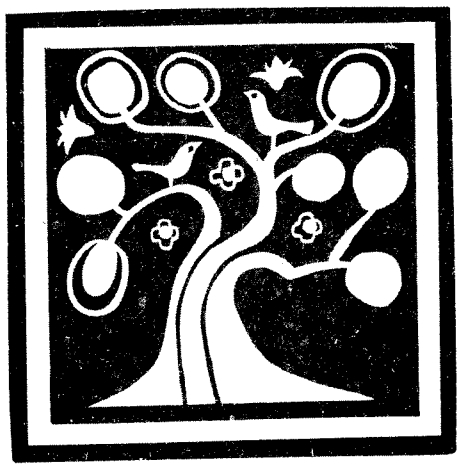
# Guiding the Process of Becoming

## The ANISA Theories of Curriculum and Teaching



BY DONALD T. STREETS AND DANIEL C. JORDAN

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# Guiding the Process of Becoming

## The ANISA Theories of Curriculum and Teaching

BY DONALD T. STREETS AND DANIEL C. JORDAN

THE FIELD of "curriculum is moribund." This was the expression one leading educator chose to describe the confusion and frustration educators, theorists, researchers, and national commissions have experienced in attempting to define curriculum, formulate theory about curriculum development, and design various curricula.[1] Needless to say, their efforts have been less than startling, and their best attempts have resulted only in proposals of a variety of experimental approaches and discussions of a number of basic issues related to the definition of a theory of curriculum rather than in the actual formulation of one.

Disciplines outside of education (e.g., systems analysis, decision theory) have also been drawn upon in the hope of gaining new perspectives on the development of a theory of curriculum. Yet such attempts have only demonstrated that borrowing from other disciplines models whose legitimacies are derived from data not pertinent to education is unwarranted. Such efforts, however, have not been entirely futile; for they have, by the process of elimination, laid to rest many unproductive approaches to the development of curriculum design, revealing the one remaining viable approach to the problem—namely, that curriculum design can hardly be considered apart from the development of a curriculum theory which in turn must be grounded in the knowledge of human development. This presents a dilemma because, as experts speculate, developing such a theory will take perhaps as long as fifty to one hundred years, while the pressures for curriculum revision are intense and immediate. In the meantime, pragmatic theorists such as Joseph J. Schwab, Arno Bellack, Daniel Tanner, George A. Beauchamp, Jerome S. Bruner, and Arthur W. Foshay suggest a variety of interim procedures to handle the immediate needs. In spite of the pessimism with which these writers speak of the likelihood of a comprehensive theory of curriculum being developed soon, some have suggested what such a theory should be able to do:

> When a comprehensive curriculum theory is built, it will have to take into account not only the learning methods and teaching methods ('strategies of instruction' and the like), but also the knowledge to be learned, the nature of the student who will learn it, and the nature of the societal responsibility shared by teacher and student. For if education is a moral affair before it is a technical affair, then the grounds for moral behavior have to be incorporated in one's theory of educational action.[2]

We have made certain that, as a minimum, the above conditions for developing a comprehensive curriculum theory have been met in the ANISA Model. Based on a

1. Joseph J. Schwab, *The Practical: A Language for Curriculum* (Washington, D.C.: National Education Association Publications, 1970), p. 1.
2. Arthur W. Foshay and Lois A. Beilin, "Curriculum," in Robert L. Ebel et al, eds., *Encyclopedia of Educational Research,* 4th ed. (New York: Macmillan, 1969), p. 276.

philosophy which views man as the pinnacle of creation—a spiritual being endowed with an infinitude of potentialities capable of endless expression, the Model defines development as the process of translating those potentialities into actuality and designates interaction with the environment as the means by which the process is sustained. Its theory of development provides a conceptual scheme that enables one to integrate a vast amount of research data on how human beings grow and develop. The ANISA theories of curriculum and pedagogy are logical derivatives of this theory of development.[3]

Curriculum, as we define it, is comprised of two interrelated sets of educational goals and what children do, usually with the help of peers and adults, to achieve those goals. One set of goals concerns information (content) to be learned. Culture is the source of the information, the organization of which rests on the classification of environments, and includes three basic symbol systems (mathematics, language, and art) used to convey that information. The other set of goals concerns process and rests on a classification of the potentialities of the human organism and the means by which those potentialities become actualized. Achieving the two sets of goals (content and process) results in the emergence of a personal identity—a Self, which, through gaining mastery over its environment and over the process of its own becoming, can take charge of its own destiny, the overriding purpose of the ANISA Model.

