processing of efficacy information and reflective thought. One must distinguish between information conveyed by events and information as selected and integrated into self-efficacy judgments.

The cognitive processing of efficacy information involves two separate functions. The first is the types of information people attend to and use as indicators of personal efficacy. Social cognitive theory specifies the set of efficacy indictors that are unique to each of the four major modes of influence. These are summarized in Table 1. For example, judgments of efficacy based on performance attainments may vary depending on people's interpretive biases, the perceived difficulty of the task, how hard they worked at it, how much help they received, the conditions under which they performed, their emotional and physical state at the time, their rate of improvement over time, and biases in how they monitor and recall their attainments.

Insert Table 1 about here

The indicators people single out provide the information base on which the self appraisal process operates. The second function in efficacy judgment involves the combination rules or heuristics people use to weight and integrate efficacy information from the diverse sources in forming their efficacy judgments. The informativeness of the various efficacy indicants will vary for different spheres of functioning. The various sources of efficacy information may be integrated additively, multiplicatively, configurally, or heuristically. This judgmental process is not entirely dispassionate. Strong preconceptions and affective proclivities can alter self-efficacy appraisals positively or negatively.

The multiple benefits of a strong sense of personal efficacy do not arise simply from the incantation of capability. Saying something should not be confused with believing it to be so. A sense of personal efficacy is constructed through a complex process of self-persuasion based on constellations of efficacy information conveyed enactively, vicariously, socially, and physiologically.

Enablement Through Guided Mastery

Guided mastery provides one of the most effective ways of cultivating competencies. However, a skill is only as good as its execution, which is heavily governed by self-regulatory and motivational factors. Individuals may, therefore, perform poorly, adequately, or highly with the same set of skills depending on the beliefs they hold about their capabilities in given situations (Bandura, 1997). As previously noted, mastery experiences, especially those gained through perseverant effort and ability to learn from setbacks and mistakes, builds a resilient sense of efficacy.

The method that produces the best gains in both self-efficacy and skill combines three components (Bandura, 1986). First, the appropriate skills are modeled to convey the basic rules and strategies. Second, the learners receive guided practice under simulated conditions to develop proficiency in the skills. Third, they are provided with a graduated transfer program that helps them to apply their newly learned skills in work situations in ways that will bring them success.

Instructive Modeling. Modeling is the first step in developing competencies. Complex skills are broken down into subskills, which can be modeled on videotape in easily mastered steps. Subdividing complex skills into subskills produces better learning than trying to teach everything at once. After the subskills are learned by this means, they can be combined into complex strategies to serve different purposes. Effective modeling teaches general rules and strategies for dealing with different situations rather than only specific responses or scripted routines. Voice-over narration of the rules and strategies as they are being modeled, and brief summaries of the rules enhances development of generic competencies.

The execution of skills must be varied to suit changing circumstances. People who learn rules in the abstract usually do a poor job in applying them in particular situations. Teaching abstract rules with varied brief examples promotes generalizability of the skills being taught by showing how the rules and strategies can be widely applied and adjusted to fit changing conditions. A single lengthy example teaches how to apply the rule in that particular situation but provides no instruction on how to adapt its application to varying situations.

People also fail to apply what they have learned, or do so only half-heartedly, if they distrust their ability to do it successfully. Therefore, modeling influences must be designed to build a sense of personal efficacy as well as to convey knowledge about rules and strategies. The impact of modeling on beliefs about one's capabilities is greatly increased by perceived similarity to the models. Learners adopt modeled ways more readily if they see individuals similar to themselves solve problems successfully with the modeled strategies than if they regard the models as very different from themselves. The characteristics of models, the type of problems with which they cope, and the situations in which they apply their skills should be made to appear similar to the trainees' own circumstances.

Guided Skill Perfection. Factual and procedural knowledge alone will not beget proficient performance. Knowledge structures are transformed into proficient action through a conception-matching process. The feedback accompanying enactments provides the information

needed to detect and correct mismatches between the generic conception of requisite skills and action. This comparative process is repeated until a close match is achieved. Putting into practice what one has learned cognitively can also reveal gaps and flaws in the guiding conception. Recognizing what one does not know contributes to the refinement of cognitive representations by further modeling and verbal instruction regarding the problematic aspects of the representation.

