Individual and Organizational Learning

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Introduction

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/development programs, and fostering an environment of trust and high morale. Morale is important because, heightened by organizational success, it increases personnel's readiness to learn (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.

Prior chapters 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 Basic Concepts and Principles" section of this booklet covers elementary definitions of learning and memory and then discusses various major factors that influence how well we learn. 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 "Learning in Organizations" section describes various styles of learning and discusses how organizational planning and problem-solving relate to learning and development. It also discusses several rather widely practiced applications of learning and problem-solving principles: the learning organization (and its related concept, systems thinking), action learning, and appreciative inquiry.

Basic Learning Concepts and Principles

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 their 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 various skills to think and relate more effectively.

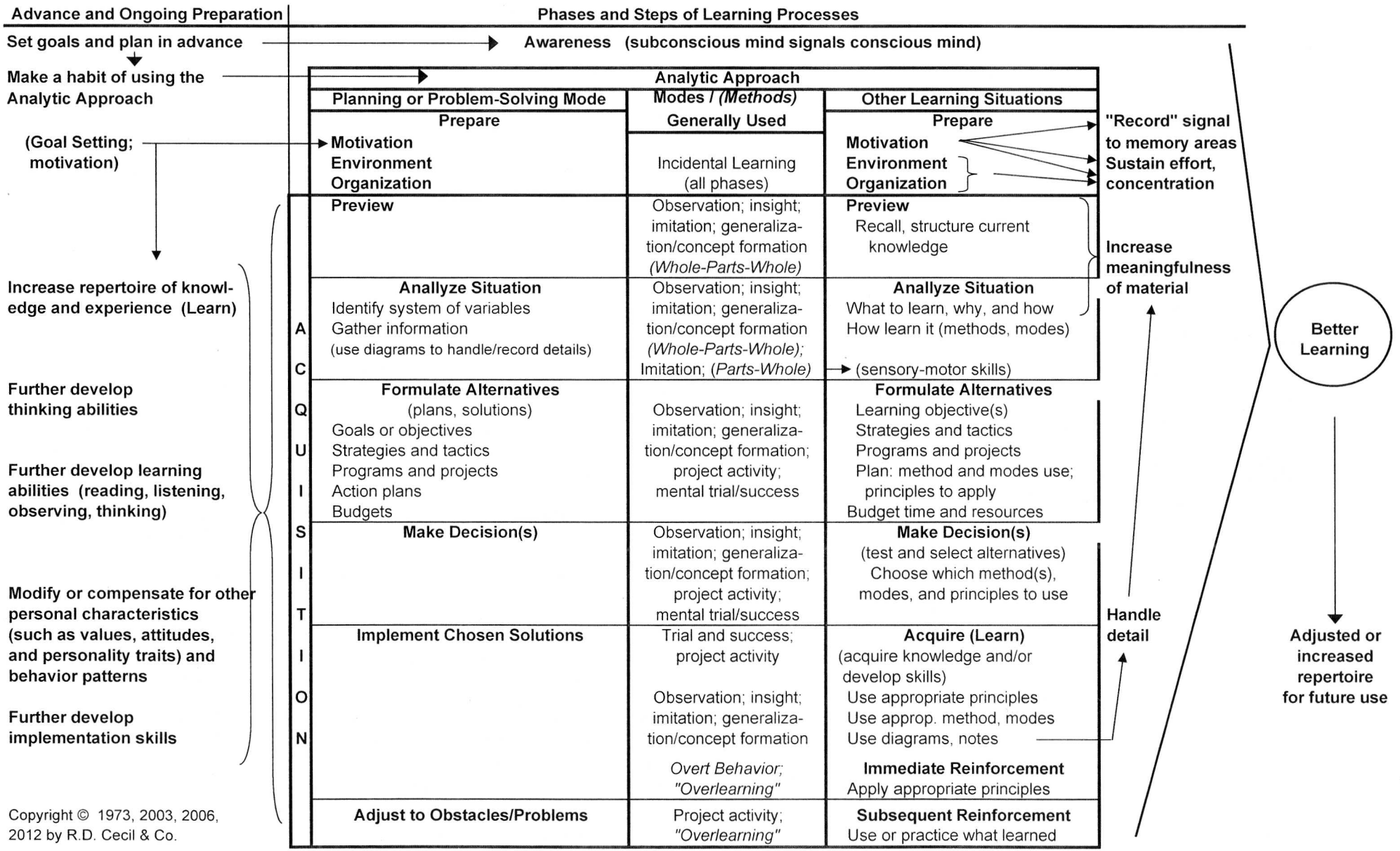
Many factors influence what and how well we learn. The sections below, which deal with influential factors. modes and methods of learning, and learming styles are highly abbreviated. More detailed discussions can be found in books on educational psychology by authors such as Robert Sternberg and Wendy 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 1**, indicates that many variables influence how well we learn. For a learning situation to be most effective, we must purposefully maximize some, control some, minimize some, and compensate for some. Several previous chapters have covered these factors and the structured approaches for dealing with them.

The left column in the model indicates the factors (inputs) that should be increased or otherwise improved on an "advance and ongoing" basis. The figure also illustrates

Figure 1: Advance and Ongoing Activities and Approaches for Improving Learning Processes



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 or mode 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. A planning process is also a mode of learning, since it is a problem-solving process performed within a different context. The shaded column on the right represents an approach for effectively structuring "other learning situations," where other primary 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 can be involved in the phases of both types of learning situations. Modes are shown in normal type; *methods* are italicized and in parentheses.)

