CHAPTER SEVENTEEN

Better Individual and Organizational Learning

INTRODUCTION

What This Chapter Is About

Over the last several decades, management experts have increasingly emphasized the strategic benefits of learning. Learning programs develop competencies and other inputs that constitute competitive advantages. An organization's success is now seen as largely dependent on its ability to develop knowledge, attitudes, and skills that will enable personnel to implement operating strategies more effectively and achieve operating goals more successfully. According to Gardiner (1999), several major steps in this direction include promoting information sharing, providing goal-oriented education and development programs, and fostering an environment of trust and high morale. Morale is important because it increases personnel's readiness to learn, especially when heightened by organizational success (Chien, 2004).

Both individual and organizational learning produce benefits. Wong (2004) has reported that group-based learning contributes to group cohesiveness and effectiveness, while the learning that occurs more individually outside a group contributes to group innovativeness.

Chapters Thirteen, Fifteen, and Sixteen have emphasized that our effectiveness when thinking and communicating can be improved by increasing knowledge and experience and by further developing skills and attitudes—that is, by learning on an ongoing basis. This chapter focuses on how individuals and teams can not only improve their learning skills but also maximize their own and their organization's learning processes.

The basics section of this chapter covers elementary definitions of learning and memory, discusses major factors that influence how well we learn, and describes modes and methods of learning. It also describes an approach for structuring learning processes so that some influential factors can be maximized, some compensated for, and some minimized. Not surprisingly, these are the same factors that influence the effectiveness of planning, problem-solving, decision-making,

and communicating processes. The basics section ends with a discussion about how skills are developed.

Going beyond the basics, the chapter describes various styles of learning and discusses how organizational planning and problem solving relate to learning and development. It also discusses several widely practiced applications of learning and problem-solving principles: the learning organization (and its related concept, systems thinking), action learning, and appreciative inquiry.

What Consultants, Trainers, and Facilitators Can Get Out of This Chapter

After studying this chapter, consultants, trainers, and facilitators should be able to help participants

- Analyze how much and how well people can learn within the context of a particular organizational culture
- Identify, plan, and implement ways that individuals', groups', and their organization's learning practices and processes can be improved
- Further develop an effective learning climate in their organization on a continuing basis

What Practicing Managers, Participants, or Students Can Get Out of This Chapter

After studying and discussing this chapter, the student or seminar participant should be able to

- Better understand, identify, and improve or further develop the many personal and nonpersonal variables that influence what, how much, and how well people learn
- Apply an approach for more effectively structuring learning situations in order to minimize, prevent, or compensate for mental and environmental constraints on learning processes
- Better improve or further develop his or her own learning practices and skills, so that their use becomes second nature
- Better improve or further develop subordinates' learning practices and skills
- More effectively contribute to organization-wide development and reinforcement of more effective individual, unit, and organizational learning policies, practices, procedures, and skills

How Instructors (and Participants) Can Use the CD-ROM's Supplementary Materials

The accompanying CD-ROM contains these additional materials for Chapter Seventeen:

- *Chapter Seventeen Study Guide.*
- *Quotations on Learning.* These pithy maxims help generate many useful insights into what, how, and why people learn.

THE BASICS

Learning is recording information (sights, sounds, ideas, skills) in *memory* regions of the brain. That makes every second of our waking lives a learning situation. But some learning situations are more important than others. Importance is a function of our need to *recall* (pull) information from memory (rather than simply recognize it) and then *use* it. The importance of what has been learned is also a function of our goals, plans, and priorities. Successful performance and personal fulfillment in our various roles require that we learn many inputs. What we learn and how well we learn it underlie all else we are able to do: think, cope with change, perform tasks, respond to the environment, relate with and persuade others, learn even more, and so forth. Thus, learning is undoubtedly a major mental activity. Even so, it is not enough just to pile up knowledge in one's head. Learning is rather pointless unless we use our repertoire of knowledge and apply our skills in order to think and relate more effectively.

Many factors influence what and how well we learn. The following sections, which deal with influential factors and then with modes and methods of learning, are highly abbreviated. More detailed discussions can be found in books on educational psychology by authors such as Robert Sternberg and Wendy Williams (2001) and Robert Slavin (2002) and books on learning theory by authors such as B. R. Hergenhahn and Matthew Olson (2004) and John Malone (1990).

Factors That Influence Learning

A now-familiar type of model, Figure 17.1, indicates that many variables influence how well we learn. For a learning situation to be most effective, we must purposefully maximize some factors, control some, minimize some, and compensate for some. Three previous chapters have covered these factors and the structured approaches for dealing with them.

The left column of the figure indicates the factors (inputs) that should be increased or otherwise improved on an advance or ongoing basis. The figure also illustrates the major phases, steps, and practices for structuring a learning process in order to maximize, minimize, or compensate for factors that influence learning. Note the two shaded columns. Each represents a particular type of problem solving. The left one shows phases and steps of a problem-solving process, which is a major mode of learning, especially in organizations. Because a planning process is essentially a problem-solving process, it, too, is a mode of learning, but it is performed within a different context. The shaded column on the right represents an approach for effectively structuring other learning situations—that is, those in which other modes of learning are used. Note that even these learning situations involve thinking about the situation and planning what to do to make the process most effective. (Various modes of learning are described briefly in the next main section. Major methods of learning are described in the section after that.) The unshaded column between the two shaded columns indicates the modes and methods of learning that might be involved in the phases of both types of learning situations.

While reading about the following influences on learning, consider how the various phenomena, nonpersonal variables, and personal characteristics may be affecting what, how much, and how well you learn.

Awareness of a Learning Situation (Increase). Although we do not remember ever seeing this phenomenon mentioned in educational psychology textbooks, it is still very important. In order to apply what we have learned about learning, we must actually stop to think about what we

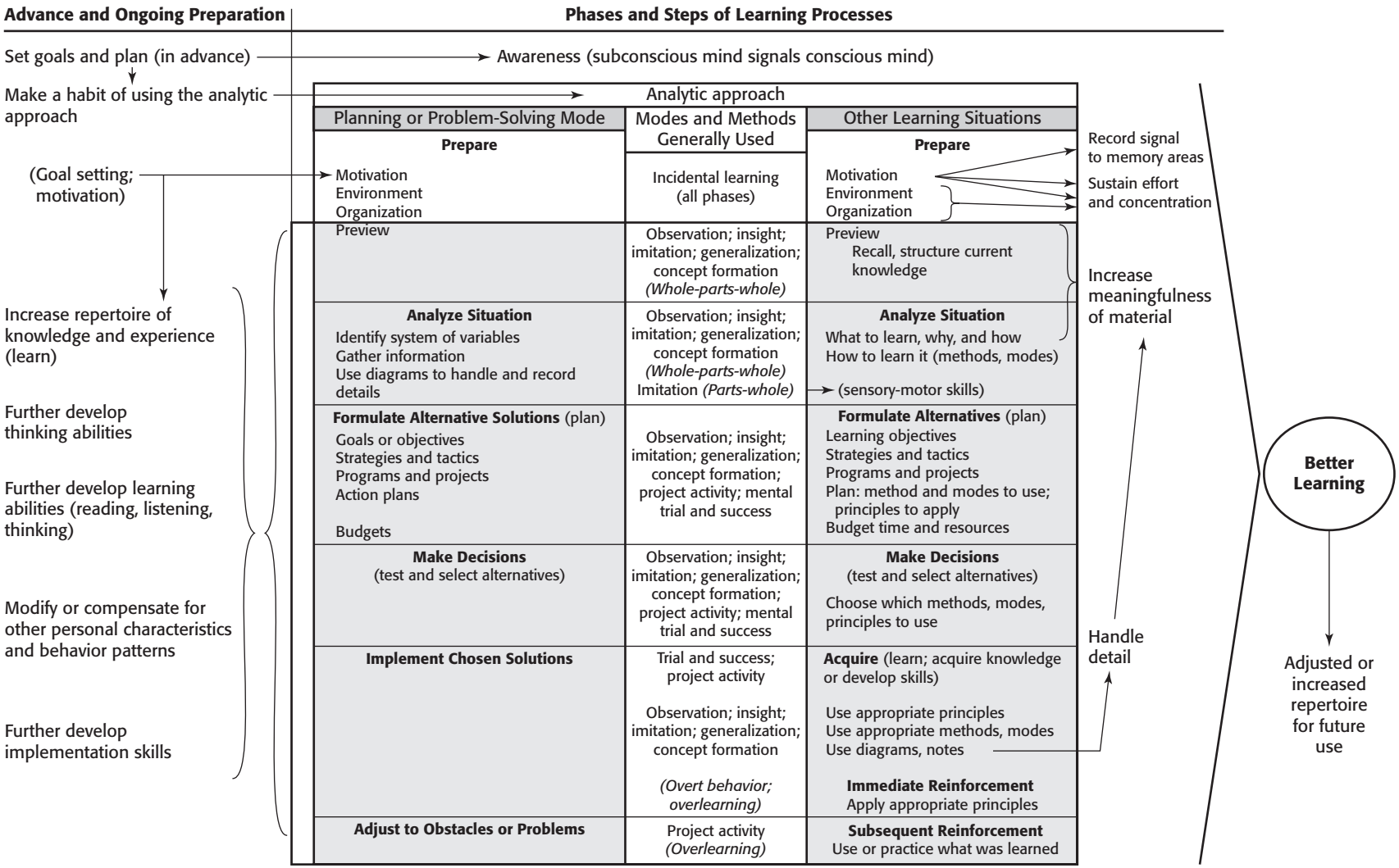

Figure 17.1. Advance and Ongoing Activities and Approaches for Continually Improving Learning Processes

Note: In the "Modes and Methods Generally Used" column, modes are shown in roman type; methods are italicized and enclosed in parentheses.

are doing and how to do it better. But mostly out of habit, we seldom do. Two types of stimuli help subconscious brain mechanisms trigger conscious awareness that a learning situation exists. First are *unfamiliar or unmeaningful* sights, words, sounds, tastes, odors, or tactile sensations. These indicate that stimuli are not being effectively interpreted, very likely because there is inadequate information in memory with which to associate them and make them meaningful. This, in turn, indicates a need to stop, think what one is doing, and effectively learn the necessary information—if it is considered important enough to do so. Second are *unintended or unexpected* stimuli, which do not compare with intended or expected stimuli as expressed in goals and plans. These signal a problem-solving situation, wherein something that perhaps should have been learned earlier will be learned as one identifies potentially causal variables, gathers information, analyzes the situation, formulates solutions, makes a decision, and then implements one or more chosen solutions.