In the transformational phase of competency development, learners test their newly acquired skills in simulated situations where they need not fear making mistakes or appearing inadequate. This is best achieved by role rehearsal in which they practice handling the types of situations they have to manage in their work environment. Mastery of skills can be facilitated by combining cognitive and behavioral rehearsal. In cognitive rehearsal, people rehearse mentally how they will translate strategies into what they say and do to manage given situations.

In perfecting their skills, people need informative feedback about how they are doing. A common problem is that they do not fully observe their own behavior. Informative feedback enables them to make corrective adjustments to get their behavior to fit their idea of how things should be done. Videotape replays are widely used for this purpose. Simply being shown replays of one's own behavior, however, usually has mixed effects (Hung & Rosenthal, 1981). To produce good results, the feedback must direct attention to the corrective changes that need to be made. It should call attention to successes and improvements and correct deficiencies in a supportive and constructive way so as to strengthen perceived efficacy. Some of the gains accompanying informative feedback result from raising people's beliefs in their efficacy rather than solely from further skill development.

The feedback that is most informative and achieves the greatest improvements takes the form of corrective modeling. In this approach, the subskills that have not been adequately learned are further modeled and learners rehearse them until they master them.

Effective functioning requires more than learning how to apply rules and strategies for managing organizational demands. The transactions of occupational life are littered with impediments, discordances, and stressors. Many of the problems of occupational functioning reflect failures of self-management rather than deficiencies of knowledge and technical skills. Therefore, an important aspect of competency development includes training in resiliency to difficulties. As we shall see later, this requires skill in cognitive self-guidance, self-motivation, and strategies for counteracting self-debilitating reactions to troublesome situations that can easily unhinge one. Gist, Bavetta, and Stevens (1990) augmented a guided modeling training in negotiation skills with a self-management component. In the latter phase, trainees were taught how to anticipate potential stressors, devise ways of overcoming them, monitor the adequacy of their coping approach, and use self-incentives to sustain their efforts. Trainees who had the benefit of the supplemental self-management training were better at applying learned negotiation skills in new contractual situations presenting conflictful and intimidating elements and negotiated more favorable outcomes than trainees who did not. The self-managers made flexible use of the wide range of strategies they had been taught, whereas their counterparts were more likely to persevere with only a few of the strategies when they encountered negative reactions.

Transfer Training by Self-Directed Success. Modeling and simulated enactments are well suited for creating competencies. But new skills are unlikely to be used for long unless they prove useful when they are put into practice in work situations. People must experience sufficient success using what they have learned to believe in themselves and the value of the new ways. This is best achieved by a transfer program in which newly acquired skills are first tried on the job in situations likely to produce good results. Learners are assigned selected problems they often encounter in their everyday situations. After they try their hand at it, they discuss their successes and where they ran into difficulties for further instructive training. As learners gain skill and confidence in handling easier situations, they gradually take on more difficult problems. If people have not had sufficient practice to convince themselves of their new effectiveness, they apply the skills they have been taught weakly and inconsistently. They rapidly abandon their skills when they fail to get quick results or experience difficulties.

Mastery modeling is now increasingly used , especially in videotaped form, to develop competencies. But its potential is not fully realized if training programs do not provide sufficient practice to achieve proficiency in the modeled skills or if they lack an adequate transfer program that provides success with the new skills in the natural environment. Such programs rarely include training in resiliency through practice on how to handle setbacks and failure. When instructive modeling is combined with guided role rehearsal and a guided transfer program, this mode of organizational training usually produces excellent results. Because trainees learn and perfect effective ways of managing task demands under lifelike conditions, problems of transferring the new skills to everyday life are markedly reduced.