These goals cannot be fully achieved without the assistance of teachers. But what is teaching? If the individual's potentialities are actualized through interaction with his environment, it follows logically that teaching is arranging environments and guiding the child's interaction with them to achieve educational goals. Assisting the child to gain competence as a learner (process goals) while assimilating information about the environment (content goals) is the hallmark of good teaching. Process cannot exist without content. As the potentialities of the child become actualized, process and content are structured to form his identity—the Self.

### *Classification of Potentialities and the Process Curriculum*

AFTER EXAMINING the wide array of talents and abilities human beings possess, five basic categories of potentialities become evident: psychomotor, perceptual, cognitive, affective, and volitional. We have tentatively identified processes that underlie the development of learning competence in each area. Learning competence—knowing how to learn—*is the ability to differentiate aspects of experience, whether internal or external, integrate them into a new whole, and generalize the whole to different situations.*[4] Differentiation, integration, and generalization thus comprise the common denominator of all types of learning reflected in the different categories of potentialities.

3. The essence of theory is the statement of propositions about how "things" work, explanations of how phenomena pertinent to those things are related, and definitions of terms used in the propositions and explanations. Seen in this light, nothing is so practical and useful as a good theory. It is essential to efficient practice.
4. For example, the act of riding a bicycle involves the differentiation of a variety of different movements of different muscles which have to be integrated into patterns of movements which enable one to propel the bicycle forward while maintaining balance. Many of these movements already exist in the repertoire of the person when he comes to the task of learning to ride by the bicycle; his learning to ride requires identifying (differentiating) which movements are required and integrating them into a new whole or pattern. The new pattern may then be generalized to riding different kinds of bicycles, riding a motorcycle, a unicycle, or a variety of other similar activities.

Specifications on each of the basic processes in these five categories have been developed and constitute the process curriculum. Each specification contains the following: a definition of a particular process; its theoretical and empirical justification supported by a review of the pertinent research literature; an expression of the process in terms of an educational objective; an explanation of the kinds of experiences (interactions with particular environments) a child must have at given developmental levels in order to achieve the objective; and a statement on how the experiences can be evaluated so that we can be certain that what we are doing is taking us where we want to go. Thus the specifications of the ANISA Model form the foundation of our competency-based teacher preparation program; they also insure the replicability of the Model and facilitate cost-effectiveness determination. Mastery of the central processes in each category constitutes learning competence for that area. Thus, for example, psychomotor competence is learning competence in that area; and on it depends the development of psychomotor potentialities. The following are summaries of processes pertinent to the attainment of learning competence in each area.

*Psychomotor Potentialities.* Psychomotor competence refers to the capacity to coordinate, control, and direct the movement and position of voluntary muscles. As the child gains control of his muscles through the repeated experience of differentiating (generalizing) all his muscles and their possible movement patterns, and adapting the patterns to different situations, an internal organization called the motor-base develops.[5]

In essence, the motor-base is a positional and functional awareness of the parts of the body and its use as a reference point in time and space. Specific processes that contribute to the development of the motor-base are balance and posture and their subprocesses (laterality, verticality, and directionality), locomotion, manipulation, receipt, contact, and propulsion. While achieving psychomotor competence is the main task of the young child, perceptual, cognitive, volitional, and affective powers are also developing and becoming integrated with each other and with the motor-base.

