


5

Applying Theories of Learning and Teaching to HRD



Coping with the Different Theories

Having explored the jungle of learning and teaching theories, you have a decision to make. What do you do? You have several choices.

Ignore the Theories

For one thing, you can ignore them. You can say they are impractical. They may be all right for the pure psychological scientists and researchers, you can say, but they're too abstract and obtuse to be of much use in planning and operating day-to-day educational programs. The trouble with this choice is that it is unrealistic. The fact is that there are assumptions, concepts, and principles—theories—behind everything you do, whether you are conscious of them or not. If you are planning an educational activity in philosophy, the arts, mathematics, machine operation, orientation of new employees, supervisory training, or management development, you are going to have to make decisions about content, techniques to be used, units of instruction and sequence, time and place, and standards for evaluation. For each decision you will be confronted with a number of options, and your choice will be determined by some idea of what will work best. That is a *theory*.

If you aren't clear about what your theory is—or even whether you have one—the chances are that you will end up with a hodgepodge. You will use different theories in different times or situations, or conflicting theories for different decisions in the same situation. You won't know why you are doing what you are doing. There is a cliché in the applied social sciences—often attributed to Kurt Lewin—that nothing is as practical as a good theory to enable you to make choices confidently and consistently, and to explain or defend why you are making the choices you make.

Pick one Theory

A second choice available is to select one theory and go with it all the way. You can conclude that Skinner's operant conditioning theory makes the most sense to you, provides the clearest guidelines for program design and operation, and assures the most predictable results. Or you can conclude that the *third force* psychologists (Maslow, Rogers, et al.) are more in touch with human nature as it really is, and make decisions that are congruent with such concepts as self-directed inquiry, positive self-image, and self-actualization. Or you can choose any of the other theories as a workable alternative. But before you take such a big jump, check a few things out.

For example, how does the proposed theory fit your organization's management philosophy? To use Douglas McGregor's (1960) terms, if the management philosophy is Theory X, then Skinner's or any of the other mechanistic theories would fit fine. But if it is Theory Y, one of the organismic theories is indicated. For the assumptions about human nature underlying Theory X management philosophy and the mechanistic learning-teaching models are remarkably similar, as are those underlying Theory Y management philosophy and the organismic learning-teaching models. Table 5-1 presents a comparison of the assumptions about human nature and human behavior by managers subscribing to Theories X and Y as perceived by McGregor (1960, pp. 33-34 and 47-48) with the assumptions implicit in current education and those relevant to significant experiential learning as perceived by Rogers (1972, pp. 272-279).

It seems clear that if a training program based on the assumptions in Rogers' experiential learning model is introduced into an

Table 5-1
A Comparison of the Assumptions About Human Nature and Behavior Underlying Theory X and Theory Y Management Philosophy

Theory X Assumptions about Human Nature (McGregor)	Assumptions Implicit in Current Education (Rogers)
<p>The average human being inherently dislikes work and will avoid it if he can.</p> <p>Because of this characteristically human dislike of work, most people must be coerced, controlled, threatened in the interest of organizational objectives.</p> <p>The average human being prefers to be directed, wishes to avoid responsibility, has relatively little ambition, wants security above all.</p>	<p>The student cannot be trusted to pursue his own learning.</p> <p>Presentation equals learning.</p> <p>The aim of education is to accumulate brick upon brick of factual knowledge.</p> <p>The truth is known.</p> <p>Creative citizens develop from passive learners.</p> <p>Evaluation is education and education is evaluation.</p>
Theory Y Assumptions about Human Nature	Assumptions Relevant to Significant Experiential Learning
<p>The expenditure of physical and mental effort is as natural as play or rest.</p> <p>External control and threat of punishment are not the only means for bringing about effort toward organizational objectives. Man will exercise self-direction and self-control in the service of objectives to which he is committed.</p> <p>Commitment to objectives is a function of the rewards associated with their achievement.</p> <p>The average human being learns, under proper conditions, not only to accept but to seek responsibility.</p> <p>A high capacity for imagination, ingenuity, and creativity in solving organizational problems is widely, not narrowly distributed in the population.</p> <p>Under the conditions of modern industrial life, the intellectual potential of the average human being is only partially utilized.</p>	<p>Human beings have a natural potentiality for learning.</p> <p>Significant learning takes place when the subject matter is perceived by the student as relevant to his own purposes.</p> <p>Much significant learning is acquired through doing.</p> <p>Learning is facilitated by student's responsible participation in the learning process.</p> <p>Self-initiated learning involving the whole person—feelings as well as intellect—is the most pervasive and lasting.</p> <p>Creativity in learning is best facilitated when self-criticism and self-evaluation are primary, and evaluation by others is of secondary importance.</p> <p>The most socially useful thing to learning in the modern world is the process of learning, a continuing openness to experience, an incorporation into oneself of the process of change.</p>

organization employing Theory X management philosophy, a dissonance would occur that the organization would not tolerate—unless, of course, the training program is expressly being used to help bring about a change in management philosophy. Equally, if a training program which is based on Rogers' judgment of current education is introduced into an organization employing Theory Y management philosophy, it would be resented and resisted.

Another thing to check before choosing a single theory is its congruence with the organization's long-range developmental goals. If its policy makers see it as a fairly stable, slow-changing organization whose products and processes will remain about the same for ten years, then an HRD program based upon one of the mechanistic models would be appropriate. Educational efforts would be primarily directed at reproducing in new employees the knowledge and skills of the present work force. But if the organization is fast-changing, continuously developing new products and processes, then the HRD program should be based on an organismic model.

Perhaps the fundamental distinction between these two types of organization is in how leadership views the organization as an energy system. Considering the individual as an energy system, Ira Gordon (1968) makes the comparison in Table 5-2 between the Newtonian and the Einsteinian conceptions. [See also, Ingalls, 1976]

The essential difference is that Newtonian physics saw energy as being mechanical, a stable source of power in an absolutely controllable, orderly universe. You get out of a machine what you put into it. This conception of energy is portrayed simplistically in Figure 5-1, in which an input of one erg of energy into a system containing units of matter transforms the energy into one erg of output—less some loss from friction or heat.

In contrast, Einstein's formula $E = mc^2$ presented the idea that atoms of matter contained enormous amounts of energy which could not be released mechanically. But the input of one erg of the right kind (high-speed) of energy into a system containing units of matter would excite these units to release their pent-up energy. Since this energy is uncontrollable it takes lead shields to keep it in bounds and electromagnetic fields to give it direction. This conception of energy is portrayed in Figure 5-2, in which an input of one erg of radiational energy releases (not transforms) hundreds of ergs of energy stored in its units of matter.

Table 5-2
The Individual as an Energy System

Newtonian Conception	Einsteinian Conception
Fixed intelligence	Modifiable intelligence
Development as an orderly unfolding	Development modifiable in rate and sequence
Human potential fixed, though undeterminable at early ages.	Human potential creatable through transaction with the environment
A telephone switchboard brain	A computer brain
Energy output is like that of a steam engine	Possession of an inertial guidance and self-feedback motivational system
Possession of a homeostatic regulator for drive reduction	Continuous activity
Inactivity until the engine is stoked	

If an organization is thought of as an energy system, with the people in it being the units of matter on whom the energy inputs work, Figures 5-1 and 5-2 go a long way toward explaining the differences among organizations I have observed and in which I have worked. In some organizations Newtonian control of the energy of the employees is highly valued and all training is geared to assure that only prescribed behavior is learned. The function of management and supervision is to control the behavior of subordinates. In other organizations Einsteinian release of the energies of the employees is highly valued, and all training is geared to facilitate the development of each individual to his fullest potential.