A mastery modeling program devised by Latham and Saari (1979) to teach supervisors the interpersonal skills they need to work effectively through others is an excellent case in point. Supervisors have an important impact on the morale and productivity of an organization. Yet they are often selected for their technical competencies and job-related knowledge, whereas their success in the supervisory role depends largely on their interpersonal skills to guide, enable, and motivate those they supervise.

Latham and Saari used videotape modeling of prototypic work situations to teach supervisors how to manage the demands of their supervisory role. They were taught how to increase motivation, give recognition, correct poor work habits, discuss potential disciplinary problems, reduce absenteeism, handle employee complaints, and overcome resistance to changes in work practices (Goldstein & Sorcher, 1974). Summary guidelines defining key steps in the rules and strategies being modeled were provided to aid learning and memorability. The group of supervisors discussed and then practiced the skills in role-playing scenarios using incidents they previously had to manage in their work. They received instructive feedback to help them improve and perfect their skills.

To facilitate transfer of supervisory skills to their work environment, they were instructed to use the skills they had learned on the job during the next week. They later reviewed their successes and difficulties in applying the skills. If they encountered problems, the incidents were reenacted and the supervisors received further training through instructive modeling and role rehearsal on how to manage such situations. Supervisors who had received the guided mastery training performed more skillfully both in role-playing situations and on the job assessed a year

later than did supervisors who did not receive the training. Because the skills proved highly functional, the supervisors adhered to them. The effects of weak training programs, relying heavily as they often do, on enthusiastic persuasion, rapidly dissipates as the initial burst of enthusiasm fades through failure to produce good results. Simply explaining to supervisors in the control group the rules and strategies for how to handle problems on the job without modeling and guided role rehearsal did not improve their supervisory skills. Because this approach provides supervisors with the tools for solving the problems they face, they express favorable reactions to it.

Supervisory skills instilled by guided mastery improve the morale and productivity of organizations (Porras & Anderson, 1981; Porras et al., 1982). Compared to the productivity of control plants, the one that received that guided mastery program improved supervisory problem-solving skills, had a significantly lower absentee rate, lower turnover of employees, and a 17% increase in the monthly level of productivity over a six-month period. This surpassed the productivity of the control plants. Mastery modeling produces multiple benefits in sales similar to those in production as reflected in enhanced productivity, and a lower rate of turnover in personnel (Meyer & Raich, 1983).

There are no training short-cuts or quick fixes for perceived inefficacy, dysfunctional work habits, and deficient self-regulatory and occupational competencies. As is true in other pursuits, the methods that are least effective are most widely used for ease of delivery, whereas enablement methods of proven value are used less often because they require greater investment of time and effort.

The application of guided mastery for markedly different purposes, such as the elimination of anxiety, stress reactions and phobic dysfunctions, further illustrates the power and generality of this approach. To overcome distress and phobic avoidance people have to confront their perceived threats and gain mastery over them. When people avoid what they fear, they lose touch with the reality they shun. Guided mastery provides a quick and effective way of restoring reality testing. It provides disconfirming tests of faulty beliefs. But even more important, mastery experiences that are structured to develop coping skills provide persuasive confirmatory tests that one can exercise control over potential threats. However, individuals are not about to do what they dread. Therefore, one must create enabling environmental conditions so that individuals who are beset with profound self-doubt can perform successfully despite themselves. This is achieved by enlisting a variety of performance mastery aids (Bandura, 1997).

Feared activities are first modeled to show people how to cope effectively with threats and to disconfirm their worst fears. Difficult or intimidating tasks are broken down into subtasks of readily mastered steps. The change program is conducted in this step-wise fashion until the most taxing or threatening activities are mastered. Joint performance of intimidating activities with the implementor further enables inefficacious individuals to attempt activities they resist doing by themselves. Another method for overcoming resistance is to have individuals perform the feared activity for only a short time. As they become bolder, the length of involvement is extended. With gains in mastery the provisional performance aids are withdrawn to verify that coping attainments stem from the exercise of enhanced personal efficacy rather than from mastery aids. Dysfunctional styles of thinking that arise in the coping transactions are corrected

and coping strategies that foster successful performance are suggested. In the final phase, self-directed mastery experiences are arranged that provide the newly emboldened individuals with opportunities to confront their nemeses and succeed entirely on their own to strengthen and generalize their sense of coping efficacy.

