

ORGANIZATIONAL LEARNING, PERFORMANCE, AND CHANGE

## Human Performance Technology

Another critical professional practice domain is organizational performance. To properly understand this domain, we must examine four essential elements: human performance technology (Chapter 8), performance improvement and management (Chapter 9), performance consultants (Chapter 10), and performance consulting (Chapter 11).

### A Definition of Human Performance Technology

Rothwell (1996b, 5) describes human performance technology (HPT) as a “systematic process that links business strategy and goals and workers’ abilities to achieve them with a variety of interventions, including environment redesign, learning and training, and incentive system reconfiguration.” The primary outcome is individual and organizational performance improvement. Through causal analysis of performance problems or business opportunities, underlying causes are identified for which effective solutions can be generated for any given performance challenge.

Spitzer (1999, 163) maintains that “human performance (HP) technologists are in the business of improving performance in organizations.” Like other consultants who have no direct authority over organizational change, HP technologists rely on indirect influence in the form of interventions (Block 1981), which may be any type of organizational change, from a relatively small modification of a tool, to a training program, to a completely new organizational system or structure.

According to Stolovitch and Keeps (1992, 3), “human performance technology is a field of practice that has evolved largely as a result of the experience, reflection, and conceptualization of professional practitioners striving to improve

human performance in the workplace." They add that since the term human is included in the name, the focus of this field of application is on human performers in organizational and work settings. In short, they believe that HRD professionals work with the performance of people (employees) operating within results-oriented systems.

The term performance is defined as an accomplishment, execution, outcome, or achievement. It denotes a quantified result or a set of obtained results. Swanson (1999) defines performance as the outcomes of behavior. Stolovitch and Keeps (1992, 4) argue that "behavior is individual activity, whereas the outcomes of behavior are the ways in which the behaving individual's environment is somehow different as a result of his or her behavior." Within an organizational context, Gilbert (1978) asserts that performance is an "accomplishment" that is valued.

The term technology is perhaps the most confusing in that it has incongruous connotations. But when joined with the word performance and introduced into an organizational context, it implies an objective, systematic procedure for examining performance issues from both individual and organizational perspectives. Thus, "human performance technology is a field of endeavor that seeks to bring about changes to a system, in such a way that the system is improved in terms of the achievements it values" (Stolovitch and Keeps 1992, 5).

Rothwell (1996b, 3) asserts that "human performance technology requires a systematic process of discovering and analyzing important human performance gaps, planning for future improvements in human performance, designing and developing cost-effective and ethically justifiable interventions to close performance gaps, implementing interventions, and evaluating the financial and non-financial results." This definition can be further explained.

By "systemic," Rothwell (1996b, 15) implies that human performance improvement is approached in an organized, open systems approach, whereby the organization system absorbs environmental inputs (people, raw materials, capital, and information), uses them in such transformational processes as delivering service or manufacturing products, and discharges them as outputs such as finished goods or customer services. "Discovering and analyzing" means identifying and examining present and future barriers that prevent an organization, process, or individual from achieving desired results. "Human performance" refers to a quantified result or a set of obtained results. "Planning for future improvements in human performance" indicates performance improvement is focused on averting future problems or realizing improvement opportunities as well as examining past and present performance problems or breakdowns. "Designing and developing cost-effective and ethically justifiable interventions" refers to discovering optimal, sensitive, and efficient means of solving past or present performance problems or planning for future performance improvement opportunities. "Implementing interventions" includes installing and maintaining performance im-

provement solutions. Finally, "evaluating results" gathers persuasive evidence that demonstrates the solution's effectiveness.

Fuller and Farrington (1999, 94) add insight into human performance technology with their definition: "HPT is a systemic and systematic approach to defining a business need or opportunity, identifying barriers to achieving the desired business result, implementing solutions to remove the barriers to performance, and then measuring bottom-line results." This definition differs from previous ones in that it has additional considerations:

1. Using a systematic approach. HPT follows well-organized procedures, using a step-by-step approach, method, or system that is known for achieving results.
2. Defining a business problem or opportunity. Fuller and Farrington (1999) assert that HPT as a process makes certain the organization knows what the problem is that practitioners are trying to solve.
3. Identifying barriers to achieving the desired business result. HPT uses process, performance, and causal analysis to assess the root cause of the problem or the reason why an opportunity is not being realized. This is done in order to ensure that practitioners go beyond the symptoms of a performance problem to identify the performance issues within the firm.
4. Implementing solutions to remove barriers to performance. HPT eliminates barriers to performance by offering a number of solutions (i.e., work environment, motivational factors, knowledge, and skills), since most performance problems or business opportunities require a combination of interventions.