It is perhaps tempting to make a value judgment about these two kinds of organization, and to proclaim the latter as the only good one. Obviously, both kinds exist and are required. Wherever safety is involved (as in the operating room of a hospital) or absolute precision is necessary (as in an accounting department) the Newtonian model of energy-control is probably appropriate. The important thing is that the learning-teaching theory you choose be one that is congruent with the organization's type of energy system. Appendixes E and F present two examples of the application of the Einsteinian energy system to teaching and human resources development.

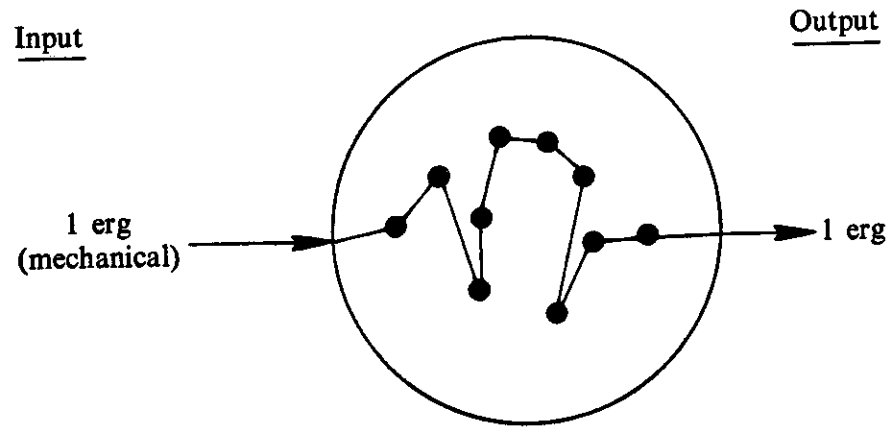


Figure 5-1. The Newtonian energy system.

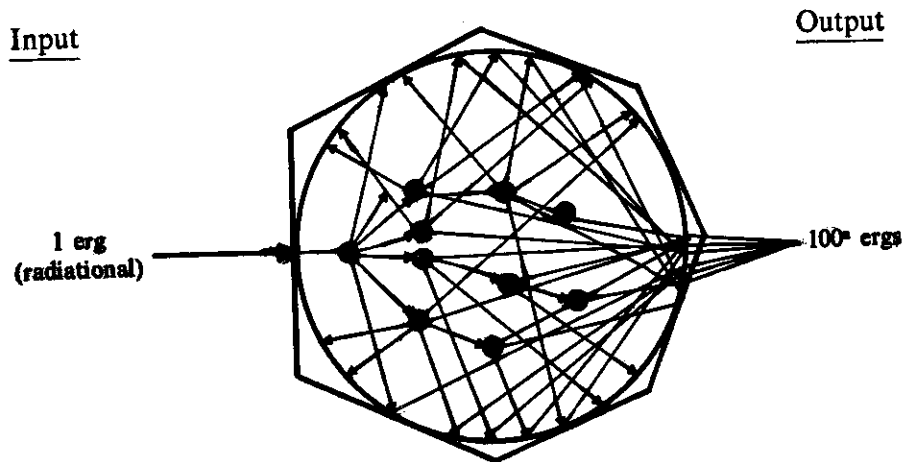


Figure 5-2. The Einsteinian energy system.

Pick One Theory for Training and One for Education

Nadler, in the foundational book of this series, distinguishes between training and education. Training

is those activities which are designed to improve performance on the job the employee is presently doing or is being hired to do. . . The purpose of training is to either introduce a new behavior or modify the existing behaviors so that a particular and specified kind of behavior results. [Nadler, 1970, pp. 40-41]

Employee education is defined as those HRD activities which are designed to improve the overall competence of the employee in a specified direction and beyond the job now held. [*Ibid.*, p. 60]

In an educational situation, the person likewise brings a variety of behaviors, but it is now hoped that a releasing experience is provided so that he can produce more behaviors than when he entered the situation. [*Ibid.*, p. 41]

Glaser (1962) also distinguishes between education and training and delineates two differences. Training tends to be toward specific objectives, such as operating a machine or following certain regulations, while education tends to be toward broader objectives, such as becoming a cultured gentleman or an effective manager; and training seeks a certain uniformity, a competency that can be counted upon, such as mastery of typing skills that leads to being able to type 60 words a minute, while education seeks to maximize individual differences by discovering and releasing the potential of the individual.

This kind of distinction suggests that different theories of learning and teaching might be appropriate for different kinds of learning. As we have seen previously, Gagne takes the position that there are at least eight different kinds of learning, each requiring different teaching strategies. For purposes of human resources development, Nadler's and Glaser's two-type taxonomy seems more realistic and leads to the proposition that for training, one of the mechanistic models such as programmed instruction or didactic cognitive teaching would be appropriate, while for education an organismic adult educational model such as self-directed learning projects would be more appropriate. Perhaps different types of learning-teaching situations could be put on a continuum, as in Figure 5-3, with two criteria for identifying the appropriate teaching model: complexity of the learning task and level of individual learning ability.

I need to make one thing clear about the meaning of "level of learning ability." Certainly general intelligence is part of it, but I think it also includes previous exposure to the content, readiness to learn, motivation, and perhaps other factors. I have a higher level of ability to learn new things about adult learners (a content area with which I have had previous experience) than to learn new things about nuclear physics (a content area that is totally strange to me).

Let me illustrate how I see this model working in an HRD program. If the operation to be learned is fairly simple (such as operating a simple machine) and the learners' level of learning ability is fairly low, then the behaviorist theories are in touch with that reality, and programmed instruction, linear computer-assisted instruction, behavior modification, or drill are appropriate strategies. If the learning task is moderately complex (such as gaining a knowledge and understanding of the theory behind the operation of the machine), then the cognitive theorists are in touch with that reality, and didactic teaching is appropriate. But if the learning task is highly complex (such as learning to be a more effective manager) and the learners' level of learning ability is high, the humanistic theorists are in touch with that reality, and self-directed learning projects are appropriate. For guidance in selecting the appropriate theorists, I have indicated in Figure 5-3 where I see the major theorists fitting on the continuum.

But if we take seriously the idea of this being a continuum, with self-directed inquiry being the highest form of learning, then we have an

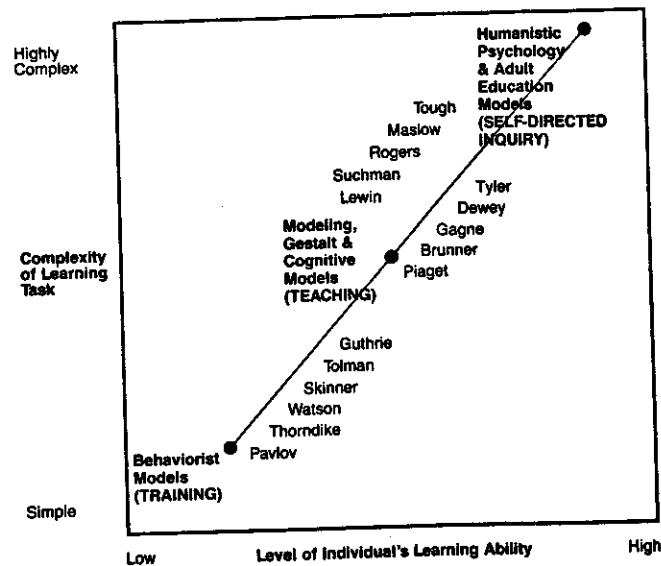


Figure 5-3. Relationship between teaching models and the learning situation.

obligation to build into our strategies at each level some learning experiences that will help learners move up the continuum. A computer-assisted program could have some branching episodes that help learners upgrade their skills in using teachers and other resource people. Didactic instructors could provide some independent study projects that help learners increase their skill in self-directed inquiry. It has been my experience, in fact, that highly skillful self-directed learners make more effective use of behaviorist programs and didactic teachers than dependent learners do; the more proficient we become as self-directed learners, the better we can make use of all kinds of learning resources. (For case descriptions of self-directed learning programs in a variety of settings, see Boud, 1981; Knowles, 1984, 1986.)