As shown in Figure 17.1, setting goals and planning in advance of any particular learning situation provide memory with inputs that help trigger awareness of important learning situations. Writing down goals provides memory with impressions of intended or expected outcomes, which help trigger awareness of problem-related learning situations. In order to trigger awareness of other types of learning situations, we write down and record in memory (a) goals that identify the knowledge factors, skills, and experience we think we need to learn and (b) plans for how and when we intend to learn them. Goal setting also increases one's motivation to (a) continually increase or further develop other inputs to better learning, (b) think what one is doing and how to do it well, and (c) actually use learning approaches and principles to improve the learning process (as shown by one arrow pointing downward and one arrow pointing to the right).

Knowledge of and Ability to Use a Structured Approach (Make a Habit of Using the Analytic Approach). Psychology and education students are taught various theories and principles of learning; however, they are not always exposed to the phases, steps, and practices of a structured approach for applying the principles and dealing with factors that influence learning. Figure 17.1 helps, but Table 17.1, which is discussed later in this chapter, describes in detail an analytic approach that uses familiar phases and steps to structure a learning process. It indicates the points at which one should consider the other influential factors or apply the principles, methods, and modes of learning described here. Anyone who wishes to maximize learning effectiveness should make a habit of using this approach. Management trainers can use Table 17.1 to help structure their training sessions and apply the principles, modes, and methods involved.

Motivation (Increase). Our motivation to learn is the psychological factor that focuses attention and helps us sustain concentration and effort during a learning situation. When conscious or even unconscious brain mechanisms determine that something is important enough to record in memory, messages are sent to memory and other related areas, telling them to gear up to record information. Thus, the greater the importance of the situation to us, the greater our motivation; and the greater our motivation, the stronger the signals to record information; and the stronger the signals, the better the information is recorded in memory. Increasing motivation is largely a matter of personal and organizational goal setting and planning.

Physiological Factors (Minimize Adverse Influences). If sensory, interpretive, reasoning, or memory mechanisms of the brain are somehow impaired, learning is impaired. Thus, age, fatigue, time of day, atmospheric conditions, organic defects in sense organs and the brain, drugs

such as alcohol, and many other factors can all adversely affect learning efficiency and effectiveness. Obviously, one should minimize these adverse influences to the extent possible.

Environment (Find Conducive Surroundings). No one learns anything in a vacuum. The more contact we have with many different people, places, objects, activities, and ideas, the greater the breadth and depth of our repertoire of knowledge and experience will be. However, once we are in a learning situation, we must ensure that we are in an environment conducive to learning. If we are not, extraneous or distracting environmental stimuli may distract our attention, distort the interpretation of sensations, or disrupt the continuity with which perceptions are being recorded in memory. All three phenomena impair the initial recording and later recall of information. In addition, once our train of thought is broken, we must take the time and effort to regain it.

Organization (Get Well Organized). Gathering needed materials (references, texts, manuals, notes, and so forth), writing materials, computer equipment, and any other necessary learning equipment keeps a person from having to interrupt the learning process to get them.

Meaningfulness of Material (Increase). Meaningfulness is a major influence on learning. Sensed stimuli are interpreted and become meaningful when they are compared with information already recorded in memory. Thus, the greater our existing repertoire of knowledge and experience, the more information we have with which to associate new information or experiences, and the more meaningful the new information or experiences will become. Also, the greater our repertoire, the more patterns there are with which new information can be interconnected, and, thus, the better that the new information will be recorded in memory. Put simply, *the more we know, the more we learn and the better we learn it.* Meaningfulness of material can also be increased by initially *previewing* material (skimming a book or reading a speaker's handouts) before actually reading or listening for details. This gives the mind an opportunity to start accessing information in memory, thereby gearing up (a) interpretive areas (to help make incoming information more meaningful) and (b) related memory areas (to "light up" patterns of neurons with which new information may be associated and interconnected).

Repertoire of Knowledge and Experience (Increase). As shown in Figure 17.1 and as just discussed, increasing one's knowledge and experience is a major means for making any subsequently learned material more meaningful and, therefore, better learned. It also increases one's insight into problem situations and, thus, the learning that occurs when one is solving problems.

Learning—and Thinking—Abilities (Further Develop). Improving learning abilities often involves, for example, further developing one's reading and listening skills. (See "Receiver Responsibilities" in the "Receiver Reception Problems" and "Receiver Interpretation Problems" panels of Table 15.2.) Improving learning abilities also involves further developing one's thinking abilities. For example, during general learning situations, improved abilities for class logic and propositional logic help a person better evaluate what an author or speaker has said. Furthermore, because problem solving is a major mode of learning, more developed thinking abilities enable one to learn better because one is better able to identify, describe, analyze, and compare and contrast (a) variables, (b) their relationships, (c) corresponding facts, (d) alternative solutions, and so forth.

The more intelligent a person is, the more efficient and effective his or her learning processes are and the better he or she interprets and records new information and experiences. However, being born with the potential for high intelligence is not enough. Mental abilities involved in perception, reading, juggling information, and reasoning must be developed to their fullest if the mind is to work at full power. Since these abilities are never fully developed in anyone, we all have some room for improvement. (Different types of intelligence are described in Table 10.1.)

Regardless of intelligence, developed mental abilities, motivation, and so forth, the mind is still a great simplifier. In an age when information is exploding and becoming more complex, we are becoming overloaded with information. To compensate for the frustrations of trying to handle so much information, we tend to cut through the detail, oversimplify, overgeneralize, and develop a low tolerance for detail. We also are developing a bad habit: focusing on information not to learn and remember it, but only to remember where it is located, in case we need it again. Learning something in order to be able to recall and use it later is becoming a thing of the past. Furthermore, instead of improving our own abilities to learn and remember, we have begun to take an easy way out by developing other means of processing and handling information. We are devoting billions of dollars to the development and use of complex information storage, retrieval, and computing systems. Although these are powerful and efficient extensions of the mind, increasing our dependence on them is beginning to reduce the incentive to improve the much more sophisticated and creative (albeit less accurate) system that sits atop our shoulders. Remember, we must expand repertoire in order to be able to think, cope, respond, *and* learn more effectively and efficiently. Our minds, what is in them, and how we use them are what really count. As we are fond of pointing out in our seminars, the mind itself is the ultimate weapon, because it creates the weapons, the counterweapons, the counter-counterweapons, and so on. Fortunately, the mind is also the ultimate instrument for dealing with the problems of the world.

Other Personal Characteristics and Behavior Patterns (Modify or Further Develop). *Values, interests, and other attitudinal characteristics* can be improved or further developed. A relatively high *theoretical* value can be useful if one must acquire and use large amounts of information in order to solve complex problems. A predisposition to ask "why?" motivates a person to search out additional information and piece it together (that is, into a generalization or concept). Interests, beliefs, ethics, biases, and other attitudes all affect what we will focus attention on and, therefore, learn. However, they do tend to turn objective observations, facts, and insights into rather subjective opinions, conclusions, or assumptions that may or may not be true. This is approximately the same thing as saying that we often see things the way we want to see them rather than the way they really are, or we learn what we want to learn rather than what we need to learn. Since values, interests, and other attitudes reflect needs and drives, they affect the level of motivation to concentrate attention on information that may be important. Remember, too, that a person's repertoire tends to be greater in those areas that are important to him or her. Therefore, values and other motive/attitudinal traits not only directly affect *motivation* but also indirectly affect what we do and do not learn in different areas and, thus, the *meaningfulness* of material in different areas.

Personality traits are difficult to change, but one can at least control or compensate for them once one recognizes their influences. Within the context of learning, what are the implications of your trait levels for what and how much you learn? And what are their implications for what and how much your subordinates learn?

The more *adaptable* a person is (without going to an extreme), the more honestly and objectively she will examine new information, especially when it directly involves herself and her relationships or interactions with the environment.

The more *conscientious* a person is (without being too conscientious), the less he will tend to let his attitudes adversely color his perceptions of others.

If a person is highly *self-sufficient,* she may tend to seek and verify information for herself, which is functional. However, if she is too self-sufficient, she may not be inclined to avail herself of others' knowledge and experience when it might be appropriate.

The more *self-confident* a person is, the more likely it is that he will approach learning situations with an "I can and will learn it attitude"—a positive attitude. However, if he is too self-confident, he may not make the added effort to reinforce what he has learned so that he can recall it easily when it's needed.

If a person is overly *dominant,* it may be difficult for him to get others to cooperate in collecting information or in helping him learn necessary material. Also, he may be inclined to assert his own opinions and beliefs rather than listening to and learning from those of others.

If a person is more *introverted* than extroverted, she may tend to withdraw from interpersonal or social situations in which she could learn more about people. If she is more extroverted, she is more interested in people and therefore has probably learned more about their traits and behavior.

The more *emotionally stable* a person is, the more objective her repertoire of knowledge and experience is likely to be. Also, she will tend to waste less energy in important learning situations, because she will be relaxed. Relaxation aids both learning and recall. Tension can be a motivator, but it can also reduce concentration.

The more *self-controlled* or self-disciplined a person is, the more he will be able to concentrate and sustain attention and effort on a learning situation, even when his motivation to do so is rather low.

Modes of Learning

E. R. Hilgard (1956), E. L. Thorndike (1962), and many other learning theorists have identified a number of basic modes through which *sensory impressions* (sometimes called *sensations* or *sensitivities*) are recorded in representative patterns of neurons in memory.

Observation. This mode is operating when our attention is focused on visual, tactile, auditory, or other sensory stimuli involving objects, people, places, and activities. Watching, reading, listening, and manipulating objects all constitute situations during which sensory impressions will be recorded in memory. As a result, we tend to think in one or more of three modes: visual impressions (in the mind's eye, as we think about tangible, visible, or concrete matters); language (in the mind's ear, as we think about ideas and other verbal constructs); and muscular movements (as we think about motions involved in physical work or sports, for example).