*Perceptual Potentialities.* Perceptual competence refers to the ability to differentiate sensory information and to integrate that information into generalizable patterns which constitute interpretations of reality that enable one to make meaningful decisions and to act on them. Past experience, present needs, and aspirations or intentions which concern the future strongly influence one's organization and interpretation of stimuli. Through perception the organism is kept in touch with the actual world. A perceptual-base is developed as perceptual competence is gained, just as a motor-base is developed as psychomotor competence is achieved. The perceptual-base functions as a set of rules which generates and directs the basic processes of differentiation, integration, and generalization as they relate to perception. Processes in this area include those associated with sight, hearing, smell, taste, the cutaneous senses (touch or pressure, cold, hot, and pain) and the vestibular senses (which inform us of motion and enable us to maintain equilibrium).[6] Both vision and hearing have been defined by a large number of processes, mastery of which make up most of the important educational objectives of the perceptual area of the process curriculum.

*Cognitive Potentialities.* Cognition, generally associated with perception, frequently

5. George H. Early, *Perceptual Training in the Curriculum* (Columbus, Ohio: Charles E. Merrill Publishing Co., 1969), p. 5.
6. Frank A. Geldard, *The Human Senses,* 2nd ed. (New York: Wiley, 1972).

accompanied by muscular reactions and emotions, and usually guided by intention or purpose, is comprised of the elements which constitute thinking, an area of human functioning that still requires a great deal of clarification. Thinking develops as the child interacts with the environment just as all other potentialities do. Piaget describes this process as one in which the subject must act upon and transform objects in the environment.[7] He says the individual must "displace, connect, combine, take apart, and reassemble them." "Displace" and "take apart" are examples of differentiation; "connect," and "combine" and "reassemble," of integration and generalization.

Through the process of differentiation, integration, and generalization, internal structures develop which form the basis of cognitive competence. Among the more important cognitive processes are analysis, synthesis, classification, seriation, number relations, deductive and inductive inference, interpolation, extrapolation, analogy, and conservation. Some are developmental predecessors of others and are composed of differentiative and integrative functions operating in different ways at different levels. This by no means exhausts the list. We have identified approximately thirty others on which specifications are being developed.

*Affective Potentialities.* Affective competence is the ability to organize one's emotions and feelings in a way that supports and facilitates the release of further potentiality. Emotions are associated with all other processes; and if they are not organized well, all other areas are affected. How one feels about things is for the most part learned but rarely taught in any deliberate or conscious way. The organization of emotional behavior requires one to differentiate emotions and integrate them with reference to individuals, objects, and events or ideals and then generalize them in ways that provide a basic stability to life. Teachers can assist children to achieve affective competence through the example they set, by the relationship they establish with their students, and through providing children with consistent feedback on their behavior. While the goal of detailing a comprehensive theory of emotional development is yet to be accomplished, a large number of processes which contribute to gaining affective competence have been identified. They include inhibiting, coping with, managing, and facilitating emotions in terms of a sense of purpose or subjective aim. For example, coping with sadness or disappointment, managing anxiety, inhibiting a destructive impulse, or facilitating expressions of joy and gladness are all manifestations of affective competence.

*Volitional Potentialities.* Though there is a theoretical vacuum created by psychologists' rejection of volition, or will, as a meaningful aspect of human functioning, recent literature in psychology is attempting to correct this error. The vacuum was for the most part a consequence of a mechanistic view of man as a creature whose behavior is determined by external stimuli rather than by intention or some intrinsic determinant. And yet the vast number of changes which occur within the organism between stimulus and response and which provide the meaning that defines the relationship between the two make this position untenable. It is virtually impossible to make sense out of anyone's behavior without ascertaining his intention.