Drop the Education of Individuals in Favor of Organization Development

You can take the stand that the training, teaching or self-development of individuals make little long-run difference in the productivity, morale, or effectiveness of the organization, and that therefore the energy of the human resources developer should be directed at changing the organization as a total system. Given this definition of the purpose of human resources development, learning and teaching theories geared to individual development are more or less irrelevant; theories of organizational change are what count.

I must confess that I have experienced a shift in my role as an adult educator away from managing the logistics of learning activities for collections of individuals and toward educating institutions, influencing the educative quality of whole environments. And I see a similar shift occurring in the professional work of many of my colleagues and former students. But I don't see this as an either-or dilemma; there is need for both the direct facilitation of the development of individuals and the indirect facilitation of their development through improving the educative quality of their environments.

Take the Best from Each Theory

It is natural that in the early development of the relevant sciences the applied users, the technologists, will tend to be eclectic, picking up a

plausible idea here and there, and using it somewhat inventively in the practical situation. [Hilgard and Bower, 1966, p. 265]

Schwab believes that there are "arts of eclectic" which contribute to the teacher's ability "to bring a multiplicity of theoretic stands to bear on the concrete case, thus ensuring a wider view of the hardships and facilitations to be expected in the course of instruction." [Schwab, 1971, p. 506]

The risks of this choice are similar to those of the first choice, ignoring the theories altogether, ending up with a hodgepodge and not knowing why you are doing what you do. Rogers has observed that "the person who attempts to reconcile [different schools of thought] by compromise will find himself left with a superficial eclecticism which does not increase objectivity, and which leads nowhere." [Rogers, 1951, p. 8]

Hilgard again comes to our rescue.

The option is still open of attempting to guide practical developments by way of one or another of the prevailing theories, or by developing some new model which has more unity than a set of eclectic 'principles.' [Hilgard and Bower, 1966, p. 565]

Here is a skeletal description of my andragogical model of human resources development. It is based on the assumptions about adults as learners presented in Chapter 3 and incorporates features of various prevailing theories that make sense to me.

An Andragogical Model of HRD

Two comprehensive treatments of the andragogical model and its application to the designing and operating of adult educational programs of various sorts are available: Knowles, *Modern Practice of Adult Education*, 1980, and Ingalls and Arceri, *A Trainer's Guide to Andragogy*, 1972. Some moving observations about the application of andragogy to developing countries are contained in Appendix N.

The main purpose here is to demonstrate how a unified model can incorporate principles and technologies from various theories and still maintain its own integrity.

The andragogical model is a *process* model, in contrast to the content models employed by most traditional educators. The

Table 5-3
A Comparison of the Assumptions and Designs of Pedagogy and Andragogy

	Assumptions		Design Elements	
	Pedagogy	Andragogy	Pedagogy	Andragogy
Self-concept	Dependency	Increasing self-directiveness	Climate	Mutuality Respectful Collaborative Informal
Experience	Of little worth	Learners are a rich resource for learning	Planning	Mechanism for mutual planning
Readiness	Biological development social pressure	Developmental tasks of social roles	Diagnosis of needs	Mutual self-diagnosis
Time perspective	Postponed application	Immediacy of application	Formulation of objectives	Mutual negotiation
Orientation to learning	Subject centered	Problem centered	Design	Sequenced in terms of readiness
			Activities	Problem units Experimental techniques (inquiry)
			Evaluation	Mutual re-diagnosis of needs Mutual measurement of program

difference is this: in traditional education the teacher (or trainer or curriculum committee or somebody) decides in advance what knowledge or skill needs to be transmitted, arranges this body of content into logical units, selects the most efficient means for transmitting this content (lectures, readings, laboratory exercises, films, tapes, etc.), and then develops a plan for presenting these content units in some sort of sequence. This is a *content model* (or design). The andragogical teacher (facilitator, consultant, change agent) prepares in advance a set of procedures for involving the learners (and other relevant parties) in a process involving these elements: (1) establishing a climate conducive to learning; (2) creating a mechanism for mutual planning; (3) diagnosing the needs for learning; (4) formulating program objectives (which is content) that will satisfy these needs; (5) designing a pattern of learning experiences; (6) conducting these learning experiences with suitable techniques and materials; and (7) evaluating the learning outcomes and re-diagnosing learning needs. This is a *process model*. The difference is *not* that one deals with content and the other does not; the difference is that the content model is concerned with transmitting information and skills whereas the process model is concerned with providing procedures and resources for helping learners acquire information and skills. A comparison of these two models and their underlying assumptions is presented in Table 5-3 in which the content model is conceived as being pedagogical and the process model as being andragogical.

Establishing a Climate Conducive to Learning

Just as we have witnessed in the past decade a growing concern for the quality of our environment for living, so during the same period there has been increasing concern among educators for the quality of *environments for learning*. From the ecological psychologists we have begun to obtain valuable information about the effects of the physical properties of environment on learning. The social psychologists have taught us much about the effects of the human environment—especially the quality of interpersonal relations. And from the industrial psychologists have come many useful insights about the effects of the organizational environment—the structure, policies, procedures, and spirit of the institution in which learning takes place.

The *physical environment* requires provision for animal comforts (temperature, ventilation, easy access to refreshments and rest rooms, comfortable chairs, adequate light, good acoustics, etc.) to avoid blocks to learning. More subtle physical features may make even more of an impact. Ecological psychologists are finding, for example, that color directly influences mood; bright colors tend to induce cheerful, optimistic moods, and dark or dull colors the opposite.

If you are saying, "But what can I, a mere educator, do about the color of my institution?" let me share an experience I had several years ago. I was meeting with a class of about 50 students in a large classroom in the basement of one of our university buildings. The windows were small and transmitted very little light, so we had to have the yellow ceiling lights on all the time. The walls were painted dusty institutional beige, and two walls were ringed with black chalkboards. During the third meeting of the class, I became conscious of the fact that this class wasn't clicking the way most classes do, and I shared my feeling of discouragement with the students. It took them no time at all to diagnose the problem as being the dolorous environment of our meetings.

One of our learning-teaching teams agreed to experiment with our environment at the next meeting. They went to the dime store and bought brightly colored construction paper and a variety of other materials and objects, the total cost of which was under \$5, and made collages for the walls, mobiles for the ceiling and simulated flagstones for the floor. What a happier mood characterized our fourth meeting!