Stolovitch and Keeps (1999) maintain that HPT is concerned with measurable performance and the structuring of strategies within the organizational system to improve performance. As a result, the HP practitioner must identify and analyze factors within the organizational system that may affect performance and the consequences of employee performance (rewards and punishments) to uncover root causes of inadequacies so that a performance solution can be constructed to address them.

### *Basis of Human Performance Technology*

HPT is grounded in general systems theory as it applies to organizations. HP practitioners adopt a holistic philosophy of performance problems: They examine problems (defined as a gap between desired and actual states) from a broader context of the organizational system in which it actually occurs. Not all performance problems require an endless examination of all systems; however, *is studied*

in relation to the overall goals and mission of the organization within which it is identified.

Stolovitch and Keeps (1999) warn that HPT should not be applied to all organizational systems because it is a results-driven, productivity-oriented process that may be inappropriate in social systems. They believe that it is particularly valuable for business and industry, where organizational purposes and goals are generally clearly defined.

### *Relevance of Human Performance Technology to Organizations*

HPT is particularly relevant to organizations for several reasons. First, HPT adopts an organizational systems view in that it seeks to link the actions and interventions of all organizational elements (selection, training, feedback systems, incentives, and organizational design) that affect overall performance rather than operating piecemeal (training-only approach) (Rummler and Brache 1995). Second, it uses a systematic approach to performance improvement through the orderliness of technology, ensuring that the analysis and evaluation of performance problems are based on solid scientific, theoretical, and empirical foundations. This provides a coherent approach to the solution of performance problems, as opposed to the more eclectic procedures adopted by most vendor-driven training departments (Gilley and Maycunich 1998a). Third, HPT practitioners are more cause conscious than solution oriented because they rely on the results of performance and causal analysis prior to proposing interventions or solutions (Rothwell 1996b). Fourth, HPT is bottom-line oriented, which makes it particularly credible to money-conscious decisionmakers (Fuller and Farrington 1999). Fifth, HPT is a rational, logical, and transparent approach to performance improvement because it requires thorough performance analyses to identify all factors contributing to the current level of performance. Moreover, HPT requires a precise statement of the mission(s) of the system in which improved performance is being sought (Stolovitch and Keeps 1999). Sixth, HPT is dedicated to linking training, environmental redesign, feedback systems, or incentive systems to measurable performance in order for the organization to achieve its business goals and objectives (Brinkerhoff and Gill 1994).

### *Goals of Human Performance Technology*

The goal of human performance technology is to guarantee that the right individuals have the knowledge, skills, motivation, and environmental supports to do their jobs effectively and efficiently (Fuller and Farrington 1999). Rummler and Brache (1995) define effectiveness as employee accomplishments that are of value to the organization as well as to the individual. They believe efficiency involves

production in a manner that requires the least amount of resources (time, financial, human, and material). The result is improved organizational performance and renewal capacity (Gilley and Maycunich 2000).

### *Principles Underlying Human Performance Technology*

Jacobs (1987, 41) identified eleven important principles of human performance technology, which serve as a foundation for other elements such as performance and causal analysis, stakeholder evaluation, design and development techniques, implementation strategies, and evaluation procedures.

1. Human performance and human behavior are different, and knowledge of their differences is important for achieving goals.
2. Any statement about human performance is about organizational performance as well.
3. Costs of improving performance should be regarded as investments in human capital, yielding returns in the form of increased performance potential.
4. Organizational and individual goals must be considered to define worthy performance.
5. The domain of human performance technology consists of management functions, development functions, and systems components.
6. Knowing how to engineer human performance and the conditions that affect it is as important as explaining why the behavior occurred.
7. Diagnosing problems requires analysis of the present system and examination of differences between it and an ideal system. Avoiding anticipated problems requires analyzing the planned system and modifying it to approximate the ideal.
8. Exemplary performance provides the most logical reference for establishing job performance standards.
9. Human performance problems have differing root causes that originate either from the person, from something in the environment, or both.
10. The performance of one subsystem affects the performance of other subsystems in somewhat predictable ways, requiring that root causes be analyzed at more than one level of the organization.
11. Many different solutions may be used to improve human performance. Selection of any one solution is dependent upon the cause and nature of the performance problem, and the criteria used to evaluate a solution must include its potential to make a measurable difference in the performance system.