The philosophical basis of the ANISA Model identifies purpose in the life of man as an element of behavioral causality, just as physical forces or genetic inheritance are also part of causality; subjective aim or purpose is thus recognized as a critical element in the translation of all potentialities into actuality. Subjective aim guides and directs

7. Jean Piaget, *Genetic Epistemology* (New York: Norton, 1970), p. 704.

concrescence—the process of becoming—and provides criteria for making choices among a variety of possibilities. When subjective aim becomes conscious, we have clear intentions, and the volitional capacity is activated. Volitional competence rests on the ability to form ultimate aims, differentiate them into operable goals, and integrate them into a perpetual flow of intentional behavior directed toward achieving those goals. Some of the processes which relate to the development of volition are attention, goal-setting, self-arousal, perseverance, effecting closure, and fantasizing a state of goal attainment. While a great deal of research is still needed to understand fully the dynamics of volition, the above processes provide a rich beginning that will enable educators to address this area of human functioning.

### *Classification of Environments and the Content Curriculum*

JUST AS INDIVIDUALS can accumulate and store information about their experiences, societies incarnate ways of thinking, feeling, and acting. The totality of those ways we call culture. Thus one does not have to start from the beginning to discover things about the universe, for countless discoveries are recorded and maintained as part of the culture to which one belongs. The information a culture represents is the basic source of any given content curriculum. In the ANISA Model this information is organized around the classification of environments: the physical environment—which includes everything except human beings (mineral, vegetable, and animal); the human environment—which includes all the human beings one comes in contact with; the environment of unknowns and unknowables—the ultimate mysteries in the cosmos of which consciousness enables us to be aware, even if we do not know what constitutes them; and the Self—a reflection of the above three environments in a particular human being.

There are three interrelated symbol systems which mediate the assimilation of the content curriculum and mastery of the process curriculum, one for each of the first three environments listed: mathematics for the physical environment; language for the human environment; and art for the environment of the unknowns. Since the self as environment reflects the other three, all of the symbol systems are used to assimilate information about one's own self and to manage the overall process of self-actualization.

The focus of curriculum activities over the years has been on content rather than process. Consequently the organization of content as information has been worked out fairly well, and much of it is congruent with the structure of the ANISA Model's content curriculum. Information bears interpretation, and interpretation proceeds from knowing what assumptions one is making about the nature of man and the world around him. Although the ANISA content curriculum relies on information stored by a culture, it brings to bear on that information a broad and comprehensive philosophical perspective that has implications for how it is used in living one's life.

The organization of the content curriculum depends on the classification of environments and may be briefly summarized as follows:

For the *physical environment* it includes mathematics, natural sciences, natural history, and technology; for the *human environment,* language and communications (reading, writing, and speaking), social sciences, human relations, and ethics; for the *unknown environment,* art, aesthetics, philosophy, and religion; and for the *Self,* all of the above as they relate to the information accumulated about the Self. This information is organized around the categories of potentialities and includes body-aware-

ness, self-perception, self-concept, self-esteem, self-determination, physical health, the social-self, and the ideal-self.

The organization of the above is, of course, incomplete. All of the applied fields, such as law, engineering, or medicine, are not listed but nonetheless fit into the scheme. One of the basic new emphases in this organization is the education of the Self.

Because the environments are hierarchically arranged, the informational content of any one environment is related in particular ways to the others. Medicine, for instance, is the application of the natural sciences to the human organism and is incomplete without their integration with what is known about the particularly human or non-physical aspects of the organism (such as the role of perception or emotion in healing) and the part played by faith.[8] The arts and aesthetic and religious experience will have a bearing on both physical and mental health. Therapy heavily implicates learning.

The traditional curriculum, which is basically content-oriented, is organized vertically so that there is no transfer of knowledge horizontally among disciplines. In other words, a student generally proceeds from arithmetic, to geometry, to algebra, to trigonometry, to calculus, but not from arithmetic, to music, to physics, to social studies. Biologists often see no connection between their work and music; musicians, too, are frequently unaware of the relationship between their art and social studies, physical sciences, or mathematics. The ANISA Model provides for horizontal integration through its emphasis on process. If teachers teach their own specialty from a process point of view, horizontal integration takes place. For example, a biologist utilizing the cognitive process of classification in disseminating the information of his discipline can do it in a way that makes the student aware of both content *and the process.* When the student is subsequently engaged in a study of music and classification is required to organize information about music, classification as a process can be emphasized. In this way a good deal of what is learned in biology is transferable to music. Transferability of knowledge is a basic element of effectance or competence.