Recording information in more than one sensory-related memory area of the brain aids recall. *Multiple sensory perception* and recording occur when, for example, we write notes during a lecture, diagram a problem situation, or actually use something we have learned. Studies by National Training Laboratories (1960s), now NTL Institute, resulted in their development of the *learning pyramid.* Although numbers that have become associated with this model have been questioned recently, the model does indicate the following: reading is more effective than simply attending a lecture; audiovisual presentations (using two senses) are better recorded in

memory; demonstrations are even more effective; processing information in discussion groups is even more effective; practicing what has been learned by doing is still more effective; and teaching others is the most effective. These and other phenomena are discussed further in the following sections. (Instructors: Show and tell what is to be learned. However, avoid overwhelming people's senses and perceptual and interpretive abilities.)

Insight. Insight is a matter of perceiving and understanding how pieces of information are either related or connected to each other. It is not simply a matter of what some call *intuition;* rather, it is a result of underlying mental processes. For example, we can arrive at an insight during the interpretive process or during subsequent reflection on what was recorded in memory. It is through observation and thought (ideation) that we interpret, see, or understand a situation in all its aspects. It can be a matter of perceiving relationships among present sensory impressions, among present and recorded sensory impressions, or among recorded sensory impressions. If, for example, a sensory impression (or pattern) A is similar or related to pattern C (in terms of characteristics, space, or time), and if pattern B is also similar or related to pattern C in the same respects, then through insight, we deduce (using class logic) that A and B are associated because of their common or shared relationships with C. (Instructors: Use a Socratic approach, leading participants toward perceiving relationships among ideas or visual images that are being learned.)

As mentioned in Chapter Thirteen, neurophysiologists such as John C. Eccles (1960) have reported that while we interpret and record sensations rather well when we are focusing on external stimuli, we do not record well in memory what we are thinking, what we are saying, and periods of skilled activity. (Skilled activity involves conditioned, subconsciously controlled sensory-motor or ideomotor skills, such as sewing or performing repetitive assembly line tasks.) In these cases, we are "thinking internally," using information already recorded in memory rather than processing present external stimuli. Therefore, especially when we are thinking about ideas and complex verbal or mathematical constructs in either learning or problem-solving situations, it is highly advisable to take notes and make diagrams. Doing so not only helps us keep track of the details but also helps us better record those thoughts or impressions in memory for future use. (Instructors: Encourage taking notes and diagramming information.)

Imitation. When we were children, we observed what adults were doing or saying and then unthinkingly did or said what they did ("monkey see, monkey do"). That is how we learned motor abilities such as moving and speaking—by first observing and then copying or repeating. Now we observe and imitate more purposefully, uniformly behaving as others are observed to be behaving. As a result, multiple sensory impressions of what we saw or heard and then did are recorded in several areas of memory. (Instructors and managers: Set a good example.)

Trial and Success (once called "Trial and Error"). In its simplest form, this is a matter of learning by behaving or responding in various ways until, by chance, one behaves successfully and something more or less intended results. In a more advanced and goal-oriented form, it is a matter of first thinking about the situation and hypothesizing some possible solutions, then purposefully trying them one at a time until one trial finally works and achieves the desired outcome. This mode of learning often occurs during the decision-making phase of a think-work situation (in which case, it involves *mental* trial and success). It nearly always occurs during the implementation phase of management, problem-solving, or communication situations, during

which we learn what happens (or doesn't happen) when we do X, Y, or Z. (Instructors: Give students projects or problems through which they will gain experience by trying different courses of action and thereby learning what occurs under various circumstances.)

Generalization or Concept Formation. During this ideational process, one uses logical reasoning to insightfully generalize from common, shared, or related parts (elements or facts) and associate them into a conceptual whole (a frame of reference, concept, rule, definition, axiom, principal, or law that includes, summarizes, or generalizes about the particular elements or perceptions from which it has been derived). One can generalize or form concepts concerning objects, places, people's characteristics and behavior, activities, phenomena, events, numbers and symbols, and elemental or building-block concepts or ideas. (Instructors: Provide students or participants with information that will lead them to generalize or form concepts.)

Project Activity. We also learn by doing—that is, by working on a problem, doing a drill, or accomplishing some activity that interests us enough to plan, organize, and then acquire the new information or skills involved. As shown in Figure 17.1, project activity both relies on and involves other modes of learning. It (a) is made possible by knowledge previously learned through other modes (such as observation and insight), (b) involves overt behavior, and (c) is often performed in conjunction with other modes—such as observation, insight, and trial and success. Remember, it is generally believed that we remember about 75 percent of what we have seen, heard, and *done,* while we remember much lower percentages of what have only seen, only heard, or only seen and heard. (Instructors: Design projects so that participants can apply or practice what they have learned.)

Problem Solving. During the analysis phase of think-work, we learn by (a) *observing* symptoms of the situation, (b) identifying potentially causal or influential variables, (c) using checklists to (*observe* and) consider new variables, (d) using *insight* to identify factors' relationships, (e) gathering facts and *observing* them, (f) analyzing the qualitative and quantitative aspects of the situation to *insightfully* identify the underlying as well as obvious causes, and (g) *generalizing and forming concepts* about relationships among causal or influential factors. During the planning or formulation of alternatives phase, we learn by *hypothesizing* solutions and combinations thereof. During the decision-making phase, we learn by (a) testing hypothesized solutions (anticipating events and assessing probabilities based on experience), (b) identifying and comparing the pros and cons of each, and (c) otherwise using *mental trial and success* to choose one or more for implementation. During the implementation phase, we learn by (a) performing *project activities* aimed at achieving planned results; (b) *observing* activities and their results; (c) analyzing results; and (d) adjusting solutions or solving implementation problems.

In other words, during the problem-solving process, we are actually *learning through most or all of the modes of learning.* New information, experience, insights, and improved skills are all assimilated into appropriate areas of memory. Also, previously learned information and skills used during the process are reinforced or further developed. (Instructors: Give participants a problem situation or case that will enable them to (a) learn more variables and associated facts; (b) develop deeper insights or generalizations concerning factors and their relationships; (c) use other modes of learning to full advantage; and (d) further develop thinking, learning, and communicative skills.)

Incidental Learning. In most learning situations, we learn information or skills that were *not* the primary learning objectives. Such information or skills may be learned intentionally or unintentionally, regardless of their perceived or actual importance. For example, by solving a problem or doing project activity, we usually learn more about planning and further develop communication skills. (Normally, incidental learning refers to learning something positive or useful. However, we sometimes incidentally learn misinformation, useless information, bad habits, ineffective procedures, and so on.)

Primary learning involves the particular information or ability that we intended to record in memory (the primary objective). *Concomitant learning* is the incidental learning of such positive or useful things as the exercise of judgment, the ability to plan, self-reliance, and so forth.

Methods of Learning

Methods of learning are often closely related to modes of learning. While modes of learning deal with basic ways in which we *sense and process information,* methods of learning deal very specifically with the *sequences* in which we focus on, observe, think about, and thus learn about (a) a whole object, idea, or activity; (b) its parts; (c) relationships among the parts; and (d) the parts' relationships to the whole. The major methods of learning are the whole to parts method; whole versus parts method; parts to whole method; mediating method; overt behavior; and overlearning.

Whole to Parts Method. This is the most appropriate method in two situations. The first involves learning concepts, ideas, or other verbally oriented materials that have (a) some unity or continuity or (b) some whole construct or central idea to which the details or parts can be related. In these cases, the general nature of the material (for example, the overall idea or concept) is learned first, then the parts of which it is composed are learned. The second situation involves visual learning—that is, assimilating visual (spatial) information. For example, we generally look at someone's whole face first, then the parts, and then we relate the parts to the whole.

The importance of previewing material should be more apparent at this point. It provides an initial glimpse of the whole and some idea of the parts and how they relate to the whole. (Instructors: This is one reason for the first part of the old adage, "Tell them what you're going to tell them, tell them, and then tell them what you've told them.")

Whole Versus Parts Method. This method has been found to produce better results when, for example, a rather long poem, article, or monologue is to be memorized. The person keeps practicing the entire piece from beginning to end rather than learning the parts and eventually stringing them together.

Parts to Whole Method. This method is most useful for learning (and teaching) motor skills that require sensory-motor coordination, such as playing the piano, playing golf, or swimming. For example, learning to swim involves initially learning the parts (individual movements such as arm movements, head movements, and kick) and then practicing combinations of the parts until they can all be combined into the whole activity of swimming.

Mediating Method. This method involves first learning the whole and then the parts, but placing more attention or practice on the difficult parts. The mediating method might be used

if something to be memorized is much too long to be learned by the whole versus parts method.

Overt Behavior. Using, practicing, reciting, or being tested on what has been learned are all overt responses. Overt behavior results in feedback that indicates whether something has been learned correctly. If it has, it can be reinforced through repetition, use, or practice. If it has not been learned correctly, there is still an opportunity to correct it or to replace it with fresh learning. This keeps incorrect learning from being reinforced and becoming more difficult to unlearn and replace. For example, repeating a message back to the sender is overt behavior that allows correction, if necessary. (Recall Chapter Fifteen's discussion about sender and receiver responsibilities for testing to determine whether a message got through correctly.) Tests and project activity can be used for the same purposes. (Managers and instructors: Keep in mind that people learn not just by your reinforcing what they have learned but also by your contradicting them when they are wrong and helping them to correct their mistakes.)

Overlearning. Overlearning involves continual repetition, reinforcement, and use of learned material—and continual practice and use of skills—which strengthens memory by (a) organizing more and stronger patterns of neurons in memory and (b) reestablishing previously formed patterns that may have been reorganized by more recently recorded information. (Reorganization of previously learned patterns tends to obscure what was learned earlier, causing us to forget things.) We overlearn material in order to better retain it and then better recall it when it is needed—not just to recognize it. A good example of assisted overlearning is the fact that four very similar tables (in Chapters Thirteen, Fifteen, Seventeen, and Eighteen) cover inputs to mental processes that should be increased, further developed, or otherwise improved on an advance and continuing basis. In addition, three very similar tables (in Chapters Thirteen, Fifteen, and Seventeen) list the phases and steps that should be used to prepare for and perform more effective communicating, planning, problem-solving, decision-making, and learning processes. (Instructors: As shown in the "Acquire" phase in the fourth column of Figure 17.1, you can simultaneously or immediately reinforce what has been learned; however, once the training program has ended, you will probably not be able to continually reinforce it. Only managers and their superiors, colleagues, and subordinates—all working together—will be able to *continually* and *mutually* reinforce what all are learning.)