### Process of Human Performance Technology

*Instructional Systems Design.* According to Rosenberg, Coscarelli, and Hutchison (1999), HPT relies on instructional systems design (ISD) as a generalized systematic model. They contend that instructional requirements must be identified to determine the precise instructional needs of learners. Thus, instructional program design links with analysis. Moreover, instructional materials are produced and delivered in accordance with design. In every situation, evaluation data are collected and revisions are made to align outcomes of the learning process with identified needs as closely as possible. Today, this systematic model has come to be known simply as ADDIE (analysis, design, development, implementation, and evaluation).

The ISD framework has a few limitations. First, a variety of needs cannot be met through instructional programs alone, regardless of how well learning interventions are designed. Further, learning does not always result in improved performance. As HRD practitioners have become better at identifying problems, they have realized that their repertoire of instructional solutions can solve only a small set of problems; thus, a broader paradigm is required (Rosenberg, Coscarelli, and Hutchison 1999).

*Analytical Systems.* Harless (1974) realized that analysis of learner needs often occurs too late in the instructional process. He believed it was critical to complete the analysis process before design of an instructional program. Over time, front-end analysis became the first step in the instructional design process.

Rummler and Brache (1995) maintain that organizational structures are a collection of integrated systems (finance, manufacturing, human resources, and marketing). Through systemic analysis they discovered that individual performance is influenced by organizational performance, and vice versa. They suggest that all organizational systems (and their subsystems) are influenced by a complex and ever-changing variety of outside forces. Rosenberg, Coscarelli, and Hutchison (1999) argue that organizational analysis is required to examine this interrelationship and the impact of external forces. They also suggest that several other factors are a critical part of the process of HPT, including the following:

*Cognitive engineering* is an applied cognitive science that draws on the knowledge and techniques of cognitive psychology and related disciplines to provide the foundation for principle-driven design of person-machine systems.

*Ergonomics and human factors* are disciplines that developed in response to the world's increasingly complex technology.

*Psychometrics* is the measurement of human achievement and capabilities.

*Feedback systems* are directly related to motivation, incentives, and rewards. According to Tosti (1986), the critical characteristics of feedback are tied to who

gives it, what the content of the feedback is, and when and where the feedback is given.

*Intervention systems* are responses to identify causes of human performance problems or to opportunities for improving performance, and are often referred to as *solutions, strategies, tactics, or human resource functions*.

### Management of Human Performance Technology

HPT is more complex than managing a single intervention. However, the management of HPT has been primarily based on overlaying the human performance system within an organization, applying HPT models, or through utilization of one of three types of practitioner.

Hutchison (1990) identified two types of HPT practitioners: the *performance technologist*, concerned primarily with analysis, management, and evaluation, and the *intervention specialist*, focused on the design and implementation of specific interventions. One or more individuals, depending on the complexity of the performance problem or business opportunity, may perform these roles. Robinson and Robinson (1996) identified a third type of practitioner: the *performance consultant*.

Rosenberg, Coscarelli, and Hutchison (1999) argue that many HP practitioners assume that combinations of interventions, taken from a variety of fields, provide greater value when applied to a performance problem or opportunity than any specific intervention does when used alone. Gilley (1989) notes that career development within an organization is enhanced when the training and organizational development processes and strategies are linked together. Pucel, Cerrito, and Noe (1989) assert that the linkage between selection, training, and performance appraisal can result in a defensible human resource system that contributes to management's ability to improve organizational productivity.

### Implementation of Human Performance Technology

Galpin (1996) warns HRD professionals not to take a haphazard approach to the transition from training to performance improvement, because it will invite resistance, delays, confusion, and potential rejection of the entire strategic HRD approach. Fuller and Farrington (1999, 57) advocate a planned approach to building an effective performance improvement practice within an organization. There are four phases in this planned approach: (1) prepare for performance technology by building capability and gathering resources; (2) demonstrate results by implementing small projects that have a clear, positive impact on the organization's business needs (cost, quality, quantity, and timeliness); (3) build organizational awareness by communicating and demonstrating ways to achieve results; and (4) address the barriers to implementation.