### *Fusion of Content with Process: The Formation of Attitudes and Values*

THE CHILD DEVELOPS through interaction with his total environment—a process which enables potentialities to become actualized, thereby becoming the basic powers of the organism. These powers are not expressed in random fashion; they are structured. As they become structured, factual information is integrated with them to form the attitudes and values which collectively constitute character and personality. The structuring takes place in relation to the various environments with which the child is interacting and results in the formation of value systems which reflect those respective environments. For example, as a child interacts with the physical environment, potentialities (psychomotor, perceptual, cognitive, affective, and volitional) are collectively released (process) and blended with selected information (content) about that environment to form material attitudes and values on which technological com-

8. Recognition of this fact led to the emergence of psychosomatic medicine, which deals with physical disorders which cannot be traced to organic causes. Many cardiovascular disorders, conversion hysterias, many kinds of allergies and asthma, some forms of paralysis, blindness, and deafness are well-documented psychosomatic illnesses. See W. R. Hess, *The Biology of Mind* (Chicago: Univ. of Chicago Press, 1964) for a full discussion of the interaction between mind and body.

petence rests. If such values put one in close touch with material reality, the person will be highly competent technologically.

Interaction with the human environment, in similar fashion, translates those same basic potentialities into structured powers which collectively and interrelatedly combine with information about mankind to form social attitudes and values on which a person's moral competence rests.

As one attempts to interact with the ultimate unknowns and to structure them, he forms ideals. This kind of interaction leads to the formation of religious attitudes and values on which spiritual competence rests.[9] To structure an unknown requires an act of faith and is therefore religious in that sense.

As the Self interacts with its own self within the context of the other environments, all the other values become integrated. This integration constitutes the structural and functional reality of personal identity—the fundamental expression of creativity inherent in all human beings. Personal effectance is determined by the quality of this integrated structuring. If the quality is good, the person will be both confident and competent to deal with his environment; and his capacity for self-transformation and


continual development will be insured. In other words, personal effectance is "self-competence"—a combination of technological competence, psychological competence, moral competence, and spiritual competence.

Furthermore, since the self includes parts of the physical and human environments, all of which include unknowns, the attainment of spiritual competence subsumes all other competencies. An individual's future, as well as his potentialities at any given time, are unknowns. With faith he can structure these unknowns by creating a self-ideal which serves as a standard that enables him to pursue a destiny consistent with it. If one cannot do this, all other potentialities are suppressed, because the absence of an ideal-self (which also reflects the combined ideals derived from interaction with the unknowns inherent in each of the other environments) means that there are no criteria by which the Self can make decisions about its own future. Without a sense of future, decisions will be made in terms of what brings immediate pleasure and what enables one to avoid pain or discomfort. Since facing unknowns always produces some degree of discomfort and anxiety, one is likely to avoid experiences which entail facing unknowns; and yet those are precisely the experiences that hold the greatest promise of facilitating self-actualization.

The explanation of personal identity in terms of value formation is the basic proposition of the ANISA Model's comprehensive value theory. To explain values solely in terms of affective considerations or by excluding content or information from that definition, as has been done by many value theorists and philosophers, is untenable.

9. "Religious" and "spiritual" are used as psychological terms rather than denominational ones. When a Buddha, a Moses, or a Christ appears and structures the unknown in ways that unify large numbers of people around those structures, a religion is founded.

All categories of potentialities and information are involved in the formation of values. Recognizing this, we have been compelled to define values as *relatively enduring organizations of actualized potentialities* (psychomotor, perceptual, cognitive, affective, and volitional) *blended with information about the environment which orient and predispose one to respond in a particular way to some aspect of the environment.* Values always include an evaluative or judgmental element which has implications for action. All the values become integrated around fundamental aims, purposes, or ultimate concerns to form the total value system. Attitudes are values in their differentiated forms; values are integrations of attitudes. The individual's character, his identity, is represented by the total value system—the integration of all his values. Education broadly defined thus means the process of value formation or character formation.