This mastery-oriented approach instills a robust sense of coping efficacy, eliminates anxiety arousal, activation of stress-related hormones, perturbing ruminations and nightmares, and wipes out phobic behavior (Bandura, 1997; Williams, 1992). Guided mastery is ideally suited for ridding oneself of other dysfunctional mindsets that create emotional distress and impair interpersonal effectiveness.

Cognitive Mastery Modeling

A great deal of professional work involves making judgments and finding solutions to problems by drawing on one's knowledge, constructing new knowledge structures, and applying decision rules. Competency in problem solving requires the development of thinking skills for how to seek reliable information and put it to good use. People can learn thinking skills and how to apply them by observing the decision rules and reasoning strategies models use as they arrive at solutions.

Over the years, organizational training relied almost exclusively on the traditional lecture format despite its limited effectiveness. Mastery modeling works much better than lectures (Burke & Day, 1986). With the advent of the computer, talking heads are being replaced by self-paced instructional diskettes that provide step-by-step instruction, structured drills, and feedback of accuracy.

Comparative tests indicate that cognitive modeling may provide a better approach to the development of higher-order cognitive competencies. In teaching reasoning skills through cognitive modeling, performers verbalize their strategies aloud as they engage in problem-solving activities (Meichenbaum, 1984). The thoughts guiding their decisions and actions are thus made observable. During cognitive modeling, the models verbalize their thoughts as they analyze the problem, seek information relevant to it, generate alternative solutions, judge the likely outcomes associated with each alternative, and select the best way of implementing the chosen solution. They also verbalize their strategies for handling difficulties, how to recover from errors, and how to motivate themselves.

Modeling thinking skills and action strategies together can aid development of reasoning skills in several ways. Watching models verbalize their thoughts as they solve problems commands attention. Hearing the rules verbalized as the action strategies are implemented produces faster learning than only being told the rules or seeing only the actions modeled. Modeling also provides an informative context in which to demonstrate how to go about solving problems. The rules and strategies of reasoning can be repeated in different forms as often as needed to develop generative thinking skills. Varied application of reasoning strategies increases understanding of them.

Observing models verbalize how they use their cognitive skills to solve problems highlights the capacity to exercise control over one's thought processes, which can boost observers' sense of efficacy over and above the strategic information conveyed. Similarity to succeeding models boosts the instructional impact. And finally, modeling how to manage failures and setbacks fosters resilience to difficulties.

Gist (1989) taught managers how to generate ideas to improve the quality of organizational functioning and customer service by providing them with guidelines and practice in innovative problem solving. Cognitive modeling, in which models verbalized strategies for generating ideas, proved superior to presenting the same guidelines solely in the traditional lecture format. Managers who had the benefit of cognitive modeling expressed a higher sense of efficacy and generated considerably more ideas and ideas of greater variety. Regardless of format of instruction, the higher the instilled efficacy beliefs, the more abundant and varied were the generated ideas.

The advantages of cognitive mastery modeling are even more evident when the effectiveness of alternative instructional methods are examined as a function of trainees' preexisting level of perceived efficacy. Gist, Rosen, & Schwoerer (1988) taught managers with a computerized tutorial how to operate a spreadsheet program and use it to solve business problems. Cognitive modeling provided the same information and the same opportunities to practice the computer skills but used a videotape of a model demonstrating how to perform the computer task.

Videotaped cognitive modeling instilled a uniformly high sense of efficacy to acquire computer software skills regardless of whether managers began the training self-assured or self-doubting of their computer capabilities. A computerized tutorial exerted weaker effects on efficacy beliefs and was especially ineffective with managers who were insecure in their computer efficacy. Cognitive modeling also promoted a high level of computer skill development. The higher the preexisting and the instilled efficacy beliefs, the better the skill development. The benefits of mastery modeling extend beyond development of technical skills. Compared to the computer tutorial training, mastery modeling produced a more effective working style, less negative affect during training, and higher satisfaction with the training program. Mastery modeling provides an instructional vehicle that lends itself well for enlisting affective and motivational determinants of competency development.