Mnemonic devices and other *memory aids* can be used to assist recall. Here are several examples of mnemonic devices: "Every good boy does fine" has helped many music students recall the notes E, G, B, D, and F on the lines of a musical staff. Students recall the first eight U.S. presidents using this question: "Will a jolly man make a jolly visitor?" (Washington, Adams, Jefferson, Madison, Monroe, [John Quincy] Adams, Jackson, and Van Buren). Chapter Thirteen mentioned using the phrase "PREPARE for DRAFTS and IMPLEMENT" to help people recall the phases of the analytic approach to problem solving. The following are several memory or recall tricks: People's names can be more easily recalled (and associated with their faces) if one conjures a ridiculously outrageous or exaggerated mental picture that relates the person's name to a prominent facial feature or physical characteristic. Lists can be more easily recalled by linking items in some ridiculous visual manner or by using the first letter of each item to make up an easily recalled word or sentence. Telephone numbers can be more readily recalled by translating the numbers to the corresponding letters on the dial, forming more easily remembered words. Many other such devices are covered in countless books on improving memory.

Phases, Steps, and Practices of a Structured Analytic Approach to Learning

Table 17.1 is very much like Tables 13.1, 15.5, and even 16.1. It is meant to be used as a handy reference for learners and instructors. Principles, modes, and methods of learning that appear in the table are described in the preceding pages, so the table requires little explanation.

The following, however, should be noted. Phase I, the preparation phase, contains most of the same steps mentioned in the previous three tables. Phases II, III, and IV involve almost the same steps as in previous tables, but in this case they are aimed at planning how better to learn the material at hand. Phase V, the implementation phase, is the acquisition phase of a learning process, wherein the mind actually acquires information (or whatever is to be learned) and begins to assimilate it into memory. Note that this phase includes some pointers on *simultaneous or immediate reinforcement of learning* (reinforcement at the time that the information or skills are initially learned), which can involve overlearning. Phase VI is subsequent reinforcement, which involves repeating, practicing, or overlearning what was learned initially. Continual reinforcement increases retention and later recall.

Skill Development

A learned skill or ability has at least four aspects. Each aspect is essentially a stage in the learning or development of the particular skill. The first is the *what*—that is, the basic knowledge of some theory, concept, or principle, the effective application of which constitutes a skill. The second is what can be called the *knowledge of the whys*—that is, why the theory, concept, or principle works and why it is important. College professors or instructors normally teach these first two aspects in the order mentioned. The third aspect is *knowledge of how* to apply the theory, concept, or principle—that is, the knowledge of a practical method, system, or procedure. The fourth aspect is the learned *ability to apply* or use the method, system, or procedure both effectively and efficiently. The fourth aspect amounts to experiential learning, which involves learning through many possible combinations of modes and methods, such as observation, imitation, insight, overt behavior (using, practicing), project activity (using, practicing), trial and success, or overlearning (as shown in the third column of Figure 17.1).

Many management seminars often skip over the first two stages and concentrate on (1) teaching practical methods or procedures and then (2) providing participants with practice in using them. This and related phenomena raise several concerns. First, many management seminar companies, management development managers, and management trainers speak about skill development as though knowledge of "what" and "why" are unnecessary. In fact, a number of management seminar firms and many companies' internal management trainers promote and even brag about the fact that they focus on skill development without burdening participants with the underlying theories, concepts, or principles. Both parties do so largely because they know that their clients, being businesspersons, are much more interested in practical applications than they are in theories. In fact, the word *theory* has acquired a rather negative connotation. We have always believed what the research of others has concluded: that personnel better apply methods and procedures if they understand what they are doing and why. Ralph Waldo Emerson undoubtedly got it right when he said, "The man who knows *how* will always have a job, but the man who knows *why* will be his *boss.*"

Table 17.1. Phases, Steps, and Principles of a Structured Learning Approach

ACTION	BENEFICIAL EFFECTS
PHASE I: PREPARE	
1. **Be aware:** stop to think what you're doing and how to do it well.	Actually apply what you know; consciously structure process to account for influences
2. Increase **motivation:** think about which personal and organizational goals or plans make the situation important.	Increase and sustain concentration, interest, and effort; minimize distractions; strengthen signal to memory areas to start recording information
3. Seek a conducive **environment.**	Minimize distractions or interruptions (of train of thought or recording information in memory); find stimulus-rich environment, if appropriate
4. Get **organized.**	Get information, materials, and equipment so as to minimize disruptions; prioritize; allocate time
5. **Preview** material to the extent possible: get preliminary information about the situation and the material involved.	Anticipate how situation may be more important than first thought; increase meaningfulness of material; establish mental framework for parts, whole, and their relationships
PHASE II: ANALYZE (the SITUATION or MATERIAL)	
6. Analyze observations and insights from your preview: • Relate previewed material to present knowledge (crystallize knowledge). • Identify situation's importance in regard to context, relevant goals or plans, and priorities.	Determine how whole and parts are (or perhaps should be) structured Increase meaningfulness and interpretation of material; better record information in memory Further increase and sustain motivation, concentration, and effort
PHASE III: PLAN (ALTERNATIVES FORMULATION)	
7. Formulate alternative learning objectives.	Further increase motivation to concentrate and sustain attention and effort; prioritize activities
8. Formulate alternative learning or development strategies and tactics, programs and projects, taking account of	
• Most effective senses and modes of learning to use	Improve sensory, interpretive, assimilation, and memory processes
• Most effective method of learning to use—for example, whole to parts	Improve sensory, interpretive, assimilation, and memory processes
• Principles to apply during each phase of the process	Improve sensory, interpretive, assimilation, and memory processes
9. Formulate action plans (what to do, in what order, when, with whose help, and so on).	Plan actions in order to learn both effectively and efficiently
10. Budget time, financial resources, and human resources.	Use resources effectively and efficiently
PHASE IV: MAKE DECISIONS	
11. Choose objectives.	Maximize or increase motivation, concentration, and effort; prioritize situation
12. Choose strategies, modes, methods, principles, and resources to apply.	Purposefully structure process and apply principles for maximum results; use resources wisely
PHASE V: IMPLEMENT (ACQUIRE KNOWLEDGE OR SKILLS: READ, LISTEN, WATCH, IMITATE, SOLVE PROBLEM, OR OTHERWISE LEARN)	
13. **INITIAL ACQUISITION: apply learning principles:**	
a. **Consciously focus attention:** read, listen, and watch before beginning to evaluate; look for ideas, not just facts; pay attention to details; get the gist of the argument; look for key words and phrases to aid recall; observe sequence of movements.	Avoid missing information; focus interpretation on important aspects of material; minimize distracting stimuli; ensure uninterrupted recording of information in memory
b. **Acquire information through the most appropriate or effective modes:** • Verbal or conceptual material: Learn through observation; insight; generalization or concept formation; or problem solving. • Sensory-motor skills: Learn through observation, imitation, or trial and success.	Learn through several modes; make information more meaningful in more ways; enhance recall
c. **Use multiple senses** (visual, auditory, sensory-motor).	Record related information in several memory areas; enhance ability to recall
d. **Acquire information through the most appropriate or effective method:** • Verbal or conceptual material: learn through whole to parts or mediating (whole-parts-whole) method. • Sensory-motor skills: learn parts first, then integrate them into a whole.	Interpret, assimilate, and record information in the most effective manner; enhance recall

e. **Be objective; keep an open mind:** avoid letting your own attitudes, beliefs, or biases cause you to tune out or taint perception of the message or material; avoid being critical of the author or speaker and his or her style and mannerisms; avoid overreacting to emotion-charged words.	Stay attentive, focused; minimize effects of feelings or attitudes that could distort interpretation and information processing
f. **Use proper study habits:** learn it right the first time; if you do not understand, reread or ask for elaboration or clarification; alternate study of verbal and nonverbal materials; take breaks at thirty- to fifty-minute intervals; distribute study over time, leaving time between sessions to let information to sink in; study last what you want your mind to mull over; spend about two hours in study for every hour of class.	Make certain that you are learning correctly (so you don't record or reinforce wrong information) Keep from overloading your mind with too much information at once Alleviate physiological factors such as fatigue Let your mind associate new information with what you already have recorded in memory; increase your repertoire of information so that you better understand lecturer
14. **SIMULTANEOUS OR IMMEDIATE REINFORCEMENT: Apply Learning Principles.**	Make material more meaningful; reinforce formation or reorganization of memory patterns
a. **Take notes; make diagrams, models, and flowcharts:** all visual aids help record verbal information in visual areas of memory.	Better handle details; use multiple sensory perception; increase meaningfulness of material; record info in several areas of memory; have materials for later review and reinforcement
b. **Use memory aids:** use visually- or verbally-oriented mnemonic devices to better record information in memory—for example, use ridiculous images to remember names; use sentences or acronyms (sequences of letters) to remember lists.	Increase meaningfulness; reinforce learning and improve ability to recall information
c. **Think about and evaluate what you are learning:** think about the concepts, practices, or tools you are learning; evaluate the validity of information and the credibility of its source; separate facts from opinions and assumptions; consider the speaker's motives; consider the relevance of the information; identify implicit messages; consider how your own attitudes or opinions might change based on the information.	Increase motivation and concentration; increase meaningfulness of material; question whether what you are learning is valid, correct, relevant, or useful
d. **Verify the correctness of what you think you have learned:** check other references or sources; run what you have learned by others for validation of the information or agreement on ideas.	Ensure that what you learned (for example, ideas, facts) is correct (so as not to reinforce erroneous information)
e. **Consciously associate knowledge:** identify what you are learning for the first time; consciously relate information to what you already know, perhaps by using diagrams or models.	Increase meaningfulness; enhance or reinforce processing to memory by associating information with more existing patterns in memory
f. **Anticipate uses of the material:** identify situations in which the information would help you learn better, think better, or relate better with others; anticipate how might it be applied in creative situations.	Increase motivation to reinforce learning; increase motivation to use or apply learning; program your mind to trigger awareness of important situations in which you can use what you've learned; record information better in memory
g. **Test your ability to recall information or to do what you have learned:** discuss it with other people; check what you think you have learned with what others have learned; write a summary of important ideas and facts; attempt to use a skill.	Test how well you have learned and are able to recall; ensure that you have learned correctly; reinforce memory patterns
h. **Review and repeat what you've learned:**	
• Review materials (reading materials, notes, diagrams, visuals, and so forth).	Use repetition to reinforce memory patterns in multiple areas of memory
• Discuss the material with others.	Use repetition to reinforce memory patterns; revalidate correctness of learning
• Teach the material to others.	Use repetition to reinforce memory patterns; increase knowledge and insights
• Use the information learned (for example, in a learning or thinking situation).	Use repetition to reinforce learning; learn how to effectively use or apply what you've learned
• Practice the skills learned.	Use repetition for reinforcement