While reading about the following influences, consider how the various phenomena, non-personal 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 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, and 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 the chosen solution(s).

As shown in **Figure 1**, *goal-setting and planning* provide memory with inputs that help trigger awareness of 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 and planning also increase 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.

Knowledge of and Ability to Use a Structured Approach (Habituate Use of 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 1 helps, but **Table 1**, which will be discussed shortly, describes in detail an analytic approach that uses familiar phases and steps to structure a learning process. It indicates points at which one should consider the other influential factors or apply the principles, methods, and modes of learning described below. One should make a habit of using of this approach if he or she wishes to maximize learning effectiveness. Management trainers can use the table to help structure their training sessions and apply the principles, modes, and methods involved.

Motivation (Increase)

One's 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, and 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 will be the breadth and depth of our repertoire of knowledge and experience. On the other hand, once we are in a learning situation, we must assure that we are in an environment conducive to learning. If we are not, extraneous or distracting environmental stimuli can interrupt our focus of attention, distort the interpretation of sensations, and disrupt the space/time 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 together needed materials (references, texts, manuals, notes, and so forth), writing materials, computer equipment, and any other learning equipment keeps us from having to interrupt the learning process to get them.

Meaningfulness of Material (Increase)

The meaningfulness of perceptions 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 with which to associate new information or experience, and the more meaningful the new information or experience will become. Also, the greater our repertoire, the more patterns 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 inceased 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 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 1**, and as discussed just above, 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 can involve, for example, further developing reading and listening skills. (See "Receiver Responsibilities" in the booklet on Communication.) It can also involve further developing thinking abilities. For example, during general learning situations, improved abilities for class logic and propositional logic can help one better evaluate what an author or speaker has said. Furthermore, since problem solving is a major mode of learning, more developed thinking abilities enable one to learn better by being more able to identify, describe, analyze, and/or compare and contrast (a) variables, (b) their relationships, (c) corresponding facts, (d) alternative solutions, and so forth.

The more *intelligent* we are, the more efficient and effective our learning processes are, and the better we interpret and record new information and experiences. However, being born with the potential for high (academic) 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 hardly ever fully developed in anyone, we all have some room for improvement.

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 over-loaded with information. To compensate for the frustrations of trying to handle so much information, we tend to cut through the detail, over-simplify, over-generalize, and develop a low tolerance for detail. We also are developing the habit of learning information not to remember it, but to remember where it is located if we ever need it. 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 learning and memory abilities, we have begun to take the easy way out 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 counter-weapons, the counter-counter weapons, and so on. Fortunately, it can also be the ultimate instrument for dealing with the problems of the world.

Other Personal Characteristics and Behavior Patterns (Adjust 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 one 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, 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 they 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 levels for what and how much you learn? 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 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 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 to the extent 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 where 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 may be. Also, she will tend to waste less energy in important learning situations because she is relaxed. Relaxation aids both learning and recall. Tension can be a motivator, but it can also reduce concentration.

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

Modes of Learning

E. L. Thorndike (1962), E. R. Hilgard (1964), and many other learning theorists have identified various basic modes through which sensitivities are recorded in representative patterns 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 sensitivities 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;
- audio-visual 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 below. (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. We can arrive at insights 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 sensitivities, among present and recorded sensitivities, or among recorded sensitivities. If, for example, sensitivity (or pattern) A is similar or related to pattern C (in terms of characteristics, space, and/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" by leading participants toward perceiving relationships among ideas or visual images being learned.)

As mentioned earlier, neurophysiologists such as John C. Eccles (1960) have reported that we do not record well in memory what we think, what we say, and periods of skilled activity. 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 it 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 unintentionally did or said what they did ("monkey see, monkey do"). That is also 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 actually results. In a more advanced and goal-oriented form, it is a matter of first thinking about the situation and hypothesizing some possible solutions, and then purposefully trying them one at a time until some trial finally works and achieves the desired outcome. This mode of learning *can* occur during the *decision-making phase* of a

think-work situation (which 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 may or may not happen when we do X, or Y, or Z. (Instructors: Give students projects or problems where, by trying different courses of action, they gain experience as they learn what may or may not occur under various circumstances.)

Generalization or Concept Formation

During this ideational process, one essentially uses logical reasoning in order 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 and/or skills involved. As shown in **Figure 1**, project activity is not just one mode of learning. It can also involve learning through observation, insight, trial and success, and other modes. Remember, it is generally believed that we better remember about 75% of what we have seen, heard, and *done*. (Instructors: Design projects so that participants can apply or practice what they have learned.)

Problem Solving

During the analysis phase, 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 evaluating 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* regarding relationships among causal/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) *behaving overtly* to interact with the environment, (b) *observing* those interactions and their results, (c) evaluating results, and (d) adjusting solutions or solving implementation problems.

In other words, during this process, we are actually *learning through most if not 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 (case) situation that will enable them to (a) learn more variables and associated facts, (b) develop deeper insights or generalizations concerning factors and their relationhsips, (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 also learn information and/or skills that were *not* the primary learning objectives. Regardless of whatever perceived or actual importance they might have, they may have been learned intentionally or unintentionally. 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 having a positive or useful nature. However, we sometimes incidentally learn misinformation, useless information, bad habits, ineffective procedures, and so on.)