If there are serious problems with the integration of values, either because errors or falsehoods have been incorporated into them or because some processes have never been mastered, the person will lack effectance. He will have difficulty in relating to all environments including his own self. At some point the pathology will increase to the point of his becoming dysfunctional. Therapy or rehabilitation will then be required. The ANISA Model thus provides a comprehensive theoretical framework for understanding the nature of therapy and rehabilitation. It also forms the basis for understanding how education conceived in ANISA terms can help prevent mental illness and criminality—the two basic expressions of personal dysfunctioning.

### *The* ANISA *Theory of Teaching*

IF "curriculum is moribund," pedagogy will be ailing.[10] The ANISA theory of development may restore health to both. According to the theory, development is sustained by the organism's interaction with the environment. Thus it follows that teaching will take its definition from this premise. Teaching, therefore, means arranging environments and guiding interactions with them to achieve the goals specified by the theory of curriculum. The theory of pedagogy classifies arrangements and interactions in terms of those goals. Since the main goal is the development or achievement of learning competence, and since learning competence means the ability to differentiate, integrate, and generalize aspects of experience, environmental arrangements and interactions with them can be classified in terms of the particular aspect of learning competence they facilitate.

Some arrangements and some interactions may facilitate differentiation, while others may foster integration or generalization, or do all three. Furthermore, since children are differentiating, integrating, and generalizing on different developmental levels, the teacher must be able to make this kind of assessment before arranging the environments and guiding interaction. When the teacher can draw upon developmental theory to ascertain the child's level of functioning, his approach is more inclined to be diagnostic and prescriptive. In those instances where sufficient knowledge for making such a diagnosis is unavailable, the ANISA teacher will have to be speculative and experimental. In both cases improvisation will figure prominently, for both a prescription and an experiment will require elements of spontaneity in utilizing whatever is at hand to achieve a particular objective. Through such approaches an increasing amount

10. For an up-to-date discussion of what ails teaching, see Robert M. Travers, ed., *Second Handbook of Research on Teaching* (Chicago: Rand-McNally, 1973).

of knowledge will accumulate about the child's developmental level with regard to given processes and content, thereby enabling the teacher to become progressively more prescriptive when needed. Furthermore, as the child grows and develops, he will come to take a more active role in diagnosing his own needs and prescribing the arrangement of his own environments and his own interactions with them. He then becomes a teacher of his own Self—an independent learner.

### *Arranging Environments: Creating Opportunities for Differentiating, Integrating, and Generalizing on Different Developmental Levels*

AN ANALYSIS of the environment is necessary to determine the kinds of adjustments needed to guarantee that the children will have opportunities for differentiating, integrating, and generalizing experience appropriate to their developmental levels. There are several factors important for the analysis and arrangement of environments:

*Identification of Deficiencies.* Particular educational objectives pertinent to given developmental levels will require the presence of certain things in the environment. Suppose, for example, that the educational objective selected for a group of two or three year olds is strengthening the cognitive *process* of inductive inference while introducing Archimedes' principle concerning buoyancy as *content.* Archimedes' principle (on the level being considered here) states that a floating body sinks until it displaces its weight in water. A water table and an object light enough to float, but whose weight can be altered, are minimum requirements for the experience. We may use a bottle cap as the floating object and alter its weight by pouring water into it. Observation relating weight increases (because of pouring water into the cap) to sinking levels can thus be made. But children between two and three years of age are percept-bound; they cannot hold in memory a prior event (floating bottle cap with no water in it) and compare it with a subsequent event (the same bottle cap, half sunk, with some water in it). To make the comparison, children must be able to see both at once; thus, the two situations must exist simultaneously. One bottle cap is therefore not enough; it represents a deficiency that needs remedying. At least two caps are needed (and three or four are preferable) if the differentiation (in weights) is to be grasped, the different weights matched with different sinking levels (a form of integration), and the inference made. The process (inference) and the content (an unsophisticated version of Archimedes' principle) become consolidated as the child generalizes the content and the process to floating objects other than bottle caps. A teacher who knows nothing about developmental levels is not able to remedy environmental deficiencies or guide the child's interaction with the environment to achieve particular educational objectives. This example features only a small number of important developmental considerations and their implications for teaching; the learning experience exemplified is far more complex than this simple portrayal conveys and entails a variety of other perceptual, psychomotor, cognitive, affective, and volitional elements.