Ecological psychologists also suggest that the size and layout of physical space affects learning quality. In planning the new Kellogg Centers for Continuing Education during the past several decades, great emphasis has been placed on providing small discussion-group-size rooms in close proximity to larger general-session-size rooms. All of them have been provided with round, oval, or hexagon-shaped tables to encourage interaction among the learners. [Alford, 1968; Knowles, 1980, pp. 163-165] This concern for environmental facilitation of interaction among the learners is supported by the behaviorists' concept of immediacy of feedback, the importance placed on the learner's having an active role by Dewey, and the utilization of the constructive forces in groups by field theorists and humanistic psychologists. [See especially, Alford, 1968; Bany and Johnson, 1964; Bergevin and McKinley, 1965; Jaques, 1984; Leypoldt, 1967; Mouton and Blake, 1984; Zander, 1982]

Another aspect of the environment which all theorists agree is crucial to effective learning is the richness and accessibility of resources—both material and human. Provision of a basic learning resources center with books, pamphlets, manuals, reprints, journals, films, film strips, slides, tapes and other audio-visual aids and devices is a minimal requirement. In no dimension of education have there been more explosive developments in recent times than in educational media—closed circuit television, videotape and portable videotape machines, cassette audiotapes, technimation, teaching machines, multimedia systems consoles, a variety of information retrieval systems, amplified telephone (for telelectures), learning center systems, language laboratories, computer-assisted instruction and commercially produced simulations and games. [See Rossi and Biddle, 1966]

The important thing is not just that these resources are available but that learners use them proactively rather than reactively—although mechanistic and organismic theorists disagree on this.

Regarding the *human and interpersonal climate* there are useful concepts from many theories. Behaviorists, although not very concerned with psychological climate, would acknowledge that it may reinforce desired behaviors, especially in motivation and transfer or maintenance of learning. An institutional climate in which self-improvement is highly approved (and even better, concretely rewarded), is likely to increase motivation to engage in learning activities. And a climate which approves and rewards new behaviors will encourage the maintenance of these behaviors especially if it allows frequent practice of these new behaviors. This is why supervisors who learn Theory Y behaviors in an outside human relations laboratory so frequently revert to Theory X behaviors after returning to a Theory X environment.

Cognitive theorists stress the importance of a psychological climate of orderliness, clearly defined goals, careful explanation of expectations and opportunities, openness of the system to inspection and questioning, and honest and objective feedback. The cognitive theorists who emphasize learning by discovery also favor a climate that encourages experimentation (hypothesis-testing) and is tolerant of mistakes provided something is learned from them.

Personality theorists, especially those who are clinically oriented, emphasize the importance of a climate in which individual and cultural differences are respected, in which anxiety levels are ap-

propriately controlled (enough to motivate but not so much as to block), in which achievement motivations are encouraged for those who respond to them and affiliation motivations are encouraged for those who respond to them, and in which feelings are considered to be as relevant to learning as ideas and skills. They prescribe a “mentally healthful” climate. [See especially, Waetjen and Leeper, 1966]

Humanistic psychologists suggest that we create psychological climates experienced by the individuals in them as safe, caring, accepting, trusting, respectful, and understanding. The field theorists among them especially emphasize collaboration rather than competitiveness, encouragement of group loyalties, supportive interpersonal relations and a norm of interactive participation.

The andragog would include these characteristics under the heading, An Atmosphere of Adulthood, but would give added emphasis to the conditions of mutuality and informality in the climate.

The notion of an *organizational climate* involves several sets of ideas. One set has to do with the policy framework undergirding the HRD program. In some organizations personnel development is relegated to peripheral status in the policy framework (and therefore, there is not much reinforcement of motivation to engage in it). But contemporary organization theorists (Argyris, Bennis, Blake, Drucker, Lippitt, Likert, MacGregor, Odiorne, Schein) assign it a central role in the achievement of organizational goals, and this is the trend among at least the largest organizations. [For examples of policy statements, see Craig and Bittel, 1967, pp. 493-506; and Knowles, 1980, pp. 274-294]

Another set of ideas regarding organizational climate has to do with management philosophy. As discussed earlier in this chapter, a Theory X management philosophy provides an organizational climate that almost dictates mechanistic models of training, and a Theory Y philosophy requires an organismic (and probably humanistic) model of HRD.

A third aspect of organizational climate, closely related to the second and possibly a part of it, is the structure of the organization. A number of studies have shown that in hierarchically structured organizations there is less motivation for self-improvement and more blocks to learning (such as high anxiety) than in organizations more functionally structured such as by interlinked work groups or by project task forces. [See Marrow, Bowers, and Seashore, 1968; Katz

and Kahn, 1966; and Likert, 1961 and 1967] The rapid growth of quality circles in recent years is another manifestation of this trend.

Organizational climate is also affected by financial policies. At the most primary level, the sheer amount of financial resources made available to HRD influences attitudes toward personnel development all the way down the line. When employees see that their organization values HRD highly enough to support it liberally, they are likely to value it—and vice versa. And if in times of austerity, it is the first budget to be reduced, it will come to be seen as a peripheral activity. Perhaps the ultimate signal that an organization has a deep commitment to human resources *development* is when the HRD budget is handled as a *capital investment* (like a new building) rather than as an operating cost. [See Carnevale, 1983; Eurich, 1985]

Finally, a most crucial determinant of climate is the reward system. All learning and teaching theorists would jump on the S-R theorists' bandwagon in acknowledging that those behaviors (including engaging in education) that are rewarded are likely to be maintained. Accordingly, in those organizations in which participation in the HRD program is given obvious weight in wage and salary increases, promotion, and other job emoluments, the climate will certainly be more conducive to learning than in organizations in which the attitude is that learning should be its own reward.

In my own andragogical model, climate setting is probably the most crucial element in the whole process of HRD. If the climate is not really conducive to learning, if it doesn't convey that an organization values human beings as its most valuable asset and their development its most productive investment, then all the other elements in the process are jeopardized. There isn't much likelihood of having a first-rate program of educational activities in an environment that is not supportive of education.

This emphasis on organizational climate has grave implications for the role of the Human Resources Developer. For it implies that of the three roles Nadler assigns to him [Nadler, 1970, pp. 174-246], by far the most critical is the role of *consultant*, within which the most critical subroles are those of advocate, stimulator, and change agent. If the human resources developer sees himself essentially as a teacher and administrator, managing the logistics of learning experiences for collections of individuals, he will have little influence on the quality of the climate of his organization. Only if he defines his client as the total organization, and his mission as the improvement of its quality as an environment for the growth and develop-

ment of people, will he be able to affect its climate. This means that he must perceive management to be a prime target in his student body, and all the line supervisors as part of his facility. In this conceptualization, training is not a staff function; it is a line function. The job of the Human Resources Developer is to help everybody be a better educator.

The theories most relevant to this set of functions are those of systems analysis [Baughart, 1969; Bushnell and Rappaport, 1972; Davis, 1966; Handy and Hussain, 1969; Hare, 1967; Hartley, 1968; Kaufman, 1972; Leibowitz, et al, 1986; Optener, 1965; and Schuttenberg, 1972], change theory, consultation, and intervention theory [Arends and Arends, 1977; Argyris, 1962, 1970; Baldrige, 1977; Bennis, 1966; Bennis, Benne, and Chin, 1968; Blake and Mouton, 1964, 1976; Eiben and Milliren, 1976; Goodlad, 1975; Greiner, 1971; Hornstein, 1971; Lippitt, 1969, 1978; London, 1988; Martorana and Kuhns, 1975; Nadler and Wiggs, 1986; Tedeschi, 1972; Tough, 1982; Watson, 1967; Zurcher, 1977]

Creating a Mechanism for Mutual Planning

One aspect of educational practice that most sharply differentiates the pedagogical from the andragogical, the mechanistic from the organismic, and the "teaching" from the "facilitating of learning" schools of thought is the role of the learner in planning. In the first half of each of the above pairs responsibility for planning is assigned almost exclusively to an authority figure (teacher, programmer, trainer). But this practice is so glaringly in conflict with the adult's need to be self-directing that a cardinal principle of andragogy (and, in fact, all humanistic and adult education theory) is that a mechanism must be provided for involving all the parties concerned in the educational enterprise in its planning. One of the basic findings of applied behavioral science research is that people tend to feel committed to a decision or activity in direct proportion to their participation in or influence on its planning and decision-making. The reverse is even more relevant: people tend to feel *uncommitted* to any decision or activity that they feel is being imposed on them without their having a chance to influence it.