Primary and Concommitant Learning

Primary learning is the particular information or ability that we intended to record in memory (the primary objective). Concommitant 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.

Table 1: Phases, Steps, and Applied Principles of a Structured Learning Approach

ACTION	BENEFICIAL EFFECTS
Phase I: Prepare	
1: **Be aware — and stop to think what you're doing and how to do it well.**	Actually apply what you know; consciously structure process; account for influences.
2: Increase **motivation:** think which personal and organizational goal and plans make the situation important.	Increase and sustain concentration, interest, effort; minimize distractions; strengthen the signal to memory areas to start recording or imprinting.
3: Seek a conducive **environment**.	Minimize distractions and interruptions (of train of thought, recording info in memory); find a stimulus-rich environment if appropriate.
4: Get **organized**.	Get info, materials, equipment so as to minimize disruptions; prioritize; allocate time.
5: **Preview** material to the extent possible; get preliminary information about the situationand 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 and material)	
6: Analyze observations and insights from preview, and . . .	Determine how the whole and the parts are (or perhaps should be) structured.
a. Relate previewed material to present knowledge; crystallize knowledge.	Increase meaningfulness and interpretation of material; better record info in memory.
b. Identify situation's importance (re: context, relevant goals and plans, priorities).	Further increase and sustain motivation, concentration, and effort.
Phase III: Plan (Alternatives Formulation)	
7: Formulate alternative learning objectives (within context of relevant goals).	Further increase motivation to concentrate and sustain attention and effort; prioritize activities.
8: Formulate alternative learning and development strategies and tactics, programs and projects that take account of . . .	
* Most effective senses and modes of learning to use.	Improve sensory, interpretive, assimilation, and memory processes.
* Most efective method(s) of learning to use to learn and structure whole and 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 do, in what order, when, who else, etc.).	Plan what you're going to do in order to learn both effectively and efficiently.
10: Budget time, financial resources, and human resources.	Use resources effectively and efficiently.
Phase IV: Make Decision(s)	
11: Choose objective(s).	Increase if not maximize motivation, concentration, and effort; prioritize situation.
12: Choose plans (modes, methods, strategies, principles, and resources to use).	Purposefully structure process and apply principles for max results; use resources wisely.
Phase V: Implement (Acquire knowledge or skills: read, listen, watch, Imitate, solve problem, or otherwise learn)	
13: **Initial Acquisition: Application of Learning Principles**	
a. Consciously focus attention (read, listen, watch before begin to evaluate; look for ideas, not just facts; pay attention to details; get gist of 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; assure uninterrupted recording/imprinting of info into memory.
b. Acquire information through the most appropriate or effective **modes**:	Learn through several modes; make info more meaningful in more ways; enhance recall.
Verbal/conceptual material: learn through observation; insight; generalization or concept formation; problem solving.	
Sensory-motor skills: learn through observation; imitation; trial and success.	
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**:	Interpret, assimilate, and record information in most effective manner; enhance recall.
Verbal/conceptual material; use whole-to-parts; mediating (whole-parts-whole).	
Sensory-motor skills: learn parts first, then integrate parts into a whole.	

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 or mannerisms; avoid over-reacting 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 first time; if you do not understand, re-read or ask for elaboration or clarification; alternate study of verbal and non-verbal materials; take breaks at 30- to 50-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 2 hours in study for every hour of class.	Make certain that you are learning something correctly (so don't record/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 is already recorded in memory. Increase your repertoire of information so that you better understand the lecturer.
14. **Simultaneous/Immediate Reinforcement: Apply Learning Principles**	Make material more meaningful; reinforce formation/reorganization of memory patterns.
a. Take notes, make diagrams, models, 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, reinforcement.
b. Use memory aids: use visually- and/or verbally-oriented mnemonic devices to better record information in memory--e.g., ridiculous images to remember names; sentences to remember lists; sequence of letters -- EGBDF, P-DRAFTS-I, PAR.	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 info and credibility of the source; separate facts from opinions and assumptions; consider speaker's motives; consider therelevanceofinformation; identify implicit messages; consider how your own attitudes or opinions might change.	Increase motivation and concentration; increase meaningfulness of material; question whether or not what you are learning is valid, correct, relevant, or useful.
d. Verify correctness of what you think you learned: check other references or sources; run what you think you learned by others for validation of info, agreement on ideas.	Assure that what you learned (e.g., ideas, facts) is/are actually correct (so as not to reinforce erroneous information.
e. Conscious association: identify what you are learning for first time; consciously relate new information to what you already know, perhaps using diagrams/models.	Increase meaningfulness; enhance/reinforce processing to memory by associating information with more existing patterns in memory.
f. Anticipate uses of the material: identify situations in which information would help you learn better, think better, or relate better with others; anticipate how it might be applied in creative situations.	Increase motivation to reinforce; increase motivation to use or apply; program your mind to trigger awareness of important situations in which you can use what you've learned; better record information in memory.
g. Test your ability to recall the information or to do what you've learned (discuss with other people; check what you think you 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; insure that you have learned correctly; reinforce memory patterns.
h. Review and repeat what you've learned	
* Review materials (reading materials, notes, diagrams, visuals, etc.).	Use repetition to reinforce memory patterns (in various areas of memory).
* Discuss the material with others.	Use repetition to reinforce memory patterns; re-validate correctness of learning.
* Teach the material to others.	Use repetition to reinforce memory patterns; increase knowledge and insights.
* Use the information learned (e.g., in a learning or thinking situation).	Use repetition to reinforce; learn how to effectively use or apply what you've learned.
* Practice the skill(s) learned.	Use repetition to reinforce.