*Lighting, Temperature, Sound, and Ventilation.* When appropriate levels of lighting, temperature, sound, and ventilation are established, the individual is free to concentrate on learning. An inappropriate level of any one of them may prove distracting. Learning depends upon attention, and certain elements in the environment may distract it. Environmental changes to facilitate attention will include insulating children from various visual and auditory distractions.

*Introduction of Novelty.* It is very easy for children to become accustomed to an

environment, including rich and complex environments. Since changes in the environment help to maintain high levels of curiosity, a moderately rich environment which is changing continually is important. Therefore all materials and equipment should not be displayed at all times but judiciously rotated so that there is provision for novelty introduced on a continuous basis.

*Appropriate Social Grouping.* Human beings constitute the most important part of any learning environment. In some instances educational objectives are better met through certain kinds of group interaction while in others working alone may be preferable. Teachers need to know how to arrange the human environment effectively in terms of the educational objective, with particular regard for the appropriate level of social grouping, including the variables of age, sex, and size of group.

### *Guiding Interaction with the Environment*

GUIDANCE IS NEEDED to help the child interact with and attend to the parts of the environment that help him differentiate, integrate, and generalize aspects of experience in ways which will strengthen his competence as a learner in any category of potentiality (psychomotor, perceptual, cognitive, etc.). Several modes of interaction are possible, and the teacher needs to know how to assess a given situation and determine which mode is likely to be the most appropriate. There are several ways of looking at guiding interaction with the environment:

*Active or Passive Interaction.* Interaction may be passive or active. A teacher needs to determine which mode is preferable for the achievement of a given educational objective and then to encourage the child to interact in that way. The younger the child the more important it is for the interaction to be active rather than passive since learning is facilitated by acting upon environments rather than by passively observing them. Knowing how to turn passive learning experiences into active ones is therefore an important skill.

*Activity-Generates-Goal Versus Goal-Generates-Activity Orientation to a Given Experience.* Educational objectives can be achieved in one of two ways: (a) the teacher may have an objective in mind and then proceed to prepare environments and guide the child's interaction with them so a particular objective can be achieved, or (b) the teacher may come upon a given activity (already initiated and being sustained by one or more children) which will suggest a number of possible educational objectives that pertain to some process and some appropriately related content. The teacher can then intervene by introducing something new into the environment as needed and perhaps also guide the child's interaction so that one or more educational objectives "naturally" inherent in the activity can be achieved. Creating learning experiences in accordance with a given objective, analyzing ongoing activity to see what educational objectives might be suggested, and intervening to insure that they are achieved are critical abilities for ANISA teachers.

*Intervention Versus Non-Intervention.* Knowing whether it is better to intervene in a given activity or whether it would be best not to interrupt because the children are progresssing very well on their own is important. In some cases intervention can be undertaken so subtly that the children sense no disruption of the activity, and the flow of their work continues smoothly.

*Distinguishing Between Process and Content.* It is important for teachers to be able to determine whether a child has mastered a given process underlying learning

competence or has satisfactorily assimilated content while mastery of the process has still not been achieved. Since both process and content are important, guiding interaction depends on being able to distinguish the difference between process and content and their interrelation so that appropriate environments can be arranged and suitable guidance provided to insure the mastery of process as well as the assimilation of content.