We are entering a new era in which the construction of knowledge and development of expertise will rely increasingly on electronic inquiry. Much information is currently available only in electronic rather than print form. The electronic network technologies greatly expand opportunities to attain expertise. Skill in electronic search is emerging as an essential competency. Knowledge construction through electronic inquiry is not simply a mechanical application of a set of cognitive operators to an existing knowledge base. Rather, it is a challenging process in which affective, motivational, and self-regulatory factors influence how information is gathered, evaluated, and integrated into knowledge structures.

Information seekers face an avalanche of information in diverse sources of varying value and reliability. The amount of information on the Internet and the number and types of sites are

doubling rapidly. Concepts with interrelated elements must be used to organize and guide efforts to find the most relevant information. Small changes in strategies can lead down radically different information pathways, many of which may be unfruitful. It is hard to know whether one is on the right track, or on an unproductive one. It requires a robust sense of efficacy to find one's way around this mounting volume and complexity of information. People who doubt their efficacy to conduct productive inquiries, and to manage the electronic technology, can quickly become overwhelmed.

In developing the cognitive skills for untangling the Web, individuals were taught how to frame the electronic inquiry be selecting key constructs and finding reliable sources; how to broaden the scope and depth of inquiry by using appropriate connectors; and how to sequence the inquiry optimally (Debouski, Wood, & Bandura, 1999). Compared to a group that received a computer tutorial, those who had benefit of cognitive modeling that conveyed the same search rules gained higher perceived efficacy and satisfaction in knowledge construction. They spent less time in errors and redundancies, used better search and sequencing strategies, learned more, and were more successful in constructing new knowledge. Putting a human face with whom one can identify in electronic instructional systems substantially boosts their power.

Cultivation of Self-Regulatory Competencies

People have the capacity for self-directedness through the exercise of self-influence. The accelerated growth of knowledge and rapid pace of social and technological change are placing a premium on capabilities for self-motivation and self-development. Indeed, to keep up with a world that is rapidly changing, people have to develop, upgrade and reform their competencies in continual self-renewal. To achieve this, they must develop skills in regulating the cognitive, motivational, affective, and social determinants of their functioning.

Self-management is exercised through a variety of interlinked self-referent processes including self-monitoring, self-efficacy appraisal, personal goal setting, and enlistment of motivating incentives (Bandura, 1986; 1991; Locke & Latham, 1990). Knowledge of how these various subfunctions of self-regulation operate provides particularized guides on how to develop and implement this capability.

People cannot influence their own motivation and actions very well if they do not keep track of their thought patterns and performances, their situational influences, and the immediate and distal effects they produce. Therefore, success in self-regulation partly depends on the fidelity, consistency, and temporal proximity of self-monitoring. Observing one's pattern of behavior is the first step toward doing something to affect it, but, in itself, such information provides little basis for self-directed reactions.

Goals and aspirations play a pivotal role in the exercise of self-directedness. Goals motivate by enlisting self-evaluative involvement in activities rather than directly. Once people commit themselves to goal challenges two types of affective motivators come into play—people seek *self-satisfaction* from fulfilling valued goals, and are prompted to intensify their efforts by *discontent* with substandard performances. Activation of evaluative self-influence operates through a comparitor process in which perceived performance is judged against one's personal

standard. Self-motivation through goal challenges, therefore, requires explicit goals and informative feedback on how one is doing. Neither goals without knowing how one is doing, nor knowing how one is doing without any goals is motivating (Bandura, 1991).

Motivational goal effects are mediated by three types of self-influences—perceived self-efficacy for goal attainment, evaluative self-reactions, and adjustment of personal standards in light of one's attainments. The more people bring these self-influences to bear on themselves, the greater the effort they exert and sustain to accomplish what they seek.