It is for this reason that the most potent HRD programs almost always have planning committees (or councils or task forces) for every level of activity: one for organization-wide programs, one for each departmental or other functional group program, and one for each learning experience. There are guidelines for selecting and utilizing these planning groups that will help to assure their being helpful and effective rather than the ineffectual nuisances that stereotypic committees so often are. [See Houle, 1960, 1989; Knowles, 1980, pp. 72-78; Shaw, 1969; Trecker, 1970]

Merely having mechanisms for mutual planning will not suffice. They must be treated in good faith, with real delegation of responsibility and real influence in decision making, or they will backfire. Avoid playing the kind of game that Skinner cites (whether with approval or not I can't quite tell) from Rousseau's *Emile*.

Let [the student] believe that he is always in control though it is always you [the teacher] who really controls. There is no subjugation so perfect as that which keeps the appearance of freedom, for in that way one captures volition itself. The poor baby, knowing nothing, able to do nothing, having learned nothing, is he not at your mercy? Can you not arrange everything in the world which surrounds him? Can you not influence him as you wish? His work, his play, his pleasures, his pains, are not all these in your hands and without his knowing it? Doubtless he ought to do only what he wants; but he ought to want to do only what you want him to do; he ought not to take a step which you have not predicted; he ought not to open his mouth without your knowing what he will say. [Skinner, 1968, p. 260]

Diagnosing the Needs for Learning

Constructing a Model

Constructing a model of desired behavior, performance, or competencies is an effective vehicle for determining learning needs. There are three sources of data for building such a model: the individual, the organization, and the society.

To the cognitive, humanistic, and adult education (andragogical) theorists the individual learner's own perception of what he wants to become, what he wants to be able to achieve, at what level he wants to perform, is the starting point in building a model of competen-

cies; to the behaviorists such subjective data are irrelevant. (And, incidentally, andragogs prefer *competencies*—requisite abilities or qualities—whereas the behaviorists prefer *behavior*—manner of conducting oneself—or performance.) It is not assumed that the learner necessarily starts out contributing his perceptions to the model; he may not know the requisite abilities of a new situation. The human resources developer has some responsibility for exposing him to role models he can observe, or providing him with information from external sources, so that he can begin to develop a realistic model for himself.

Organizational perceptions of desired performance are obtained through systems analyses, performance analyses [Mager, 1972], and analyses of such internal documents as job descriptions, safety reports, productivity records, supervisors' reports, personnel appraisals, and cost/effectiveness studies.

Societal perceptions of desired performance or competencies are obtained from reports by experts in professional and technical journals, research reports, periodical literature, and books and monographs.

The model that is then used in the diagnostic process is ideally one that represents an amalgamation of the perceptions of desired competencies from all these sources, but in case of conflicting perceptions, my practice is to negotiate with the conflicting sources—usually the organization and the individual. I make no bones about the fact that there are "givens" in every situation—such as minimal organizational requirements, and that we have to accept and live with them.

Commercial firms can be contracted with to develop competency models. Among the most experienced in the field are the Competency Development Corporation in Arlington, Massachusetts, McBer Company in Boston, and McGlagan Associates in Minneapolis. A more common (and less expensive) method is through the use of task forces composed of representatives of the individuals, the organization, and society. Westinghouse used task forces to develop the model illustrated in Appendix G. The model presented in Appendix J was developed by a task force of faculty, students, experienced practitioners, and employers. An elaborate model of the competencies for performing the role of human resource developer, developed by a combination of the above strategies, can be obtained from the American Society for Training and Development in Washington, D.C.

In my own experience the excellence of the model is not the most critical factor in the contribution that competency-based education makes to the effectiveness of the learning. The most critical factor is what it does to the mind-set of the learner. When learners understand how the acquisition of certain knowledge or skill will add to their ability to perform better in life, they enter into even didactic instructional situations with a clearer sense of purpose and see what they learn as more personal. It converts course takers and seminar participants into competency developers. [For references on competency-based education, see Berte, 1975; Blank, 1982; Grant, 1979; Torshen, 1977.]

Assessing Discrepancies

A learning need can be defined as the discrepancy or gap between the competencies specified in the model and their present level of development by the learners.

According to andragogy, the critical element in the assessment of the gaps is the learners' own perception of the discrepancy between where they are now and where they want (and need) to be. So the assessment is essentially a self-assessment, with the human resource developer providing the learners with the tools and procedures for obtaining data and making responsible judgments about their level of development of the competencies. Humanistic psychologists would urge the human resource developer to provide a safe, supportive, nonthreatening atmosphere for what could be an ego-deflating experience. Behaviorists have developed a variety of feedback-yielding tools and procedures that can be adapted to the self-assessment process. See Appendix J for an example of a self-diagnostic tool.

Examples of programs that incorporate the most advanced concepts and technologies of model-building and discrepancy-assessment in industry are the ROCOM Intensive Coronary Multimedia Learning System (ROCOM, 1971), the General Electric Corporation Career Development Program (Storey, 1972, and the Westinghouse Electric Company's Executive Forum (Appendix G). In higher education outstanding examples are Alverno College in Milwaukee, Holland College in Prince Edward Island, the McMaster University Schools of Nursing and Medicine in Hamilton, Ontario, and the University of Georgia School of Social Work. Other sources of information about tools and procedures for diagnosing needs for learning are: Hospital

Continuing Education Project, 1970, pp. 7-34; Ingalls and Arceri, 1972; pp. 20-34; Knowles, 1980, pp. 82-119, 1984; and Tough, 1979, pp. 64-75.

Formulating Program Objectives

At this point we hit one of the raging controversies among theorists.

Behaviorists insist that objectives are meaningless unless they describe *terminal behaviors* in very precise, measurable, and observable terms. Gagne, for example, defines an objective as . . .

. . . a verbal statement that communicates reliably to any individual (who knows the words of the statement as concepts) *the set of circumstances that identifies a class of human performances . . .* The kind of statement required appears to be one having the following components:

1. A *verb* denoting observable action (draw, identify, recognize, compute, and many others qualify; know, grasp, see, and others do not)
2. A description of the *class of stimuli* being responded to [for example, "Given the printed statement $ab + ac = a(b + c)$ "]
3. A word or phrase denoting *the object used for action* by the performer, unless this is implied by the verb (for example, if the verb is "draw," this phrase might be "with a ruling pen,,"; if it is "state," the word might simply be "orally")
4. A description of the *class of correct responses* (for example, "a right triangle," or "the sum," or "the name of the rule." [Gagne, 1965, p. 243]

Mager gives some practical guidelines for defining objectives.

1. A statement of instructional objectives is a collection of words or symbols describing one of your educational *intents*.
2. An objective will communicate your intent to the degree you have described what the learner will be DOING when demonstrating his achievement and how you will know when he is doing it.
3. To describe terminal behavior (what the learner will be DOING):
 - a. Identify and name the over-all behavior act.
 - b. Define the important conditions under which the behavior is to occur (givens and/or restrictions and limitations).
 - c. Define the criterion of acceptable performance.