Phase VI: Subsequent Reinforcement	
* Use and/or practice what you have learned.	Increase retention; reinforce through repetition; minimize adverse effects of intervening perceptions; increase the meaningfulness of new material.

Table 2: Education vs. (and) Training

Education in:

1. **Knowledge of** THE WHAT.

   The basic knowledge of some theory, concept, idea, or principle, the effective application of which constitutes a SKILL.

2. **Knowledge of** THE WHY.

   The basic knowledge of why the theory, concept, idea, or principle works and why it is important.

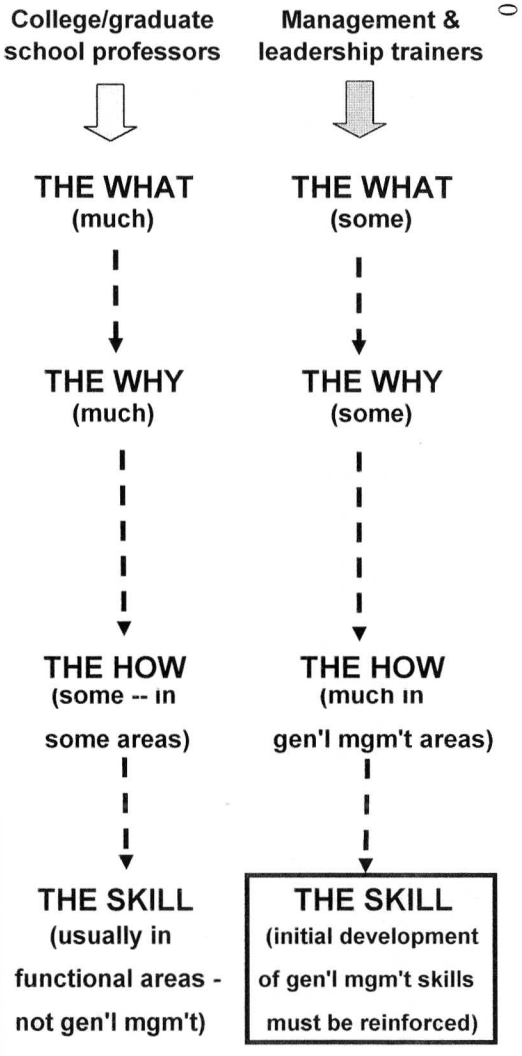
Training in:

3. **Knowledge of** THE HOW.

   The knowledge of how to apply the theory, concept, or principle -- that is, the knowledge of a usable method, system, or procedure for applying it.

4. **Developing or learning** THE SKILL.

   The learned ability to actually apply or use some method, system, procedure, or equipment both effectively and efficiently (e.g., through observing, mimicing, practicing, using, or applying it).



Methods of Learning

These are the major methods of learning: whole to part; whole vs. part; part to whole; the mediating method; overt behavior; and "overlearning."

Whole to Part Method

This is the most appropriate method in two situations. The first involves learning concepts, ideas, or other verbally oriented materials. These all have (a) some unity or continuity in the material to be learned, 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, and 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 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 vs. Part

This method has been found to produce better results where, 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.

Part to Whole Method

This method is most useful for learning (and teaching) motor skills that require sensory-motor coordination. Examples are playing the piano, playing golf, and 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.

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 vs. part method.

Overt Behavior

Using, practicing, reciting, or being tested on what has been learned are all overt responses that indicate whether or not 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 something back to a "sender" is overt behavior that can be corrected if necessary. (Remember the sender and receiver responsibilities for testing to determine whether or not 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 helping reinforce what they have learned, but also by your contradicting them when they are wrong and helping them to correct their mistakes*.)

Overlearning

Continual *repetition*, reinforcement, and use of learned material—and continual practice and use of skills—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 needed—not just to recognize it. A good example is the fact that four tables in four booklets have covered the various inputs that should be increased, further developed, or otherwise improved. In addition, four tables have listed 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 **Table 1**, instructors can "simultaneously/immediately reinforce" what has been learned, but are not in a position to continually reinforce it. Managers, their bosses, colleagues, and subordinates should all work together to continually reinforce what all are learning.)