PHASE VI: SUBSEQUENTLY REINFORCE LEARNING	
15. Use or practice what you have learned.	Increase retention; reinforce through repetition; minimize adverse effects of intervening perceptions; increase meaningfulness of new material

Table 17.2. Four Basic Learning Styles

LEARNING STYLE TYPES: Kolb, Rubin, and McIntyre (1971) (LSI)	**Concrete Experiencer**	**Active Experimenter**	**Reflective Observer**	**Abstract Conceptualizer**
Honey and Mumford (1993) (LSQ)	**Pragmatist**	**Activist**	**Reflector**	**Theorist**
Brief Description	Relies on concrete information and experience; pays attention to details; interested in how, not why; prefers structure; skill-oriented rather than idea-oriented	Action-oriented; relies on experiences; interacts with environment; organized; practical; prefers activity to concepts or principles	Interested in information; may avoid acting; not interactive; resists risks and change; thinks things over but is uncertain of conclusions	Open to change; forms generalizations and concepts easily; generates numerous possible solutions to problems
Modes of Learning Observation				
Watch	Watch	Watch	Watch	Watch
Listen	Listen	Listen	Listen	Listen
Read			Read	Read
Imitation	Imitation	Imitation		
Insight			Insight	Insight
Generalization and concept formation			Generalization, concept formation	Generalization, concept formation
Trial and success	Trial and success	Trial and success	Mental trial and success	Mental trial and success
Project activity	Project activity	Project activity		
Problem solving		Problem solving		Problem solving
Methods of Learning Whole to parts			Whole to parts	Whole to parts
Parts to whole	Parts to whole	Parts to whole		
Overt behavior	Overt behavior	Overt behavior		
Problem-Solving Modes Common sense	Common sense	Common sense		
Trial and success	Trial and success	Trial and success		
Level of Academic Intelligence	Average	Average or above average	Above average	High (especially abstract and symbolic thought)
Personality Traits Original thinking			Original thinking	Original thinking
Thinking introvert or extrovert	Thinking extrovert	Thinking extrovert	Thinking introvert	

Table 17.3. Additional Learning Styles or Orientations

	Verbal			Nonverbal					
	Verbal, Linguistic	**Intrapersonal**	**Interpersonal**	**Body Language**	**Emotions**	**Musical, Rhythmic**	**Sensory-Motor (Physical)**	**Visual, Spatial**	**Quantitative, Mathematical**
LEARNER TYPES or STYLES **Abram** (2003) **("smarts")**	Word smart	Self smart	People smart		Empathetic	Music smart	Body smart	Picture smart	Number smart
Gardner (1983, 1999) **("intelligences")**	Linguistic	Intrapersonal	Interpersonal	Interpersonal	Intrapersonal, interpersonal	Musical	Bodily, kinesthetic	Spatial	Logical, mathematical
Kolb, Rubin, and McIntyre (1971) (Learning Style Inventory) Concrete Experiencer Active Experimenter Abstract Conceptualizer Reflective Observer		Reflective observer					Concrete experiencer Active experimenter	Concrete experiencer	Abstract conceptualizer
Information Sources (Malcom, Lutz, Gerken, and Hoeltke, 1978)	External information (reading materials)	Internal feelings, thoughts	External sources				External sights, internal sensations	External sources	External information, internal thoughts
Senses Used for Learning Visual (observing, reading) Auditory (listening) Tactile (touch) Kinesthetic, motor feedback	Observe, read Listen	Observe Listen	Observe Listen Touch	Observe Listen	Observe Listen	Observe Listen	Observe Motor feedback	Observe	Observe, read Listen
Method of Learning	**Whole to parts**						**Parts to whole**		**Whole to parts**
Mental Capabilities Involved Aspect of academic intelligence Class or deductive logic Propositional or inductive logic Social intelligence or insight Spatial thinking	Verbal Class logic Propositional logic	Class logic Propositional logic	Class logic Propositional logic Social insight					Class logic Propositional logic Spatial thinking	Mathematical Class logic Propositional logic
Personality Tendencies	Original thinking (verbal constructs and concepts)	Social introvert; thinking introvert	Social extrovert; thinking extrovert		Emotional	Emotional	Active, vigorous		Original thinking (mathematical, scientific, abstract constructs and concepts)

Table 17.4. Relationships Between Phases of the Analytic Approach to Problem Solving, the Planning Process, and Steps Involved in Learning More Effectively

		LEARNING-ORIENTED PROCESSES	
		PHASE 1	PHASE 2
	PROBLEM-SOLVING PROCESS	MANAGERIAL (PLANNING) PROCESS	Learning and Problem-Solving Situations
		Phases and Steps of Process / Learning and Development Aspects of Planning Phases	
	Preparation Steps	**Preparation Steps**	**Preparation Steps**
What has happened, or what is going on—and why?	**Analysis of Situation**	**Analysis of Situation** Analyze your organizational unit, your job, and your own life Factors to analyze: organizational, environmental, social, task-related, individual → Identify knowledge, experience, skills, attitudes, and behavior that must be learned or developed in order to reach goals	**Analysis of Situation** What to learn or develop—and why Factors affecting learning Possible modes, methods, and principles to use
What needs to be done, or what might be done—and how?	**Formulation of Alternative Solutions** and plans for their implementation	**Planning** Establish goals and objectives for your unit, your job, your life Prioritize goals Formulate strategies and tactics, programs and projects, action plans, budgets → Clarify and prioritize learning and development objectives Formulate learning and development strategies and tactics, programs, and action plans (what to learn, when, sources, how—for example, modes and methods)	**Planning** Clarify and prioritize learning objectives Formulate learning plan: strategies, tactics, and action plan for applying principles, modes, and methods
What course of action should be taken?	**Decision Making** Analytically test, compare, and select among the alternatives	**Decision Making** Analytically test, compare, and select among alternative sets of goals and associated plans (for unit, job, life) → Test, compare, and select **learning and development goals and plans**	**Decision Making** Choose plan (which principles, modes, methods use)
Take action; do something.	**Implementation of Chosen Solutions**	**Implementation** Organizing Staffing (selecting, orienting, **training and developing**) Guiding and coordinating Activities Control processes → Learn as planned during subsequent situations: **Planning** **Problem solving** **Decision making** **Learning, studying, developing**	**Implementation** Implement solutions: Learn information, ideas Develop skills Modify attitudes and behavior

BEYOND THE BASICS

Learning Styles and Orientations

As in the case of individual problem-solving styles (Chapter Thirteen), experts' classifications of learning styles differ because they are based on different concepts or points of view. So, as in Chapter Thirteen, we cannot integrate several different frames of reference into a single table. Therefore, we present two separate but somewhat related tables.

Table 17.2 uses the typology of Kolb, Rubin, and McIntyre (1971), which describes concrete experiencers, active experimenters, reflective observers, and abstract conceptualizers. Peter Honey and Alan Mumford (1992, 1995) refer to these types as pragmatists, activists, reflectors, and theorists, respectively. The original authors' abbreviated descriptions appear directly below the headings. According to them, each person has a dominant style but also uses the other styles to varying degrees. We have expanded on the authors' descriptions by indicating the modes of learning, methods of learning, problem-solving modes, level of academic intelligence, and personality traits that we associate with these styles (based on behavior described in learning style and psychological trait definitions).

Table 17.3 uses the simpler typology of Stephen Abram (2003). It is very similar to Table 13.2. Abram describes both thinking styles and learning styles in terms of different types of "smarts" (which we have also categorized as verbal or nonverbal). Table 17.3 expands on Abram's descriptions by indicating types of intelligence identified by Howard Gardner (1983, 1999); the learning styles in Table 17.2 identified by Kolb, Rubin, and McIntyre (1971); and an adaptation of "information sources relied on" described by Malcom, Lutz, Gerken, and Hoeltke (1978). The table also expands on the basic descriptions by indicating the senses, method of learning, mental capabilities, and personality tendencies that the authors associate with each orientation (based on the same considerations mentioned in regard to Table 17.2).

The Planning Aspects of Learning

More effective organizational learning and development does not just depend on using the analytic approach for structuring learning situations or continually increasing, improving, or further developing various inputs. As shown in Table 17.4, it is also a function of initially using the analytic approach to identify what needs to be learned and then planning how to learn or develop it.

Phase 1 can represent either a planning process conducted by a manager and his or her unit or an organizational planning process. Note the two columns under Phase 1. The left column indicates phases of the planning process. (These are also shown in Figure 2.1 and Table 2.2.) The shaded right column indicates the learning or developmental aspects that are involved in each phase of a planning process.

In the analysis phase, managers and their units begin by analyzing all aspects of their operations and the environment in which they operate, identifying important variables affecting their activities, facilities, finances, human resource capabilities, and so forth. In the area of human resources, managers and their units identify (a) who does what within the unit; (b) what knowledge, experience, and skills are required for each job in the unit; and (c) how to staff the jobs and develop personnel.