4. Write a separate statement for each objective; the more statements you have, the better chance you have of making clear your intent.
5. If you give each learner a copy of your objectives, you may not have to do much else. [Mager, 1962, p. 53]

Moving up the scale from the behaviorists, Taba—with a more cognitive orientation—gives “principles to guide the formulation of objectives.”

A statement of objectives should describe both the kind of behavior expected and the content or the context to which that behavior applies.

Complex objectives need to be stated analytically and specifically enough so that there is no doubt as to the kind of behavior expected, or what the behavior applies to.

Objectives should also be so formulated that there are clear distinctions among learning experiences required to attain different behaviors.

Objectives are developmental, representing roads to travel rather than terminal points. [Note that at this point she departs sharply from the behaviorists.]

Objectives should be realistic and should include only what can be translated into curriculum and classroom experience.

The scope of objectives should be broad enough to encompass all types of outcomes for which the school [program] is responsible. [Taba, 1962, pp. 200-205]

In elaboration on her last point, Taba develops a classification of objectives by types of behavior.

Knowledge (facts, ideas, concepts)
 Reflective thinking (interpretation of data, application of facts and principles, logical reasoning)
 Values and attitudes
 Sensitivities and feelings
 Skills [Taba, 1962, pp. 211-228]

Building on the thinking of Tyler (1950), as did Taba, Houle identifies these attributes of objectives.

An objective is essentially rational, being an attempt to impose a logical pattern on some of the activities of life.

An objective is practical

Objectives lie at the end of actions designed to lead to them.

Objectives are usually pluralistic and require the use of judgment to provide a proper balance in their accomplishment.

Objectives are hierarchical.

Objectives are discriminative.

Objectives change during the learning process. [Houle, 1972, pp. 139-142]

He goes on to give guidelines for stating objectives.

Educational objectives may be stated in terms of the desired accomplishments of the learner.

Educational objectives may also be stated in terms of the principles of action that are likely to achieve desired changes in the learner.

The understanding and acceptance of educational objectives will usually be advanced if they are developed cooperatively.

An objective should be stated clearly enough to indicate to all rational minds exactly what is intended.

In many teaching and learning situations, but particularly in those sponsored by institutions, objectives can be stated not only in terms of the outcomes of education but also in terms of changes in the design components which will presumably make those outcomes better. (facilitative objectives) [Houle, 1972, pp. 147-149]

Theorists who see learning as a process of inquiry expressly (and sometimes rather vehemently) reject the idea that there should be pre-set or prescribed objectives at all. Schwab, for example, takes an unequivocal position.

Educators have long been accustomed to ask at this point in a curricular discussion, “What is the intended outcome?” The question arises from the dogma that curriculums should be devised, controlled, and evaluated in the light of “objectives” taken as the leading principles. Consideration of the practical character of curriculum and instruction convinces me that this dogma is unsound . . . I do not intend or expect one outcome or one cluster of outcomes but *any one* of several, a plurality. Recognizance of the several stems from consideration not of possible outcomes, but of the materials under treatment:

pluralities of theory, their relations to the matter they try in their various ways to subsume, their relations to one another. [Schwab, 1971, p. 540]

Tough (1979), in his analysis of how adults actually engage in independent learning projects, found that goals tended to emerge organically as part of the process of inquiry, with various degrees of clarity and preciseness, and to be continuously changing, subdividing, and spawning offspring.

Maslow, with his conception of self-actualization as the ultimate aim of learning, also sees goal-formation as a highly dynamic process occurring through the interaction of the learner with his experience.

As might be expected, such a position has certain implications for helping us to understand why conventional education in this country falls so far short of its goals. We shall stress only one point here, namely, that education makes little effort to teach the individual to examine reality directly and freshly. Rather it gives him a complete set of prefabricated spectacles with which to look at the world in every aspect, e.g., what to believe, what to like, what to approve of, what to feel guilty about. Rarely is each person's individuality made much of, rarely is he encouraged to be bold enough to see reality in his own style, or to be iconoclastic or different. [Maslow, 1970, p. 223]

Other theorists focus primarily on developing the skills of self-directed inquiry, holding that all other substantive learning objectives flow from the process of accomplishing this one. [Allender, 1972, pp. 230-238; Appendix D]

Perhaps these differences in viewpoint on objectives are partly reconcilable by assigning the more terminal-behavior-oriented procedures to training and the more inquiry-process-oriented procedures to education, much the way we handled teaching models in Figure 5-3. Even then, according to andragogical theory, the learner is likely to resist unless he freely chooses them as being relevant to his self-diagnosed needs. Among the most helpful treatments of the process of formulating objectives in adult education are Brookfield, 1986, pp. 209-220; Hospital Continuing Education Project, 1970, pp. 35-46; Houle, 1972, pp. 136-150 and 200-212; Ingalls and Arceri, pp. 35-42; and Knowles, 1980, pp. 120-126.

Designing a Pattern of Learning Experiences

To the behaviorists program design is essentially a matter of arranging contingencies of reinforcement so as to produce and maintain the prescribed behaviors. To cognitive and inquiry theorists it is a matter of arranging a sequence of problems that flow according to organic stages of development, and providing appropriate resources for the solving of these problems by the learner. [Bruner, 1966, pp. 71-112; Suchman, 1972, pp. 147-159] To the *third force* psychologists it is a matter of providing supportive environments (usually relatively unstructured groups) in which the participants (learners and trainers together) can help one another grow in existentially determined directions. [Rogers, 1969]

Adult education theorists have tended to build design models into which aspects of all these approaches can be fitted. The three most recent are by Knowles, Tough and Houle (in order of publication). The andragogical design model involves choosing problem areas that have been identified by the learners through self-diagnostic procedures and selecting appropriate formats (individual, group, and mass activities) for learning, designing units of experiential learning utilizing indicated methods and materials, and arranging them in sequence according to the learners' readiness and aesthetic principles. [Ingalls and Arceri, 1972, pp. 43-49; Knowles, 1980, pp. 127-154]

Tough (1979) employs the concept of a *learning project* consisting of a series of related *episodes* as his basic framework for program design. A program would consist of a number of simultaneous individual and group learning projects, each project having been collaboratively planned by learners and selected helpers and carried on at the learners' initiative. The learners could use the whole gamut of human resources (experts, teachers, colleagues, fellow students, people in the community) and material resources (literature, programmed instruction devices and software, and audio-visual media) almost without regard for the theoretical orientation underlying them. Even the most didactic teacher or linear teaching machine program will be used proactively rather than reactively by a self-directed learner.

Houle (1972) has developed a fundamental system of educational design which was described in outline in Chapter 4 and is recapitulated in graphic form in Table 5-4 and Figure 5-4.

One final observation about program design flows from these adult educational models. They assume a high degree of responsibility for learning to be taken by the learner; in the andragogical and learning projects models, especially, the entire systems are built around the concept of self-directed learning. But by and large, the adults we work with have not learned to be self-directing inquirers; they have been conditioned to be dependent on teachers to teach them. And so they often experience a form of culture-shock when first exposed to truly adult educational programs.

For this reason, I am increasingly building into my designs of programs for new entrants a preparatory *learning-how-to-learn* activity. This activity may range from an hour to a day in length, depending upon the length and intensity of the total program, and consists of the following elements:

First, a brief explanation of the difference between proactive and re-active learning, along the lines presented in Appendix H.