Goals do not automatically activate the self-reactive influences that govern level of motivation. Certain properties of goal structures determine how strongly the self-system will become enlisted in any given endeavor. These properties include goal specificity, proximity, and level of challenge.

Goals often have little impact because they are too general and personally noncommiting. To create productive involvement in activities, goals must be explicit so as to indicate the type and amount of effort needed to attain them. The amount of effort enlisted and satisfaction that accompany different goals depends on the level at which they are set. Strong interest and involvement in activities is sparked by challenges. The effectiveness of goals in regulating motivation and performance depends on how far into the future they are projected. Long-range goals provide the vision and give direction to one's activities. But they are too distant to serve as current motivators. There are too many competing activities at hand for distant futures to exert much impact on current behavior. It is too easy to put off serious efforts in the present, to the tomorrows of each day. Self-motivation is best sustained by attainable subgoal challenges that lead to distant aspirations. Short-term subgoals motivate and guide effort in the here and now. Challenging subgoals are a good way of building perceived efficacy and intrinsic interest where they are lacking (Bandura, 1991, 1997). There are several ways they achieve these effects. Sustained effort builds competencies. Subgoal attainments provide clear markers of increasing mastery. Evidence of progress builds efficacy. Subgoal attainments also bring self-satisfaction. Satisfying experiences build intrinsic interest in activities.

Goal systems structured along the lines described above function as remarkable robust motivators across diverse activity domains, environmental settings, populations, and time spans (Bandura, 1997; Locke & Latham, 1990). The chapter by Latham provides further guidelines on how to structure and implement goal systems for productive engagement in personal and organizational pursuits.

Effective self-regulation is also central to personal management of emotional states and problem behaviors that have a negative spillover on work performance. Employee absenteeism costs United States industries billions of dollars each year. It is a serious problem that disrupts work schedules, raises costs and decreases productivity. Frayne and Latham (1987) provide the elements for an effective self-management system to reduce absenteeism. Employees who often missed work were taught in groups how to mange their motivation and behavior more effectively. They kept a record of their work attendance. They analyzed the personal and social problems that prevented them from getting to work, and were taught strategies for overcoming these obstacles. They set themselves short-term goals for work attendance, and rewarded

themselves for meeting their goals. Training in self-regulation increased employees beliefs in their efficacy to overcome the obstacles that led them to miss work. They improved their work attendance and maintained these changes over time (Latham & Frayne, 1989). The stronger they believed in their self-management capabilities, the better was their work attendance. A control group of employees who did not receive the program in self-regulation continued their absentee ways.

The guiding principles and applications reviewed in the preceding sections underscore the centrality of perceived self-efficacy as a personal resource that yields dividends in motivation, performance attainments, and emotional well-being. Social cognitive theory embeds perceived efficacy within a broad network of sociocognitive factors. Because these factors are modifiable and the theory specifies their determinants and modes of operation, it lends itself readily to diverse social applications.

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Table 1. The distinctive sets of factors within each of the four modes of influence that can affect the construction of efficacy beliefs.

ENACTIVE EFFICACY INFORMATION INFORMATION	VICARIOUS EFFICACY
Interpretive biases	Model attribute similarity
Perceived task difficulty and diagnosticity	Model performance similarity
Effort expenditure	Model historical similarity
Amount of external aid received	Multiplicity and diversity of modeling
Situational circumstances of performance	Mastery or coping modeling
Transient affective and physical states	Exemplification of coping strategies
Temporal pattern of successes and failures	Portrayal of task demands
Selective bias in self-monitoring of performance	
Selective bias in memory for performance attainments	
PERSUASORY EFFICACY INFORMATION	**SOMATIC AND AFFECTIVE EFFICACY INFORMATION**
Credibility states	Degree of attentional focus on somatic states
Expertness	Interpretive biases regarding somatic states
Consensus	Perceived source of affective arousal
Degree of appraisal disparity	Level of arousal
Familiarity with task demands	Situational circumstances of arousal

Figure Caption

Figure 1. Paths of influence through which perceived self-efficacy and other key social cognitive factors regulate motivation and performance accomplishments.