In the planning phase, managers and their subordinates formulate unit and individual performance goals, productivity goals, and development goals. Then they translate those goals into plans (strategies and tactics, programs and projects, action plans, and budgets) for all areas—including plans for developing personnel, which are shown in the shaded column.

Small arrows pointing toward the right from the unshaded column under Phase 1 show that analyses, goals, plans, and decisions generated in that column are also inputs to those generated in the shaded column of Phase 1. However, as shown by the arrow pointing from the goal-setting and planning phase in the unshaded column up to the analysis phase in the shaded column, organizational goals and plans are also necessary inputs to the analysis phase in the unshaded column. In order for managers to be able to fully analyze developmental needs and plan for their fulfillment (as shown in the analysis phase of the shaded column), organizational and unit goals and plans must first be at least formulated (in the unshaded column) so that their implications can be considered and managers and their subordinates can identify what they must learn or develop based on future plans and not just an analysis of the existing situation.

During the decision-making phase, not only are operating, facilities, financial, and human resource goals and plans chosen for implementation, but so are the more specific goals and plans for units' and individuals' further development (shown in the shaded column).

Having performed the entire organizational and unit analysis, planning, and decision-making process (which is a learning process), the organization begins to implement its plans. Among them, of course, are the training and development plans. Their implementation is Phase 2 (shown in the far right column of Table 17.4). In each planned (scheduled) learning situation and even in those that are spontaneous (such as unexpected problem-solving situations that may arise), the approach we just described should be used to structure the process and maximize results. In short, it takes good planning to maximize organization-wide learning both prior to and during learning situations.

The Learning Organization and Systems Thinking

This chapter has emphasized that problem solving is a major mode of learning in organizations. This is not a new insight. Especially during the last four or five decades, problem solving has been purposefully used to bring about organizational learning and development. Peter Senge (1990), a professor at MIT, popularized the notion of learning organizations. He defined a learning organization as one where "people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (p. 3). He emphasizes that an organization must develop the ability to learn faster than its competitors. He also said, "The organizations that will truly excel in the future will be the organizations that discover how to tap people's commitment and capacity to learn at all levels in an organization" (1990, p. 4). A learning organization continually expands its capacity to create its future. According to Senge, systems thinking is the major tool for developing learning organizations.

In the 1970s, Senge was introduced to systems dynamics, an approach pioneered by his mentor, Jay W. Forrester, a computer professor at the Massachusetts Institute of Technology. Basically, all variations on systems analysis deal with analyzing systems of multicausal variables; their relationships; and any related or underlying theories, concepts, methodologies, principles, and practices from various fields and disciplines. Initially, complex systems were studied by mathematicians, biologists, physicists, and engineers. In fact, Senge credits Soviet mathematicians for their very early contributions in the 1950s. Around 1960, Americans such as Forrester began using systems approaches to deal with complex public policy issues involving, for example, economic, urban, and ecological problems. Today, systems approaches are being used by systems analysts in government, the military, intelligence agencies, manufacturing companies, and service organizations around the world.

Senge calls systems thinking "the fifth discipline." He defines it as the overarching discipline that integrates itself with four other disciplines, "fusing them into a coherent body of theory and practice" (1990, p. 12). The other four disciplines are (a) building a shared vision (a shared picture of the future that fosters personnel's genuine commitment); (b) working with mental models (understanding how our own and others' characteristics influence learning and thinking processes); (c) team learning (thinking or genuinely dialoguing together and not letting miscommunication or motive/attitudinal barriers to team think-work and learning get in the way); and (d) personal mastery (clarifying personal vision, focusing energies, developing patience, and perceiving reality objectively). Like systems thinking, these four disciplines all involve systems of variables and related concepts, methods, principles, and practices. One can look at it this way: Systems thinking is capable of integrating the other disciplines because it emphasizes systems and is conceptually capable of integrating all other systems of variables into itself. In other words, one can think of systems thinking as a meta-construct made up of many constructs, just as one can think of the socio-technical model as a meta-construct for more effective organizational analysis of complex, interacting subconstructs involving task-related or technological variables, individuals' characteristics, organizational factors, social phenomena, and outside forces or factors.

One cannot take issue with Senge's approach. It emphasizes that systems analysis in planning and problem-solving situations is a major mode of organizational learning. It also covers many of the same insights and methods covered in this book, but sometimes in different ways and contexts. However, there are reasons to be concerned about the manner in which managers actually apply systems thinking concepts. These concerns will be discussed following a discussion of action learning and appreciative inquiry, because many of them apply to all three approaches.

Action Learning

German psychologists Kurt Lewin and G. W. Lewin (1948) advocated what they called *action research.* The concepts were similar to and were developing more or less in parallel with systems thinking concepts. Then, in about 1950, an Englishman named Reginald Revans (1966, 1980, 1983) became the father and chief proponent of action learning.

Action learning can be described briefly as follows: using either the analytic approach or a brainstorming approach not just to solve problems but, equally or more important, to generate learning that is key to future strategic efforts within an organization. It could be called problem solving for the sake of learning. According to proponents, action learning can take a variety of forms and labels: organization development, management development, team building, and transformative learning. They emphasize that organizations are *multicausal human systems* and must learn and adapt if they are to survive. Learning, therefore, is a strategically oriented means to an end, that end being organizational viability over the long term. Proponents of systems thinking and learning organizations would certainly agree. In fact, the proponents of both concepts are saying virtually the same thing but in slightly different ways.

The concepts of systems thinking, learning organizations, and action learning were all born in academic environments. In universities, learning is the primary objective of education and is often emphasized over more practically oriented matters such as finding solutions to real-world problems. In fact, the academic community's learning theorists were probably the first ones to recognize that problem solving is a major mode of learning. Mostly for these reasons, today's proponents of action learning tend to have more degrees in education or educational

psychology than in management, while proponents of systems thinking and learning organizations have more M.B.A.'s and Ph.D.'s in management than in education. In other words, what someone calls a learning-oriented think-work process largely depends on their background. It may also be a function of how best to promote the concept. After all, saying "action learning" sounds more powerful and effectual than simply saying "learning," just as saying "strategic planning" sounds more critical and high-powered than simply saying "planning."

Appreciative Inquiry

Appreciative inquiry was born during a whole-organization change project led by consultant David Cooperrider at GTE in the mid-1980s. Appreciative inquiry has been referred to as an alternative to traditional problem solving. Cooperrider, Whitney, and Stavros (2003) emphasize appreciating (valuing, prizing, esteeming, and honoring) the strengths, successes, and potentials of personnel. Therefore, instead of delving into what might be wrong in an organization, this approach focuses on positive aspects of situations. Participants (a) describe their successful experiences, (b) exchange images of a desired future, and (c) brainstorm on how to bring about that future.

In addition to several possible drawbacks mentioned in the next section with respect to all three concepts, appreciative inquiry may have the following disadvantages:

First, although being upbeat and emphasizing positives, strengths, and potentials is functional in that it is nonthreatening and uplifting to personnel, it remains that people learn from identifying or being shown their mistakes and then either correcting them themselves or having them contradicted and corrected by others. By accentuating only the positive, personnel may not deal with or eliminate the negative. Even Achilles should have paid more attention to his heel. In other words, this approach may limit the extent to which personnel will recognize and learn from their mistakes.

Second, this approach does not involve analyzing entire systems of organizational and external socio-technical variables in the great depth or breadth advocated throughout this book. Several undesirable consequences can result: (a) unrecognized problems may not be identified and addressed; (b) real, underlying causes of problems may not be identified; (c) solutions dealing with problems, weaknesses, and vulnerabilities may not be formulated; (d) many dysfunctional socio-technical variables may not be corrected or improved; and (e) the influences of many other, more functional socio-technical variables may not be improved or possibly maximized.

Reservations and Recommendations

We basically agree with the concepts of systems thinking (learning organizations) and action learning, but we have several reservations—not so much about the concepts but about how they are implemented in real-world organizations. Several of these concerns also apply to appreciative inquiry.

Planning (Rather Than Ad Hoc Problem Solving) as a Primary Learning Situation. Learning organization and action learning concepts both emphasize using problem-solving situations to enhance organizational learning. However, the question is this: Is problem solving the *best* context in which to maximize learning? Possibly not. Consider two points:

First, problem solving occurs after the fact—that is, after we recognize an exception to what was planned, desired, or intended. But why wait for management by exception to signal a problem-solving (and learning) situation? Waiting for problems to occur misses many

opportunities to do the following: (a) identify other previously unrecognized problems; (b) identify factors that could be either corrected or improved; (c) anticipate problems or threats and start to alleviate or prevent them; (d) recognize opportunities and begin to take advantage of them; and (e) learn more information and better skills. Would it not be more effective to analyze an organization's entire situation in great depth and breadth at some point in time—for example, during a planning process? This leads to the next point, which elaborates on the first.

Second, proponents and users of all three concepts (but particularly those of action learning and appreciative inquiry) might do well to put much greater emphasis on *the planning process, which is not only an analytic problem-solving process but is also a far more powerful process than other, less comprehensive problem-solving processes.* Because systems thinking and action learning practices all involve (a) the analytic approach, (b) the analysis of multicausal systems, (c) more effective team think-work processes, and (d) all the other modes of learning shown in Figure 17.1, applying them within the context of a major planning process has at least two major advantages:

- It enables organizations to anticipate threats, problems, and opportunities far enough ahead to position themselves to deal with them effectively.
- Because broad, in-depth analyses of an organization's situation are more likely to be performed during planning processes than during more finite ad hoc problem-solving situations, managers and their personnel should be able to analyze and learn far more about (a) the systems of variables operating inside and outside their organization, (b) the interrelationships among those variables, and (c) the facts or information corresponding to those variables. What better time to maximize learning than when analyzing the entire organizational-environmental meta-system? After all, ad hoc problem-solving processes usually deal only with subsystems of factors that are actually operating within much larger systems. Therefore, day-to-day problem solving does not fully enable managers and their personnel to (a) identify interactions and cause-effect relationships among subsystems' variables or (b) learn how all the subsystems interact with each other to bring about net effects throughout the meta-system. All those insights constitute an enormous amount of learning that may never occur. In contrast, organizational planning enables personnel to view the whole (the meta-system) so that they can deal more effectively with the parts (the subsystems and the more finite variables of which they are composed).