### Competencies of HPT Practitioners

Few systematic efforts have been made to identify the competencies necessary for success in human performance technology. Jacobs (1987) identified fifteen competencies for training and development professionals who set their sights on becoming performance technologists. Most recently, Stolovitch, Keeps, and Rodrigue (1995) identified sixteen skills/competencies of the performance technologist:

1. Determine appropriateness of project.
2. Conduct needs assessment/front-end analysis.
3. Assess performer characteristics.
4. Analyze the structural characteristics of jobs, tasks, and content.
5. Write statement of performance improvement intervention outcomes.
6. Analyze the characteristics of a setting (learning/working environment).
7. Sequence performance intervention outcomes.
8. Specify performance improvement strategies.
9. Sequence performance improvement activities.
10. Determine the resources appropriate to the performance improvement activities and create all components.
11. Evaluate human performance technology interventions.
12. Create human performance technology intervention, implementation, monitoring, and maintenance.
13. Plan, manage, and monitor human technology projects.
14. Communicate effectively in visual, oral, and written form.
15. Demonstrate appropriate interpersonal, group process, and consumer behaviors.
16. Promote human performance technology as a major approach to achieve human performance results in organizations.

### Human Performance System

According to Dean (1999), the conceptual domain of human performance technology can be defined by three key aspects: (1) functions to manage the development of human performance systems or other management operations, (2) functions to develop human performance systems, and (3) the components of human performance systems. Combining these aspects reveals the following definition of HPT. HPT is the development of human performance systems and the management of that development, using a systems approach to achieve organizational and individual goals.

The human performance system accepts that organizations are open systems that are absolutely dependent for success on their external environments (Rothwell 1996b). Katz and Kahn (1978) argued that open systems receive inputs from the environment, process them, and release outputs into the environment. Rummeler and Brache (1995) describe inputs as resources used to produce products or deliver services; processes are the work methods applied to the inputs; and outputs are the results of processes, such as finished goods or services.

Rothwell (1996b) believes each part of an organization is a subsystem (part of the organizational system) interacting with a suprasystem (the environment external to the organization). Consequently, each part of an organization contributes to its mission. Furthermore, changes in one part of the organization will affect others. This reflects the interdependencies of open systems.

Many researchers have found that efforts to improve human performance must take into account the environments within which performance occurs. Rothwell (1996b, 32) identified four environments that practitioners should examine:

- The *organizational environment* is synonymous with the suprasystem. It is everything outside the organization (the external environment).
- The *work environment* is everything inside the organization (the internal environment).
- The *work* consists of processes used to transform inputs into outputs.
- The *worker* is the individual who performs work and achieves results.

According to Fuller and Farrington (1999, 14), the human performance system is a process where organizational inputs, people, and their behaviors lead to performance, consequences, and feedback, which loops back through the system to the organization and the people in it, and so on. Moreover, the components of this system exist within an environment that also affects performance. (Appendix D)

### Organizational Inputs

The system begins with organizational inputs such as raw materials, people, financial capital, and information. Additionally, organizations have business goals and objectives, values, guiding principles, and an overall work climate that affect the way employees operate within them. Moreover, organizations exist within a culture, sometimes referred to as behavioral norms, that identifies how work is to be done and how members of the firm are to treat one another. In short, culture is "how things get done around here" (Gilley and Maycunich 1998). Those individuals who fail to abide by the culture are socially punished by members of the organization, or choose to leave because they don't fit in, or are fired for failing to demonstrate teamwork (Aronson 1995).

Most organizations provide employees with a written job description that indicates what their role is within the organization and what results they are expected to achieve on the job. Ideally, job descriptions present a clear picture of employees' roles, responsibilities, required outputs, and standards used to judge the quality of their performance. If a job description is poorly written or dated, the employee could easily end up performing inappropriately or pursuing incorrect performance objectives.

### *People*

By applying their existing knowledge, skills, and attitudes to available input, employees (people) produce product and services for the organization. If their capabilities are inadequate, employees may perform their tasks incorrectly, poorly, or not at all (Fuller and Farrington 1999). In the human performance system, employee capabilities are not the only element needed to achieve desired performance. The mistake that HRD professionals typically make is focusing exclusively on the people component of the human performance system while ignoring the other components. Although this approach may yield highly talented and capable employees, they nevertheless will struggle to produce results in a suboptimized organizational work environment. This condition creates high levels of frustration that have been demonstrated to increase attrition, since high performers who desire a less frustrating working environment will secure a position with another organization (Greenberg 1994).