Mnemonic devices and other *memory aids* can be used to assist recall. These are several examples of mnemonic devices: "Every Good Boy Does Fine" has helped many

Table 3: Learning Styles

LEARNING STYLE TYPES: Kolb, Rubin, McIntyre ("LSI") (1971): Honey and Mumford ("LSQ") (1993):	**Concrete Experiencer** **Pragmatist**	**Active Experimenter** **Activist**	**Reflective Observer** **Reflector**	**Abstract Conceptualizer** **Theorist**
Brief Description	relies on concrete information and experience; attention to details; interest in "how," not "why" prefers structure; skill-oriented rather than idea-oriented	action-oriented; relies on experiences; interacts w/ environment; organized; practical; prefers activity to concepts/principles	interest in information; may avoid acting; not interactive; resists risks, change; thinks things over, but uncertain of conclusions	open to change; forms generalizations and concepts readily, easily; numerous possible solutions to problems
Modes of Learning Uses Most				
Observation				
Observe / watch	Observe	Observe	Observe	Observe
Listen	Listen	Listen	Listen	Listen
Read			Read	Read
Imitation	Imitation	Imitation		
Insight			Insight	Insight
Generalization/concept formatn			Gen'lztn /concpt formatn	Gen'rlizatn /concept formatn
Trial and success/(error)	Trial and success	Trial and success	Mental trial & success	Mental trial & success
Project activity	Project activity	Project activity		
Problem solving		Problem solving		Problem solving
Method of Learning Uses Most				
Whole-to-part			Whole-to-part	Whole-to-part
Part-to-whole	Part-to-whole	Part-to-whole		
Overt behavior	Overt behavior	Overt behavior		
Problem-Solving Modes Uses to Learn				
Common sense	Common sense	Common sense		
Trial and success/(error)	Trial and success	Trial and success		
Level of Academic Intelligence	Average Academic	Avg. or above academic	Above avg. academic	High academic (Abstract/symbolic thought)
Personality Traits				
Original thinking			Original thinking	Original thinking
Thinking introvert or extrovert	Thinking extrovert	Thinking extrovert	Thinking introvert	

Table 4: Learning Styles or Orientations: What Learn and How

GENERAL ORIENTATIONS	Verbal			Non-Verbal					
	Verbal / Linguistic	Intrapersonal	Interpersonal	Body Language	Emotions	Musical / Rhythmic	Sensory-Motor (Physical)	Visual/Spatial	Quantitative / Mathematical
LEARNER TYPES or STYLES									
Abram's "Smarts" (2003):	Word smart	Self smart	People smart		Empathetic	Music smart	Body smart	Picture smart	Number smart
Gardner's "Intelligences" (1983, 1999):	Linguistic	Intrapersonal	Interpersonal	Interpersnl	Intra-/inter-personal	Musical	Bodily / kinesthetic	Spatial	Logical / mathematical
Learning Style Inventory of **Kolb, Rubin, & McIntyre** (1971):									
Concrete Experiencer							Concrete experncr	Concrete experncr	
Active Experimenter							Active experimntr		
Abstract Conceptualizer									Abstrct concptlzr
Reflective Observer		Reflctv obsrvr							
Info Sources Relies On -- Malcom/Lutz/Gerken/Hoeltke (1978):	External Info (reading matls)	Internal feelings, thoughts	External sources				External sights Internal sensations	External sources	External info Internal thoughts
Modes or Senses Use									
Visual (sight)									
Observe	Observe	Observe	Observe	Observe	Observe	Observe	Observe	Observe	Observe
Read	Read								Read
Auditory (hearing)	Listen	Listen	Listen	Listen	Listen	Listen			Listen
Tactile (touch)		(Internal)	Touch						
Kinesthetic / motor feedback							Motor feedback		
Method of Learning Used	Whole-to-part						Part-to-whole		Whole-to-part
Mental Capabilities Involved									
Aspect of academic intelligence	Verbal								Mathematical
Class or deductive logic	Class logic								Class logic
Propositional or inductive ogic	Inductive logic								Inductive logic
Social intelligence or insight			Social insight						
Spatial thinking								Spatial thinking	
Personality Tendencies	Original thinking (Verbal constructs/concpts)	Social and thinking introvert	Social and thinking extrovert		Emotional	Emotional	Active/vigorous		Original thinking (Mathematical/ scientific/abstract)

Table 5: Relationships Between Phases of the Analytic Approach to Problem Solving, the Planning Process, and Steps Involved in an Effective Learning Process

		Learning-Oriented Processes	
		Phase 1	**Phase 2**
	Problem-Solving Process	**Managerial (Planning) Process**	**Afterwards, when in 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; your own life Factors to analyze: task-related, organizational, environmental, individual, and social Identify knowledge, experience, skills, attitudes, and behavior that must be learned or developed in order to reach goals	**Analysis of Situation** What to learn/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 unit, own job, and self) Prioritize goals Formulate strategies and tactics, programs and projects, action plans, and budgets (and so forth) Clarify and prioritize learning and development objectives Formulate learning and development strategies and tactics, programs, and action plans (what to learn, when, sources, which modes and methods use)	**Planning** Clarify and prioritize learning objectives Formulate learning plan: Strategies, tactics, and action plan for applying principles, modes, 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, own job, and self) 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** Organize Staff (select; orient; **train and develop**) Guide and coordinate . . . Activities Control processes Learn as planned during subsequent **situations**: **Planning** **Problem solving** **Decision making** **Learning and studying** **Developing skills, attitudes**	**Implementation** Implement Solutions: Learn information and ideas Develop skill(s) Modify attitudes and behavior

music students recall the names of the lines E, G, B, D and F on a musical staff. Students recall the first eight Presidents using this sentence: "Will A Jolly Man Make A Jolly Visitor" [Washington, Adams, Jefferson, Madison, Monroe, (John Quincy) Adams, Jackson, and Van Buren]. We often use the phrase "Prepare for DRAFTS and Implement" to help people recall the phases of the analytic approach to problem solving.