Table 5-4
Major Categories of Educational Design Situations

Individual
An individual designs an activity for himself An individual or a group designs an activity for another individual
Group
A group (with or without a continuing leader) designs an activity for itself A teacher or group of teachers designs an activity for, and often with, a group of students A committee designs an activity for a larger group Two or more groups design an activity which will enhance their combined programs of service
Institution
A new institution is designed An institution designs an activity in a new format An institution designs a new activity in an established format Two or more institutions design an activity which will enhance their combined programs of service
Mass
An individual, group, or institution designs an activity for a mass audience

Source: Cyril O. Houle, *The Design of Education* (San Francisco: Jossey-Bass, 1972), p. 44.

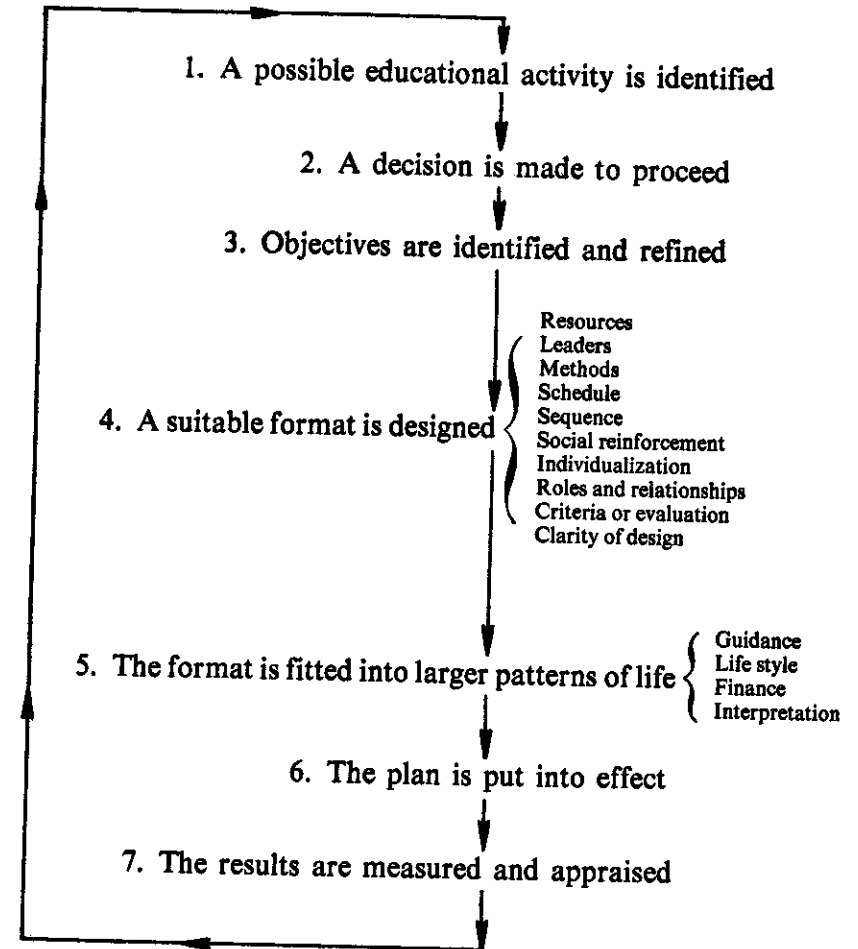


Figure 5-4. Houle's fundamental system: decision points and components of an adult educational framework. [Houle, 1972, p. 47]

Second, a short experience in identifying the resources of the participants (who knows what, or has had experience doing what) and establishing collaborative, I-Thou (rather than It-It) relationships with one another as human beings. For this exercise I use groups of four or five participants.

Third, a miniproject in using the skills of proactive learning described in Appendix H, such as reading a book proactively, or using a supervisor proactively.

It has been my experience that even a brief experiential encounter with the concepts and skills of self-directed learning helps adults to feel more secure in entering into an adult educational program. For a manual on how to help people become self-directed learners, see Knowles, *Self-Directed Learning: A Guide for Learners and Teachers*, 1975. [See also: Brookfield, 1986; Daloz, 1986; Long, et al, 1988; Moore and Willis, 1989; Robertson, 1988; Rountree, 1986; Smith, 1981, 1988.]

Operating the Program (Conducting Learning Activities)

This element of the program development process is concerned focally with the human resources developer's role as administrator, and learning-teaching theories have very little to say about this role. Nadler, [1970, pp. 202-231] describes the functions associated with this role, and ideas about how to carry them out andragogically are developed in Ingalls and Arceri, 1972, pp. 54-62 and Knowles, 1980, pp. 155-197.

I see the centrally crucial factor in program operation to be the quality of faculty resources. The current manpower sources for teachers of HRD activities contain people who only know how to teach in the traditional pedagogical fashion, since this is the way they were taught or were taught to teach. You can't rely very much on selection procedures to provide you with good teachers. You have to train them yourself, through both preservice and inservice educational programs. I would say that the single most critical aspect of your role as program administrator is your function as a developer of human resources development personnel. [See Knowles, 1980, pp. 159-162]

Evaluating the Program

Here is the area of greatest controversy and weakest technology in all of education, especially in adult education and training. As Hilgard points out regarding educational technology in general, "*It has been found enormously difficult to apply laboratory-derived principles of learning to the improvement of efficiency in tasks with clear and relatively simple objectives. We may infer that it will be even more difficult to apply laboratory-derived principles of learning to the improvement of efficient learning in tasks with more complex objectives.*" [Hilgard and Bower, 1966, p. 542, italics in,

original] This observation applies doubly to evaluation, the primary purpose of which is to improve teaching and learning—not, as so often misunderstood, to justify what we are doing. One implication of Hilgard's statement is that difficult as it may be to evaluate training, it is doubly difficult to evaluate education.

Donald Kirkpatrick's [Craig and Bittel, 1976, pp. 18-1 to 18-27; Kirkpatrick, 1971, pp. 88-103] conceptualization of the evaluation process is the most congruent with andragogical principles and the most practical of all the formulations seen to date. He conceives of evaluation as four steps, all of which are required for an effective assessment of a program.

The first step is *reaction evaluation*, getting data about how the participants are responding to a program as it takes place—what they like most and least, what positive and negative feelings they have. These data can be obtained through end-of-meeting reaction forms, interviews or group discussions. It is usually desirable to feed back data from one session at the beginning of the next session, so that indicated program modifications can be negotiated.

The second step is *learning evaluation*, which involves getting data about the principles, facts, and techniques which were acquired by the participants. This step should include both pretests and posttests, so that specific gains resulting from the learning experiences can be measured. Performance tests are indicated (such as operating a machine, interviewing, speaking, listening, reading, writing, etc.) for skill learning. Either standardized or tailor-made information-recall tests or problem-solving exercises can be used to gauge knowledge. Such devices as attitudinal scales, role playing or other simulations, or critical-incident cases may yield helpful progress in attitude-learning.

The third step is *behavior evaluation*, requiring data such as observers' reports about actual changes in what the learner does after the training as compared with what he did before. Sources of this kind of data include productivity or time-and-motion studies, observation scales for use by supervisors, colleagues, and subordinates, self-rating scales, diaries, interview schedules, questionnaires, etc.

The fourth step is *results evaluation*, data for which are usually contained in the routine records of an organization—including effects on turnover, costs, efficiency, frequency of accidents or grievances or tardiness or absences, quality control rejections, etc.