### *Behaviors*

Behaviors are measured in terms of specific actions and are influenced by organizational inputs. Fuller and Farrington (1999) revealed that job-related behaviors can be observed through the actions, problem solving, and decisionmaking of individuals and groups. Ultimately, job-related behavior impacts the achievement of desired business results.

### *Performance*

Performance is measured in terms of outcomes that are desired and valued by the organization (i.e., reduced product costs, increased quality, or increased productivity). Although appropriate job-related behavior is important, performance makes the organization successful. Gilbert (1978) contends that firms obsessed with controlling or improving behaviors will have difficulty improving both individual and organizational performance. In essence, employees can demonstrate desired behaviors yet not achieve desired outcomes.

### *Consequences*

Consequences may include rewards, incentives, recognition, status, power and authority, responsibilities, or compensation and should be linked to job performance (Fuller and Farrington 1999). In its simplest application, consequences that reinforce desired performance are likely to continue, whereas those that punish for undesired performance are likely to extinguish it over time.

To be effective, organizations should align consequences of performance with organizational inputs. When out of alignment, people are forced to choose between what they are told to do and what actually gets rewarded within the organization (Fuller and Farrington 1999, 18). Under these circumstances, employees will appear to follow organizational mandates, while spending most of their time doing what gets rewarded, which negatively impacts the organization in the long term.

### *Feedback*

Feedback is simply information about employee performance and the consequences of their performance. Employees will modify their job-related behavior to optimize their performance when they are able to associate their work with specific consequences. Without frequent, accurate feedback, people are far less likely to improve their performance over time.

### *Environment*

Four environmental factors significantly impact performance: job processes, performance barriers, information, and tools. Environmental factors have the potential to seriously impede performance even if organizational inputs such as people, abilities, behaviors, consequences, and feedback are of the highest quality. As Rummier and Brache (1995) point out, if you put a good performer up against a bad system, the system wins every time.

### *Whole-System Solutions*

Fuller and Farrington (1999, 21) assert that "if people are to achieve top-level performance, all the components of their human performance system must be optimized." When any of these components break down or are ignored, individual and organizational performance decreases. Performance consultants are then called upon to remove performance barriers by installing appropriate performance improvement solutions (Chapter 10).

Simply examining the human performance system provides evidence of the complexity of performance, its management, and improvement. For this reason,

training by itself is an insufficient approach to improving performance. Although training can positively impact the people component of the human performance system, it cannot fix performance barriers in the areas of organizational inputs, consequences, feedback, or the environment (Fuller and Farrington 1999; Swanson 1999; Gilley and Maycunich 1998a). Organizations, in turn, are obligated to create performance improvement solutions that address each of the broken elements of the performance system.

Rummler and Brache (1995, 25) believe that the human performance system relies on the premise that people are motivated and talented, and if they do not perform adequately the cause is most likely in the system (i.e., organization, process, or job/performer level) in which they work. Organizations that effectively manage the human performance system should positively respond to the following questions:

- Do performers understand the outputs they are expected to produce and the standards they are expected to meet? (Performance)
- Do performers have sufficient resources, clear signals and priorities, and a logical set of job responsibilities? (Performance)
- Are performers rewarded for achieving job goals? (Consequences)
- Do performers know whether they are meeting job goals? (Feedback)
- Do performers have the necessary skills and knowledge to achieve job goals? (Behavior)
- In an environment in which the five questions listed above are answered affirmatively, do performers have the physical, mental, and emotional capacity to achieve job goals? (People)

## Models of Human Performance Technology

### *Human Performance Enhancement*

Rothwell (1996a, 42) believes in the need for a new model of human performance technology that can be applied both situationally (Mager and Pipe 1984) and comprehensively (Gilbert 1978). Such a model, called the *human performance enhancement* (HPE) model, focuses attention both outside the organization (customers, suppliers, distributors, and other stakeholders) and inside, thus giving due consideration to the four environments that affect human performance (worker, work, work environment, organizational environment). He concluded that the model could become the basis for selecting, training, developing, appraising, and rewarding HRD professionals.