Thus, we conclude that in order to maximize organizational learning of information and skills that will enable the organization to be viable or successful over time, it initially takes planning processes to scope out and structure (diagram) an organization's meta-system, and then it takes day-to-day problem-solving and decision-making processes to (a) learn additional information and insights over time (and add them to the original meta-construct) and (b) further develop thinking and learning skills.

Depth and Breadth of Systems Analyses. As previously mentioned in different contexts, a major mental limitation in *learning* situations is a limited repertoire of knowledge and experience, and a major mental limitation in *thinking* situations is a limited knowledge of factors or variables that could be involved. These very similar limitations are largely responsible for real-world problems that occur when people apply learning organization and action learning concepts. For

example, even though participants are trained in the concepts and practices and even though think-work sessions are conducted by experienced facilitators, participants still tend to (a) identify only about twenty or thirty potentially causal variables (out of hundreds) and (b) identify only the more obvious or immediate causal factors, not the real, underlying ones. There are numerous reasons for these phenomena. Perhaps the most important is individuals' *limited repertoire of knowledge of variables.*

M.B.A.'s learn many things from professors, texts, and case studies. Their academic experience increases or further develops just about all of the inputs listed in the left-hand column of Figure 17.1. They (a) learn sophisticated concepts, principles, and quantitative methods and tools; (b) further develop their thinking and logical abilities; and (c) further develop communicative and persuasive skills. Equally important, they learn (d) factors relating to areas such as marketing, production, finance, information systems, and organizational behavior in a variety of industries; (e) possible relationships among those factors; and (f) facts or information associated with the factors and their relationships. Learning many factors is very important because all questions, issues, phenomena, events, and activities that should be considered during planning, problem-solving, and decision-making situations involve general or more finite factors and their relationships.

However, just as all people do, M.B.A.'s have their limitations. First, can M.B.A.'s learn all the variables in all the areas that they might need to consider? Of course not. Second, when the time comes to recall and consider relevant variables, is it possible for them (or anyone else) to remember and then think about all the variables they once learned? Of course not. Third, do business schools provide reference materials that would make it easy for students and graduates to look up factors that might be involved in a situation? Not that we are aware. In fact, all the factors that M.B.A. students cover are sprinkled throughout thousands of pages of texts, technical notes, cases, and class notes. And do systems thinking and action learning instructors and session facilitators provide their seminar participants with such references? What do you think?

To reemphasize how organizations might alleviate these limitations, let us revisit several analytic tools discussed in Chapter Three and explicitly relate them to the present context—certainly to learning, but also to knowledge management.

Learning benefits of using checklists of factors. Developing and using checklists of factors to analyze situations has learning benefits in addition to think-work benefits.

First, by vastly increasing the number of variables considered, it helps participants in planning, problem-solving, decision-making (and learning) situations expand on what they previously knew. It enables them to learn far more about the systems of factors affecting them, the facts or details associated with the factors, and the cause-effect and sequential relationships among those factors. It enables them to interrelate and integrate all of their "boxes" (what they previously knew and are presently learning) into a newer, more encompassing meta-construct. They are essentially using these modes of learning: observation, insight, generalization, concept formation, and problem solving. Mentally anticipating possible causes and effects closely simulates actually learning through experience. The method of learning being used is essentially "whole to parts to whole."

Second, using checklists to perform analyses in a more orderly, organized, and systematic manner helps ensure that participants will identify and explore many variables before going on to the planning (or formulation of solutions) phase. As mentioned earlier, jumping around from one phase to another can generate numerous group process problems—which usually inhibit

effective thought but also *inhibit effective learning.* The modes of learning used usually include observation, insight, generalization, problem solving, and project activity. (It should be noted that using this approach—especially to better deal with large amounts of information in a structured manner—does not preclude participants from brainstorming to generate creative ideas or solutions. Freewheeling association of ideas is especially appropriate during the planning or formulation of alternatives phase but can also occur during the analysis phase. In any case, the two approaches are not mutually exclusive.)

Third, writing down information on a checklist improves learning because multiple sensory perception will record that information better in memory regions of the brain.

Knowledge management benefits of using checklists. Using checklists also has several beneficial effects on knowledge management. Having participants write down their responses to checklist items compels them to (a) transform vague or ambiguous observations and impressions (tacit, subjective, qualitative information) into more crystallized information; (b) validate such information and determine whether it constitutes knowledge or just ill-founded opinions, assumptions, or conclusions; (c) share it in real time with each other; and (d) cross-pollinate insights and ideas among the group. This procedure greatly enhances the learning process and significantly increases all participants' knowledge, and it also gets that tacit or qualitative information out of participants' heads and into a searchable qualitative information base that saves and protects it for future use. This is particularly important in regard to the oldest baby boomers, who, as Susannah Patton (2006) has pointed out, are close to retirement and will take with them extensive tacit knowledge about their companies and industries—unless it is harvested soon.

Like checklists, diagrammatic analyses of situations have both learning and knowledge management benefits as well as analytic benefits.

Learning benefits of diagramming situations. While diagramming complex situations helps participants handle much more information at once, see interrelationships and sequences of causes and effects, and identify factors that can be improved or corrected, it also significantly improves learning. Visually illustrating (a) variables associated with subsystems, larger systems, and metasystems; (b) the important interrelationships among factors in the various systems; and (c) facts or data associated with all the variables and factors enables multiple sensory perception to record the information better in memory (by using more memory regions).

Knowledge management benefits of diagramming situations. Situational diagramming records all the information on variables, factors, their associated facts, and their relationships in a visual format that can be (a) used and updated on a continuing basis and (b) used as a graphic user interface to access both numeric and qualitative information on an organization and its operating environment.

Developing situational diagrams (or diagrammatic knowledge bases™, as we call them) is one of the most powerful analytic, learning, and knowledge management processes an organization can conduct.

Dysfunctional Analysis of Finite Situations. Problems in marketing, operations, finance, R&D, information technology, and human resources tend to pop up like dandelions on a front lawn. When, for example, a problematic marketing situation arises, it is normal for marketing personnel to look only at the factors that seem to be more or less directly involved in the situation

at hand (for example, factors relating only to sales, only to advertising, only to market research, only to channels of distribution, or only to another limited functional area). There are certainly many reasons for this type of narrow focus. One might be called "simplistic vision" (looking at a problem situation and seeing only a few causes). Another might be called "tunnel vision" (failing to see how one small system of factors might be related to other systems of factors). For example, does a problem involving sales just involve the sales force, or is it also a function of problematic factors or phenomena relating to one or more of the following areas: sales management, staffing, advertising, warehouse inventory, transportation, customer segmentation, customer relationships, product quality, production facilities, marketing budget, or some other area?

Another reason for focusing too narrowly when looking for causal factors may be perpetuated by business schools' use of the case method. Of course, the case method has important advantages. It eventually exposes students to many variables. It helps students make a habit of using the analytic approach. It develops thinking and learning skills. And it applies all the modes of learning within a problem-solving context. However, the case method, insidiously, also tends to form one or two bad habits with respect to how managers approach problem situations. Although business school cases can be rather long, they generally deal with vignette-sized situations that are small enough in scope or complexity that they can be "solved" in several hours of study and several hours in the classroom. For example, many marketing cases are aimed at familiarizing students with only a select group of factors involved in a limited or narrow aspect of a larger area (such as consumer segmentation, distribution, pricing, advertising, or market research). One of the authors (Cecil) recalls the following experience:

> During my two years in business school, we learned a few pricing factors in one case, a few more in another, a few more in another, and so on. Similarly, we learned a few consumer segmentation factors in one case, a few more in another, and so on. In other words, we were constantly exposed to many parts, but we never tied all the parts into an integrated and meaningful marketing whole. More to the point, we never once systematically analyzed and diagrammed an organization's *entire* marketing situation: industry competitors, marketplace, aspects of the marketing mix, and outside forces that could affect the industry and its marketplace over time. Nor did we ever analyze (a) an entire production operation, (b) all the behavioral phenomena occurring throughout an organization, or (c) any entire system of variables. One reason is that faculty members tend to specialize in a particular sub-area and do their research and write cases only in that area. Even today, I am told, few care about the bigger picture. In my own view, then, students are harmed by what I call "specialization at the expense of integration." Another reason for the limited extent of analyses is that the classroom writing or diagramming surfaces were not large enough to do diagrammatic analyses of entire marketplace constructs. That is why, even back in 1976, my clients and I built 160-square-foot "team-think walls" for their planning projects. Today, we specially construct 256-square-foot walls, but even they are not always large enough.
>
> Thus, during business school, we never came close to analyzing (diagrammatically or otherwise) how all of the subsystems we had studied interrelated with each other and with the outside world. Business game simulations did help us learn to integrate marketing, production, finance, and other functional areas to some extent, but the big-picture views of systemic relationships they provided were still very limited. In other words, cases, like everyday problem-solving situations, seem to deal with rather small, very limited, disjointed, piecemeal, patchwork constructs—not the meta-constructs or meta-systems that would maximize the effectiveness of think-work and

> learning. It is the same in most of today's organizations. When managers never scope out the whole and simply deal with the parts only a few at a time (as is the case in most problem-solving situations), the sum of the parts can never add up to the whole, because the parts have never been related to each other and to the whole.

Of course, the consultants, research analysts, planners, and engineers who use systems analysis and operations research methods perform much more in-depth and insightful analyses than many of the most sophisticated managers. These types of people are usually very good at diagramming the types of large systems with which they work. However, both of us authors have often seen that well-trained managers working with well-trained superiors, colleagues, and subordinates can do nearly as well if they have the necessary knowledge, skills, and tools.

CONCLUDING REMARKS

Managers can maximize organizational learning by (a) using the *analytic approach* (to help structure the process and deal with obstacles and limitations); (b) doing so within a *planning context* (so as to look at subsystems within the context of a meta-construct); (c) using *checklists of factors* (to supplement a limited knowledge of system variables and help increase repertoire over time); and (d) *diagramming* the qualitative and quantitative aspects of the situation (to handle more details, better deal with complexity, and develop diagrams that can be updated during each subsequent planning, problem-solving, or decision-making process). These recommended steps add up to what might be called "systems thinking and action learning on steroids."