The main difficulty in evaluation, as in research, is in controlling the variables sufficiently to be able to demonstrate that it was the training that was mainly responsible for any changes that occurred. For this reason, Kirkpatrick recommends using control groups whenever possible. The more recent works on program evaluation have tended to continue and deepen this emphasis on results: Brinkerhoff, 1986; Harris and Bell, 1986; Rae, 1986; Swanson and Gradous, 1988.

All learning and teaching theorists acknowledge the importance of evaluation. Behaviorists maintain that evaluation is built into their very process—when a learner makes an error in a frame of a teaching machine program it shows up immediately and corrective action is taken and if a program doesn't produce the prescribed behavior, it is modified until it does. They insist that evaluation is intrinsic to their process—not something that happens at a different time from learning. To some degree, Kirkpatrick's *reaction evaluation* employs this principle.

Cognitive theorists stress the importance of the learner's ability to retrieve and apply information to new problems as the key to evaluation, which is what *learning evaluation* is essentially about. Field theorists and humanistic psychologists emphasize the translation of learning into behavior back home or in the field (the humanists, of course, stressing self-actualizing behavior), which is the purpose of *behavior evaluation*. Organization theorists point out that unless desirable results can be demonstrated, management will withhold support from training—which is the essence of *results evaluation*.

I should like to add a fifth dimension which springs directly from the fundamental conception of adult education as continuing education—*redagnosis of learning needs*. If every learning experience is to lead to further learning, as continuing education implies, then every evaluation process should include some provision for helping the learners re-examine their models of desired competencies and reassess the discrepancies between the model and their newly developed levels of competencies. Thus repetition of the diagnostic phase becomes an integral part of the evaluation phase.

What has been said above describes the state of the art in program evaluation until very recently. But starting around 1977, the leading theorists and practitioners in the field of program evaluation began making almost a 180° turn in their very way of thinking about evalua-

tion. During the preceding 40 years, there had been a growing emphasis on *quantitative* methods of evaluation. The norm was set that if evaluation didn't have numbers and statistics attached to it, it wasn't respectable. In the late 1970s, evaluators began having second thoughts about what they were learning from their quantitative evaluations that was making so much difference in what was happening in programs. They began to realize that there is a difference between *measurement* and *evaluation*.

Evaluation, they began to report in the literature, requires getting inside the skulls of the participants—and inside the social systems in which they are performing—and finding out what is happening in their way of thinking, feeling, and doing. This is *qualitative* evaluation. It requires using such methods as participant observation, in-depth interviews, case studies, diaries, and other ways of getting "human" data. By getting the whole picture of "real-life" effects of a program first, they were then able to determine what quantitative data were needed to correlate real outcomes with program operations. So now the state of the art involves *both* quantitative and qualitative data, but with the qualitative coming first. The results have been astounding. So much more useful information is being obtained from this combination. The best current sources of information about this new development are Cronbach, 1980, Guba and Lincoln, 1981, and Patton, 1980, 1981, and 1982. This turn of events becomes even more convincing when one realizes that all of these people made their first reputations as leaders of the quantitative evaluation movement.

Contract Learning—A New Way to Put It All Together

Without question the single most potent tool I have come across in my more than half-century of experience with adult education is contract learning. It has solved more problems that plagued me during my first 40 years than any other invention. It solves the problem of the wide range of backgrounds, education, experience, interests, motivations, and abilities that characterize most adult groups by providing a way for individuals (and subgroups) to tailor-make their own learning plans. It solves the problem of getting the learner to have a sense of ownership of the objectives he or she will pursue. It solves the problem of identifying a wide variety of resources so that different learners can go to different resources for learning the same things. It solves the

problem of providing each learner with a visible structure for systemizing his or her learning. Finally, it solves the problem of providing a systematic procedure for involving the learner responsibly in evaluating the learning outcomes.

I now use learning contracts in all of my academic courses and in the in-service education programs in educational institutions, industry, and the professions in which I am a consultant. Learning contracts are being used by a number of continuing professional development programs in medicine, nursing, dentistry, engineering, social work, and the ministry. Appendix G describes how Westinghouse Electric Corporation uses the tool under a different label—"Continuing Personal Development Plan."

Turn to Appendix I to see how it works. [For other case descriptions, see Knowles, 1986.]

The Evolving Meaning of Human Resources Development

As I see it, Human Resources Development is more than just a higher sounding name for what we have always done. It is *not* just a synonym for training or in-service education or management development or even for manpower development. If it were only this, one or more of the traditional learning theories would serve.

I am beginning to visualize Human Resources Development as something deeper and more comprehensive than any of these concepts, and I hope that this book will stimulate others to sharpen the vision—a vision that includes McGregor's and Likert's (and others') conception of all organizations as human enterprises in their most vital essence. It includes the conception of systems theorists and organization development theorists of an organization as a dynamic complex of interacting subsystems of people, processes, equipment, materials, and ideas. It includes the conception of modern economic theorists that the input of human capital is an even more critical determinant of organizational output than material capital. It also includes the nuclear physicists' conception of an energy system that is infinitely amplifiable through the releasing of energy rather than the control of energy. It envisions the role of the Human Resources Developer as being perhaps more crucial than any other role in determining which organizations will be alive twenty years from now and which will be extinct.

I see a drastically new role evolving for the human resource developer as we begin to conceptualize an organization as a *system of learning resources*. The role of human resource developers then becomes that of manager of these systems—quite a different role from that of the past, as manager of the logistics of operating training programs of courses, workshops, seminars, and other scheduled activities.

In this new role they have to ask a very different set of questions from the questions they have traditionally asked. The first question they have to ask is, "What are *all* of the resources in our system that are potentially available for the growth and development of people?" A typical organization will come up with a list like this:

1. Scheduled instructional activities.
2. All line supervisors and managers.
3. Materials and media, including packaged programs, computer programs, and the like.
4. Content specialists (who often use their content specialty for work, but not for education).
5. Other individuals with special resources, including retired employees.
6. Community resources, including educational institutions and commercial providers.
7. Professional associations.

The second question the human resource developers will then have to ask is, "How can we make more effective use of these resources for the systematic and continuous development of our people?" And some of the answers they might come up with might look like this:

Scheduled instructional activities could be redesigned so as to be more congruent with principles of adult learning. The resource people conducting them could be given special training on how to treat learners as adults.

The line supervisors and managers could be exposed to the idea that their role is not just to supervise work, but to develop their people as well. Substantial blocks of time could be built into the supervisory training and management development programs dealing with the principles of adult learning and the skills of facilitating learning. The human resources developers and their staffs could be available to the line officers as consultants in performing their role as facilitators of

learning. An example of how the personnel in an organization can be coached to serve as tutors to others is described in Appendix K.

The materials and media could be selected according to their congruence with the theory of learning appropriate to the situations in which they will be used. They can be made more accessible to all the people in the system than is often the case now.

Information about the remaining resources—content specialists, other individuals, community resources, and professional associations—can be collected and put into a data bank, which can serve as a clearinghouse or educational brokering center. [see Heffernan, Macy, and Vickers, 1976]

Learning contracts—developed as an integral part of the supervisory process—can provide the means for helping individuals make use of all these resources in a systematic program of continuous self-development.

As systems of learning resources evolve, the human resources developers must increasingly radiate a professional confidence. It will no longer suffice to be a good learning specialist, a good administrator, and a good consultant. They will have to know more than learning specialists, administrators, and consultants know. They will have to know a new theory of human resources development and possess a new set of skills in applying that theory to their systems. How much more rewarding this role will be!

The idea of a system of learning resources is spelled out in more detail in Appendix D.