*Feedback and Reinforcement.* Guiding interaction with the environment also includes providing feedback on what the child is doing, usually in terms of some objective or purpose. There are many types of feedback. It can be a verbal explanation or it can involve demonstrating something. Some kinds of feedback are intrinsic to the activity in which the child is engaged, such as hammering a nail (he either hits the nail or misses it and adjusts the next stroke accordingly); the child, however, may have difficulty differentiating feedback from other less critical aspects of the activity in which he is engaged. In that case, the teacher's intervention should take the form of helping him to discriminate that part of the activity which provides feedback on what he is doing from the less informative parts. In other cases, it may be important for the teacher to reaffirm the objective or the purpose of a given activity so that the feedback will have some meaning.

Reward and punishment are other means of providing feedback. Teachers should be familiar with the dynamics of reward and punishment in the classsroom and their power to guide interaction towards the objective of internalizing those processes which underlie learning competence.

*Discovery Versus Explanation.* While it would take too long for the child to discover everything that he needs to learn, it is nonetheless important that children be led to make a number of discoveries for themselves, since the process of discovery increases acuity of observation and stimulates curiosity. Therefore teachers need to know how to strike a balance between providing a complete explanation or demonstration of things and arranging environments and guiding interaction with them in ways that lead the child to a discovery of explanations of various phenomena, ideas, and events and the relationships among them.

*Organization of Space and Time.* Arranging environments includes the organization of space appropriate to a given educational objective. For example, many psychomotor objectives may require more space than some perceptual or cognitive objectives. Timing is important not only for its rhythmic aspects (which help to carry activity forward with minimum effort) but also for its consideration in effecting closure or consummating intentions. Students must be encouraged to set goals and consummate intentions if they are to become independent learners. Certain kinds of experiences may require more time or less time to complete, depending on the development level of the child and his previous experience. Decisions concerning time allocation and the provision of appropriate space are thus important responsibilities of the teacher.

*Repetition/Practice and Achieving Transferability.* Some kinds of learning, particularly those concerned with mastery of processes underlying learning competence, require repetition and practice. Yet mere repetition can become dull and boring, and it often works against learning how to transfer knowledge. Teachers need to know how to guide interaction so that a balance is maintained between repetition and practice with variation (the introduction of novelty into repeated activity is a key factor in teaching the child how to transfer knowledge).

*Modeling Versus Explanation.* A discussion of the role of the teacher would not be complete without emphasizing that the way the teacher "arranges" himself and

guides the child's interaction with him is of critical significance. A great deal of learning takes place through modeling as well as through listening to explanations. Modeling, in simple terms, means doing what you want the child to do or being like you want him to be rather than telling him what to do or how to be. It is important for teachers to understand how to become effective models and to understand the dynamics of learning through observing or being in the presence of a model. The chief dynamic involved here inheres in the role of the teacher as a model of a competent learner, on the one hand, and as a feedback agent, on the other. If the role is properly performed, a meaningful relationship between the teacher and student can emerge and heavily influence the extent to which the child falls in love with learning, desires to pursue his destiny with joy, and is excited by the mysteries of his own potentialities. Under these conditions a budding faith may blossom in the child that will enable him to approach learning tasks with confidence, saying to himself, "I can and I will."

### *Prospects*

THE ANISA Model has accepted the challenge posed by the statement that "curriculum is moribund." A philosophical basis, broadly conceived, has served to inspire a developmental theory that makes possible the creation of a comprehensive curriculum with emphasis on both content and process and a comprehensive guide to teaching to fit the curriculum. This coherent body of theory represents the kind of significant breakthrough—a fresh vision—that curriculum theorists and pedagogues in their most pessimistic moments predict cannot happen for a hundred years. We believe this new direction, which may take a hundred years to implement fully and refine, can functionally and structurally provide the means of insuring the fullest expression of the infinitude of man's potentialities envisaged by Teilhard de Chardin when he said:

> Man is not the center of the universe as was naively believed in the past, but something more beautiful. Man is the ascending arrow of the great biological synthesis.[11]

11. Pierre Teilhard de Chardin, *The Phenomenon of Man,* trans. Bernard Wall (New York: Harper, 1959), p. 36.