Figure 17.2 summarizes much of the discussion in this chapter. The inner area of the "Learning" ring shows phases involved in planning and implementing developmental activities (more or less as they are shown in Phase 1 in Table 17.4): analyzing the situation and identifying developmental needs; planning how to fill those needs; choosing a set of developmental goals and associated plans; and implementing the chosen plans. The outer area of the ring shows the modes and methods of learning that are often involved in the phases of the two types of learning situations illustrated in Figure 17.1. It also shows how the phases, modes, and methods relate to the managerial process (analysis, planning, problem-solving, decision-making, and implementation functions) illustrated in Figure 2.1 on page 36.

Chapter Eighteen integrates most of the major concepts, processes, and models covered in Chapters Two through Seventeen into the Unified Practice of Management™ model.

Before discussing that model and its implications for major aspects of management, superiors and their immediate subordinates should conduct this module's series of superior-subordinates discussion, OD application, and team-building sessions. The next section outlines recommendations for conducting the sessions, which conclude Module 6.

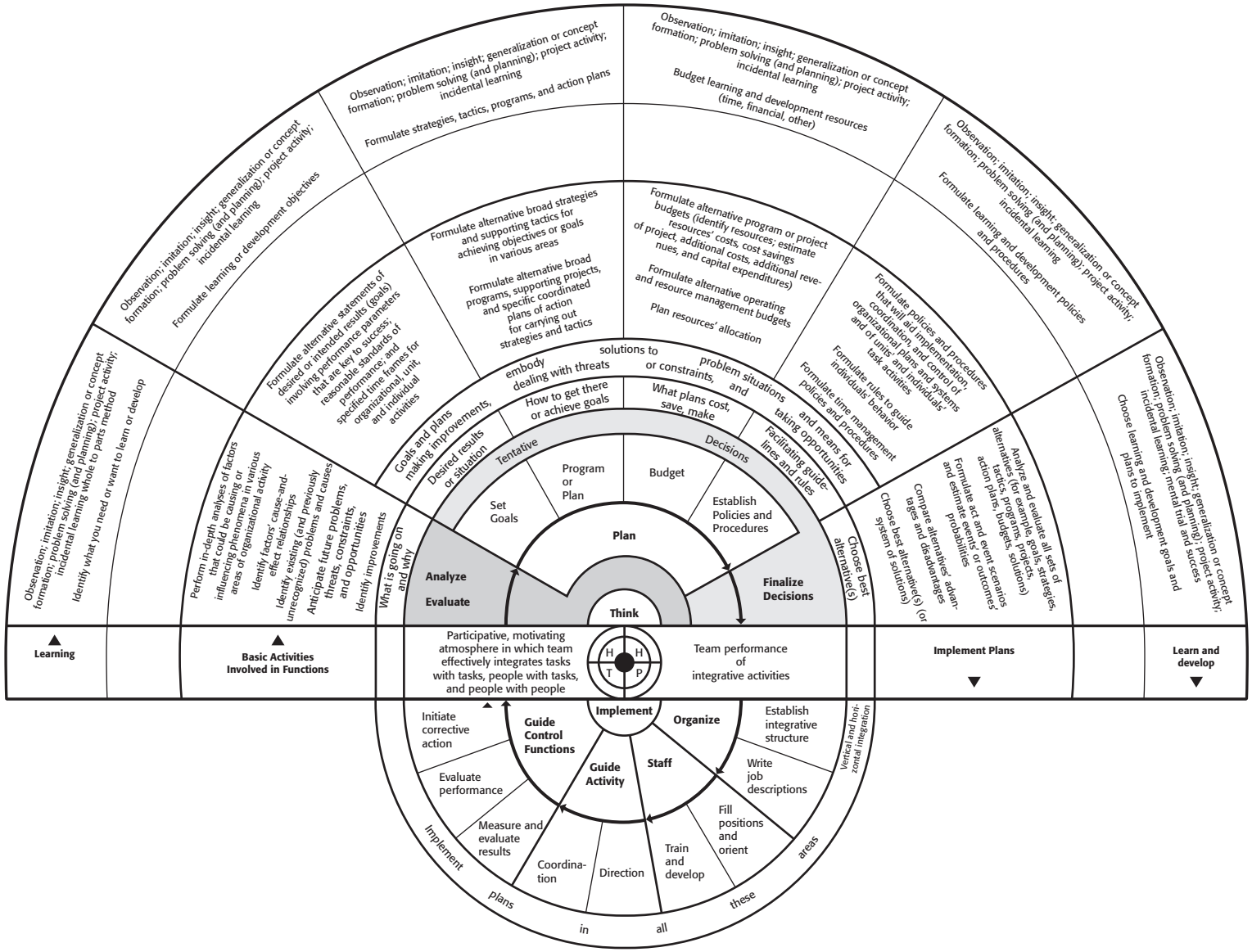

Figure 17.2. Learning in the Managerial Context

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RECOMMENDATIONS FOR CONDUCTING SUPERIOR-SUBORDINATES DISCUSSION, OD APPLICATION, AND TEAM-BUILDING SESSIONS FOLLOWING THE TRAINING PORTION OF MODULE 6

General Information

Given what participants have learned about management concepts, managerial styles, personal traits, and problem-solving and learning approaches, they are prepared for the next round of superior-subordinates sessions. As shown in the lower Module 6 box in Figure 1.1 on page 20, these sessions are oriented toward further analyzing and resolving developmental issues involving the unit—and perhaps even the organization—as a whole. Superiors might also meet with each of their immediate subordinates privately in order to hold open and frank discussions on (a) the subordinate's personal strengths, weaknesses, and potentials and (b) what the superior can do to contribute to the subordinate's job-related development.

Objectives

These discussions (a) help participants crystallize (through further thought) what they have learned; (b) help them reinforce (through repetition and actual use) what they have learned; (c) enable participants to immediately and beneficially apply what they have learned (rather than waiting until the end of the program to experience benefits or results); (d) help improve superior-subordinate relationships; and (e) enable managers' subordinates to participate in deciding what needs doing, how it should be done, by whom, and when.

As shown at the very bottom of the lower Module 6 box in Figure 1.1 (page 20), these linking pin sessions are aimed at identifying and dealing with socio-technical factors that affect educational and developmental efforts concerning individuals, a unit or work group, or the organizational as a whole. Many sessions could involve exploring how superiors and subordinates can contribute to *each other's* further development.

Preparation

If participants have used the session preparation and study guide for Chapter Seventeen that is provided on the CD-ROM, they will have already thought about the following issues and will be better prepared to discuss them.

Sessions should be scheduled for at least four hours, including breaks. Participants may choose to continue their discussions during subsequently scheduled sessions.

Topics, Problems, Situations, or Issues for Exploration

Even before participants proceed to the last module, covering the following topics at this point begins the process of revisiting—and perhaps rethinking—what was determined during the planning steps of this MD/OD program's preparation phase (see pages 19 and 20 in Chapter One). These topics not only reinforce and use what has been learned but also deal with what still needs doing within the context of longer-term management development and organization development goals and plans.

a. Evaluate the extent to which organizational or unit development goals for the following competencies, attitudes, and other job-related inputs or requirements have been achieved to this point (see Figure 11.1 on page 262 and Figure 12.1 on page 266).

- Knowledge of management concepts, methods, and practices
- Development of integrative (think-work and implementation) competencies, skills, or habits
- Interpersonal knowledge, awareness, sensitivity, and skills
- Knowledge and application of personal development methods

b. Within the context of long-range management development and organization development plans that were formulated during the preparation phase, determine what the organization must still do in order to
   - Promote both unit and individual development
   - Deal with socio-technical factors that are hindering personnel's further development
   - Improve socio-technical factors that are contributing to personnel's development
   - Provide additional developmental inputs
   - Reinforce personnel's developmental efforts

c. Discuss how unit and organizational personnel can work together to reinforce unit and organizational development efforts.

d. Discuss how unit members can help reinforce particular members' personal development efforts (but only if a member wishes them to do so).

e. Discuss what the team should do now and what they should give more thought (for example, during a planning process) before taking further action.

Commitments to Actions and Results

Superiors and their immediate subordinates should contract with each other on the following specifics of developmental goals and plans: (a) who is going to be held responsible for which final outcomes; (b) milestones on the way to end results; and (c) who will do what, when, with whom, and over what period of time.

Participants should apply the principles, practices, and visual tools discussed in Chapters Two through Six. They should also take into consideration other anticipated changes and their priorities and costs.

In our view, an organization and its units have both responsibilities and rights to establish programs and practices aimed at further developing groups' and individuals' job-related knowledge and skills. Their rights, however, do not extend to requiring personnel to change their very personal values, interests, and personality traits. Nonetheless, superiors do have a right and even a responsibility to call a subordinate's attention to any personal characteristics, attitudes, or behavior patterns that may be hampering his or her job performance. It is then up to the subordinate to decide whether to try to improve those traits on his or her own or with consensual help from the superior.

Facilitation

Here again, with concurrence of the OD consultant or facilitator, these discussions may be facilitated by the unit or work group leader, supervisor, or manager. If a group's superior is not yet considered capable of conducting the discussions, they should be facilitated by the OD consultant, professional outside facilitator, or well-trained internal facilitator.

The superior or facilitator may wish to hand out copies of Table 16.1 (also on the CD-ROM), which outlines leader and participant responsibilities involved in preparing for and conducting group think-work processes.

The facilitator should use his or her knowledge and experience to lead participants toward identification of (a) real, underlying causes of problems; (b) other influential (or possibly causal) factors, whose impacts are not always obvious; and (c) solutions or plans that have been or would tend to be most successful.

Evaluation and Follow-Up

When discussions during each superior-subordinates session at the end of this module have been completed, the facilitator may ask participants to critique their team's process by filling out or discussing the items on the Group Process Evaluation Form (found with the Chapter Sixteen content on the CD-ROM).

After the sessions are over, monitor participants' planned activities and their adherence to the commitments they made during these sessions. With guidance from an OD consultant, a facilitator, or an appropriate high-level manager, participants (superiors and their subordinates) should evaluate results upon arrival at each planned milestone.