The model requires that HRD professionals work in concert with stakeholders to do the following:

1. Analyze what is happening (performance).
2. Envision what should be happening (performance).
3. Clarify present and future performance gaps.
4. Determine the present and future importance of the performance gaps.
5. Identify underlying cause(s) of performance gap(s).
6. Select human performance enhancement strategies, individually or collectively, that close performance gaps by addressing their cause(s).
7. Assess the likely outcomes of implementation to minimize negative side effects and maximize positive results.
8. Establish an action plan for implementation of human performance enhancement strategies (performance improvement intervention/solutions).
9. Implement HPE strategies.
10. Evaluate results during and after implementation, feeding information back into Step 1 to prompt continuous improvement and organizational learning.

HPE is a systematic approach to identifying or anticipating performance problems and improvement opportunities (Rothwell 1996a, 44).

### *Human Performance Technology Approach*

Strategic HRD professionals maintain a philosophy that provides insight into complex performance situations. But how does this philosophy become converted into action? Required is an approach that addresses the range of performance improvement opportunities but always begins with the premise that performance problems are indicated by a clear gap between desired and actual performance.

HPT effectively addresses this range of situations in a systemic, performance-focused, and data-driven approach (Rummler and Brache 1992). The steps in the process are summarized as follows:

*Step 1: Problem/Opportunity Definition.* The objective of the first step is to identify and agree on the performance problem to be examined, which is the starting point (and the ending point, since it will ultimately be the basis for evaluating the project's effectiveness) of the process (Rummler and Brache 1992, 42). During this step, HRD professionals identify performance desired by the organization and the level(s) (organizational, business process, performer/job) of the performance problem.

*Step 2: Analysis.* During this step, HP technologists apply the HPT framework to diagnose the problem, determine its causes, and identify or prescribe a solution.

According to Rummler and Brache (1992, 42–44), this analysis should be focused at three levels within the organization:

- Organizational level to determine cross-functional processes that prevent appropriate performance.
- Process level to determine which process steps are not being performed properly and are leading to poor performance, to determine the action required to improve performance, and to identify the jobs that are critical to the successful performance of the process.
- Job/performer level to determine what job outputs of which critical jobs need to be improved in order for the key processes to work effectively and produce the desired quality and to identify the action required to improve the job output.

*Step 3: Design and Development of Performance Improvement Interventions.* At this point, HRD professionals consider possible ways to close past, present, or possible future performance gaps by addressing their root cause(s). The objective of this step is to design and develop performance improvement solutions that help close the performance gap. Interventions may be used individually or in combination, depending on the cause(s) of the gap(s). Rummler and Brache (1992, 44) suggest that this may include “a broad range of actions, from modifying organizational strategy to process and job redesign to the design of a new measurement system, a performance management system, or training.” They further add that a critical component of this step is development of a process to evaluate the effectiveness of the solution.

*Step 4: Implementation.* Key to the success of implementing a performance management solution is planning and installing an intervention. Of course, top management’s support is critical to successful implementation and can be assumed, provided that a significant organizational performance problem is being addressed.

Rothwell (1996b,15) points out that human performance improvement specialists help the organization install an intervention. They may assist performers, managers, process owners, and other stakeholders in carrying out the following:

- examine what the organization currently is doing to address the cause(s) of the human performance gap;
- determine what the organization should do in the future to address the cause(s) of the human performance gap;
- assess changes inside or outside the organization that may affect the intervention as it is implemented;

- clarify and emphasize how the intervention will help the organization meet its needs, achieve its mission, and realize its strategic planning goals and objectives;
- identify the best sources of talent and resources to implement the intervention.

At the conclusion of this step the organization should have a clear understanding of the desired outcomes to be achieved from the intervention. To be effective, however, any intervention requires a long-term commitment and constant oversight by HRD professionals, stakeholders, and decisionmakers.

Regardless of the level of the organizational system, Silber (1992, 61) recommends the use of five different types of performance improvement interventions by HRD professionals.

- *Isolated Training.* The simplest (not necessarily the most effective or cheapest) form of intervention uses training to fix an isolated performance problem.
- *Isolated Performance.* These solutions involve job aids, minor environmental redesign, and incentive/motivation system changes to fix an isolated performance problem.
- *Total Training.* The approach takes a broad view of the problems it addresses and does a more effective and efficient training job to solve them but is limited to the solution set it considers: training.
- *Total Performance.* This approach includes studying information, environment/work design, incentives/motives, skill/knowledge, and management problems and solutions by taking into account cost effectiveness and return on investment for implemented solutions.
- *Total Cultural.* The total cultural intervention incorporates examination of problems and solutions, in the context of addressing the total organization’s values and corporate culture, by providing techniques that determine the influence of larger-scale affective issues that underlie performance and for effecting changes that improve related performances.