These are several memory/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 name to some particularly outstanding 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 numbers on the dial into corresponding letters that comprise 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 1 is very much like the corresponding tables in several earlier booklets. It is meant to be used as a handy two-page reference for learners and instructors. Principles, modes, and methods of learning that appear in the table are described in the previous pages, so the table should require little explanation at this point.

The following, however, should be noted. Phase I, the preparation phase, contains 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, previously called 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 involves some pointers for "simultaneous or immediate reinforcement" of learning (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.

Two final points: There is so much valuable information that we could learn. However, there is just not enough time to keep abreast of the proliferation of general and specialized knowledge. Even so, we can use what time we do have to best advantage if we are motivated, know how to learn more efficiently and effectively, and have identified what we need or want to learn. Time spent learning is better spent if it is goal-oriented. However, in order to achieve goals, one must also "means-orient behavior." *Means-orienting behavior certainly involves planning, but it also involves acquiring the knowledge, experience, skills, and functional attitudes and behavior patterns that enable goal attainment.*

Skill Development

As shown in **Table 2**, 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 actually apply the theory, concept, or principle—that is, the knowledge of a practical *method, system, or procedure*. The fourth aspect (or stage) is the *learned ability to apply or use the method, system, or procedure* both effectively and efficiently. The fourth aspect amounts to *experiential learning* and can involve learning through observation, imitation, insight, overt behavior (using, practicing), project activity (using, practicing), trial and success, and even overlearning.

Many management seminars often skip over the first two aspects or stages and concentrate on (1) teaching the practical methods or procedures, and then (2) practicing participants in their use. 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. The author has always believed what others have researched and concluded: that *personnel better apply methods and procedures* if *they understand what they are doing and why*. Cal C. Wood undoubtedly got it right when he said, "The person who knows *how* will always have a job, but the person who knows *why* will be his *boss*."

Learning Styles and Orientations

Just as in the case of individual problem-solving styles covered in the booklet on *Problem Solving and Decision Making*, various experts' classifications of learning styles differ because they are based on different concepts or points of view. So, as earlier, we cannot integrate several different frames of reference into a single table. Therefore, we present two separate but somewhat related tables.

Table 3 revolves around the typology by 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 them 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. The author has expanded on those authors' descriptions by indicating the modes of learning, methods of learning, problem-solving modes, level of academic intelligence, and personality traits that can be associated with these styles (based on behavior described in learning style definitions, and behavior described in definitions/descriptions of various pertinent psychological traits).

Table 4 revolves around the simpler typology by Stephen Abram (2003). It is very similar to Table 2 in the booklet, *Problem Solving and Decision Making*. Abram describes both "thinking styles" and "learning styles" in terms of different types of "smarts" (which we have also categorized as either verbal or non-verbal). **Table 4** expands on Abram's descriptions by indicating types of intelligence identified by Howard Gardner (1983, 1999), the learning styles in **Table 3** identified by Kolb, Rubin, and McIntyre (1971), and an adaptation of "information sources relied on" by Malcom, Lutz, Gerken, and Hoeltke (1978). The table also expands on the basic descriptions by indicating the modes or senses used, method of learning used, mental capabilities involved, and personality tendencies that the author associates with each orientation.

An enormous amount of what is recorded in the average person's memory is visual information. That is not surprising, since vision is one of our two primary sensory modes for acquiring information. (The other is listening.) Those very likely to be visually oriented are concrete experiencers/learners and thinkers, who pay a great deal of attention to the tangible (visible) aspects of objects, people, activities, and events. On the other hand, while those who are more highly educated undoubtedly have considerable visual information in memory, they also have a great deal of verbally oriented knowledge that they acquired by reading books and attending lectures.

Learning in Organizations

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 5**, 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 _ and Table _.) The shaded right column indicates that the phases of the planning process involve the following (in abbreviated form): In the first phase, managers and their units analyze all aspects of the organization and its business environmment, identifying important variables affecting marketing, operations, finances, R&D, human resources, etc. In the area of human resources, managers and their units identify (a) who does what at what levels, (b) what knowledge, experience, and skills are required for each job, and (c) how to staff the jobs (and develop personnel). In the second phase, they formulate performance goals, productivity goals, and development goals for the organization, its units, and individuals). Then they translate objectives into plans (strategies/tactics, programs/projects, action plans, and budgets) for all areas—including plans for developing personnel. During the decision-making phase, not only are marketing, operations, R&D, financial, and human resources goals and plans chosen for implementation, but so are the more specific goals and plans for units' and individuals' further development.

Having performed the entire organizational and unit analysis, planning, and decision-making process (which itself 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 in the far right column of **Table 5**. In each planned (scheduled) learning situation, and even in those that are spontaneous (such as unexpected problem-solving situations that can arise), the approach we described above 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" (1990, 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 organziations 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 MIT. 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 mathemeticians, biologists, physicists, and engineers. In fact, Senge credits Soviet mathematicians for their very early contributions back in the 1950s. Around 1960, Americans such as Forrester began using systems approaches to deal with complicated public policy issues involving, for example, economic, urban, and ecological problems. Today, systems approaches are being utilized 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 and motive/attitudinal barriers to team thinkwork 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/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. K. 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 if not 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 *multi-causal 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 con-

cepts are saying virtually the same thing, just in slightly different ways.

The concepts of systems thinking, learning organizations, and action learning were all born in academic environments. It is in universities where 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 indeed a major mode of learning. Mostly for these reasons, it seems that today's proponents of action learning have more degrees in education or educational psychology than in management, while proponents of systems thinking and learning organizations have more MBAs and PhDs 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." (Saying "strategic planning" should seem redundant, since planning should always involve the formulation of strategies).

Appreciative Inquiry

Appreciative inquiry (AI) was born during a "whole organization" change project led by consultant David Cooperrider at GTE in the mid-1980s. AI 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 how to bring about that future.

In addition to several concerns mentioned below 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 non-threatening and uplifting to personnel, it remains that people learn from either identifying or being shown their mistakes, and then either correcting them themselves or having them contradicted and corrected by others. By accentuating 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 really involve analyzing entire systems of organizational and external socio-technical variables in the great depth or breadth advocated throughout this series. Several undesirable consequences can result: (a) previously 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

The author basically agrees with the first two concepts discussed above, but still has several reservations—not so much about them as about their actual implementation in real-world organizations. Several of these concerns also apply to appreciative inquiry.

Planning (vs. 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 these 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 if not 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—such as 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 fact that *the planning process itself not only* ***is*** *an (analytic)*

problem-solving process, but also is a far more powerful process. Since systems thinking and action learning practices all involve (a) the analytic approach, (b) the analysis of multi-causal systems, (c) more effective team think-work processes, and (d) all the other modes of learning (as shown in **Figure 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 better position themselves to deal with them more effectively.

- Since broader and more 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 organizations, (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 sub-systems 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 sub-systems' variables, and (b) learn how all the sub-systems interact with each other to bring about net effects throughout the entire meta-system. All those insights constitute *an enormous amount of learning that may never occur*. On the other hand, organizational planning enables personnel to view the whole (the meta-system), so that they can deal more effectively with the parts (the sub-systems and the more finite variables of which they are composed).

Thus, the author concludes the following: 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 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

It has been mentioned above that a major mental limitation in *learning* situations is a limited repertoire of knowledge and experience, and that 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 the learning organization and action learning concepts described above. 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 do the following: (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*.

MBAs learn many things from professors, texts, and case studies. Their academic experience either increases or further develops just about all of the inputs listed in the left-hand column of **Figure 1**. They (a) learn sophisticated concepts, principles, and quantitative methods and tools; (b) further develop thinking/logical abilities; and (c) further develop communicative and persuasive skills. Equally if not more important, they also 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 revolve around either general or more finite factors and their relationships*.

However, just as all people, MBAs have their limitations, too. First, can MBAs 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 that they once learned? Of course not. Third, do the 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 the author is aware. In fact, all the factors MBA 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 the booklet on *Analyzing* 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 assure 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 involved here are observation, insight, generalization, and problem-solving—and can also involve overt behavior 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 creative ideas or solutions. Actually, free-wheeling association of ideas is especially appropriate during the planning or formulation of alternatives phase, but can also occur during the analysis phase. So the two approaches are not mutually exclusive.)

Third, writing down information on a checklist improves learning because "multiple sensory perception" records that information better in memory (for example, in visual and auditory memory regions of the brain).

Knowledge Management Benefits of Using Checklists

Using checklists also has several beneficial knowledge management effects.

First, having participants write down their responses regarding 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 if it constitutes knowledge or just ill-founded opinions, assumptions, or conclusions; (c) share it realtime with each other; and (d) "cross-pollinate insights and ideas" among the group. While this greatly enhances the learning process and significantly increases all participants' knowledge, 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 regarding the oldest baby boomers, who, as Susannah Patton (2006) has pointed out, are just six years away from retirement and will be taking with them years of extensive (tacit) knowledge about their companies and industries—unless it is "harvested" soon.

Diagramming situations also has learning and knowledge management benefits as well as analytic benefits.

Learning Benefits of Diagrammning Situations

While diagramming complex situations helps participants handle much more information all at once, see interrelationships and sequences of causes and effects, and identify factors that can be improved or corrected, it also significantly improves learning. By *visually* illustrating (a) variables associated with sub-systems, larger systems, and meta-systems; (b) the important interrelationships among factors in the various systems; and (c) facts or data associated with all the above, the process of multiple sensory perception records the information better in memory (including in more memory regions).

Knowledge Management Benefits of Diagramming Situations

Equally if not more important, situational diagramming initially records all the above information in a *visual format* that can be (a) used and updated on a continuing basis, and (b) used as a graphic user interface (GUI) for accessing both numeric and qualitative information regarding 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, financial, R&D, IT, and human resources areas can tend to pop up randomly like dandelions in a front lawn. When, for example, a problematic marketing situation arises, it is normal for marketing personnel to look only at the factors that are more or less directly involved in situation at hand (depending on whether the situation *seems* to be most directly related to sales, advertising, market research, channels of distribution, or whatever). There are certainly many reasons. One is what 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 salesforce, or is it also a function of factors relating to one or more of the following: (poor) sales management; (poor) staffing; (inadequate or poor) advertising; (insufficient) warehouse inventory; (unreliable) transportation; (poor) customer segmentation; (poor) customer relationships; (low) product quality; (aging) production facilities; (insufficient) marketing budget; and so on.