*Step 5: Evaluation.* Evaluation entails gathering data on performance, assessing whether chosen solutions are producing desired results and, if not, how they can be modified to achieve the desired outcome (Rothwell 1996a). Although evaluation appears last in this process, Rummler and Brache (1992) point out that evaluation starts in step one, problem or opportunity identification, where the performance to be improved is identified. They assert that evaluation procedures should be developed along with solutions and should be part of the ongoing management



of the performance improvement initiative. The data gathered and analyzed will determine whether the performance improvement solution eliminated or significantly mitigated the performance problem. If the solution is deemed inadequate, treatment is discontinued or a new remedy is prescribed.

Rothwell (1996b, 15) provides several questions that help to determine the effectiveness of a performance improvement solution:

- How well did the intervention achieve desired and measurable results?
- How well realized were the forecasted and measurable improvements targeted for the intervention?
- What were the positive and negative side effects?
- What side effects of the intervention were noticeable?
- What lessons were learned from the intervention that could be applied in the future?
- How well has the intervention been adopted in the corporate culture?
- What best practices or lessons learned resulted from the intervention?

Evaluation properly targeted at the subject for change (such as employee performance) and at the intervention (the means to an end) answers these key questions:

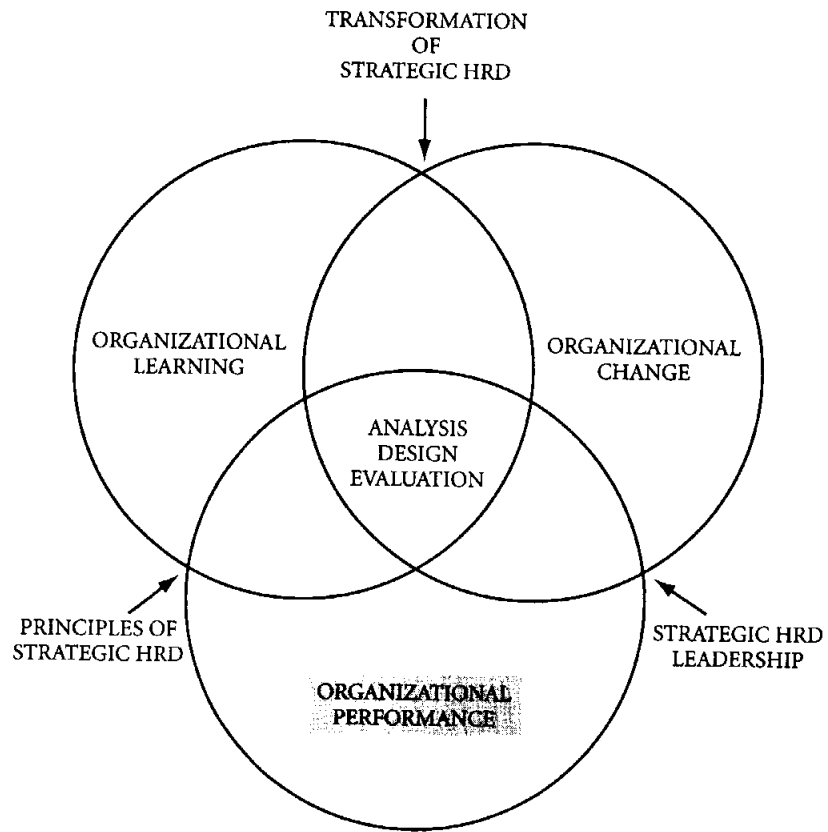
- Did results match intentions?
- Was a human performance gap eliminated or a human performance improvement opportunity realized?
- Were organizational needs met?

Measurement determines how much change and how much improvement occurred and answers the following questions:

- What were the impacts of the intervention strategy?
- What value was added in economic and noneconomic terms?

## Conclusion

Human performance technology (HPT) differs from other fields, such as training and organizational development, in its unique approach to performance problem solving. HP technologists design and develop interventions that have four fundamental characteristics: They should be *results-oriented* (measurable), *cost-effective* (designed to save more than they cost), *comprehensive* (solve the whole problem, not just part of it), and *systemic* (well integrated into the entire organization).



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