Another cause may be perpetuated by business schools' use of the case method. Of course, the case method certainly does have advantages. It eventually exposes students to many variables. It habituates use of the analytic approach. It develops thinking and learning skills. It applies all the modes of learning within a problem-solving context. However, almost insidiously, the case method also tends to habituate the manner in which managers approach problem situations. Although B-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 if not most marketing cases are aimed at familiarizing students with a group of factors (a sub-system or limited number of factors) involved in a limited aspect of a larger area (such as consumer segmentation, distribution, pricing, advertising, or market research). The author recalls the following experience:

> "During my two years in graduate business school, we learned a few (pricing) factors in one case, a few more in another, a few more in another, and so on. Next, 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 never really tied all the parts into an interated 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. Neither did we ever analyze an entire production operation. Nor behavioral phenomena all through an organization. And so forth. One reason is that faculty members tend to specialize in their own particular 'sub-area,' and only do their research and write cases in that area. Even today, I am told, few if any care about the 'bigger picture.' In my own view, then, students are actually harmed by what I call 'specialization at the expense of integration.' Another reason for the limited extent of analyses is that the classroom writing/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 (diagrammatically) analyzing how all of these sub-systems interrelated with each other and the outside world. Business game simulations, however, did help us learn to integrate marketing, production, finance, and other functional areas to some extent, but they were still very limited in the above respects. In other words, cases, like everyday problem-solving situations, seemingly deal with rather small, very limited, disjointed, piecemeal or '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 only deal with the 'parts' a few at a time (as in most problem-solving situations), the 'sum of the parts' can never add up to the whole, because the parts are seldom if ever related to each other and then back 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. All these people are usually very good at diagramming the types of large systems with which they work. However, the author has often seen that well-trained managers—working with well-trained superiors, colleagues, and subordinates—can do nearly as well if they have the knowledge, skills, and tools.

Concluding Remarks

Managers can maximize organizational learning by dong the following: (a) using the *analytic approach* (to help structure the process and deal with various obstacles and limitations); (b) doing so within a *planning context* (so as to look at sub-systems within the context of a meta-system or meta-construct); (c) using *checklists of factors* (to supplement a limited knowledge of systems' 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 initially develop diagrams that can be updated during each subsequent planning, problem-solving, or decision-making situation). These recommended steps add up to what might be called "*systems thinking and action learning on steroids.*"

Figure 2 summarizes much of the discussion in this chapter by (a) integrating the above activities with the phases and steps of the analytic approach to learning in **Tables 1 and 5**, and (b) showing which modes and methods of learning can apply to the various phases of managerial, planning, problem-solving, and learning processes.

References

Abram, S. (2003, February). Primer. *KMWorld*, p. 12.

Cooperrider, D. L., Whitney, D. L., & Stavros, J. M. (2003). *Appreciative inquiry handbaook*. Bedford Heights, OH: Lakeshore Communications, and San Francisco: Berrett-Koehler.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. NewYork: Basic Books.

Gardner, H. (1999). *Intelligence reframed: Multiple intelligences for the 21st century*. NewYork: Basic Books.

Hergenhahn, B. R., & Olson, M. H. (2004*). Introduction to the theories of learning*. Upper Saddle River, NJ: Prentice Hall.

Hilgard, E. R. (1956). *Theories of lea*rning. NewYork: Appleton-Century-Crofts.

Honey, P., & Mumford, A. (1992). *The manual of learning styles*. Maidenhead, U.K.: Author.

Honey, P., & Mumford, A. (1995). *Using your learning styles*. Maidenhead, U.K.: Author.

Kolb, D. A., Rubin, I. M., & McIntyre, J. M. (1971). Learning style inventory. In D. A. Kolb (Ed.), *Organizational psychology: An experiential approach to organizational behavior*. Upper Saddle River, NJ: Prentice Hall.

Kolb, D. A., Rubin, I. M., & McIntyre, J. M. (1999). *Learning style inventory*. Boston: Hay/McBer's Training Resources Group.

Lewin, K, & Lewin, G. W. (Eds.). (1948). *Resolving social conflicts: Selected papers on group dynamics*. New York: Harper & Row.

Malcom, P. J., Lutz, W. C., Gerken, A. M., & Hoeltke, G. M. (1978). *Learning style identification scale*. New York: McGraw-Hill Publishers Test Service.

Malone, J. C. (1990). *Theories of learning: A historical approach*. Belmont, CA: Wadsworth.

Revans, R. W. (1980). *Action learning: New techniques for managemen*t. London: Blond & Briggs.

Revans, R. W. (1983). *ABC of action learning*. Kent, U.K.: Chartwell-Bratt.

Senge, P. M. (1990). *The fifth discipline*. New York: Doubleday.

Slavin, R. E. (2002*). Educational psychology: Theory and practice*. Boston: Allyn & Bacon.

Sternberg, R. J., & Williams, W. M. (2001). *Educational psychology*. Boston: Allyn & Bacon.

Thorndike, E. L. (1962). *Psychology and the science of education: Selected papers of Edward L. Thorndike*. New York: Columbia University Press.

Figure 2: Learning in the Managerial Context