The Process Approach

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THE PROCESS APPROACH

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Developing full human potential.

Introduction

In one way or another, curriculum has been a central concern of formal education since its inception. But as a recognized field of inquiry in the United States, it did not come into being until the 1920s. Since then it has gone through a number of "identity crises" related to such fundamental issues as the definition of curriculum itself; whether or not there is, should, or could be a theory of curriculum; who should determine what a curriculum is; how to make it socially relevant; and, assuming the legitimacy of theoretical notions concerning curriculum, how to reduce the gap between theory and practice and effect a rapprochement between theoreticians and practitioners. More recently, the struggle over the issue of what should be done to the curriculum to help equalize educational opportunity has been added to the list of concerns facing curriculum developers.

Other equally important questions have yet to be raised in any systematic way :

What is the relationship between a theory of curriculum and a theory of teaching ?

Does the nature of learning itself have a bearing upon what is meant by curriculum ?

What implications for curriculum arise out of the nature of knowledge and how can one come to acquire knowledge? How comprehensive should the curriculum be?

Since the knowledge explosion is upon us and there is no way to teach anything but
the tiniest fraction of man's accumulated knowledge, what criteria should be used in
determining what should make up that tiniest fraction?
With a few notable exceptions, the past fifty years of curriculum development have
been characterized by fragmentary and piecemeal efforts to deal with the basic issues
outlined above. Educators, theorists, researchers, practitioners, psychologists, and a
variety of local, regional, and national commissions have participated in these efforts .
Any field of inquiry beleaguered by the continuing irresolution of so many of its
fundamental issues is bound to become paralyzed. Schwab says:
The field of curriculum is moribund. It is unable, by its present methods and principles, to continue its work and contribute significantly to the advancement
of education. It requires new principles which will generate a new view of the character and variety of its problems. It requires new methods appropriate to the
new budget of problems. (Schwab, p. 1)
Schwab believes that the curriculum became moribund because of an "inveterate, unexamined, and mistaken reliance on theory" and that the only way we can salvage it
is to leave theoretical pursuits and concentrate on dealing in a practical way with
problems and issues as they arise through the process of deliberation (Schwab, p. 1).
At the same time, he advises that an eclectic approach should be used in arriving at a
decision as to what ought to be done in response to a given issue or problem. By
eclectic, Schwab means appropriately applying the knowledge which theories represent to
different practical problems. He does not believe that the eclectic approach means
combining alternative theories into one coherent theory —an achievement which,
according to him, may take a hundred years. Because things are in such a bad state of
affairs, he believes that educators cannot afford to wait a hundred years; it is there fore
necessary for them to deal with educational problems on an ad hoc basis through the

process of deliberation.
While Schwab's approach might relieve short-term tensions, it will not bring us any
closer to a long-range solution to the problems surrounding the field of curriculum.
On the contrary, the solution to complex curriculum issues lies essentially in the
construction of a comprehensive theory, whose propositions, definitions, and explanations will function as an efficient guide to practices that lead to the achievement of specific educational objectives. If the objectives are efficiently
achieved by applying the theory, the theory becomes substantiated . If not, the theory is challenged and must be modified; but that does not mean theory construction and research is unimportant.
For several years, my colleagues and I have been working on the construction of a
theory of curriculum which forms a part of a comprehensive theory of education. This
body of theory and the procedures for translating it into practice are known as the
Anisa model (Streets and Jordan) . In the course of working on the model, we attempted to deal with every one of the issues concerning curriculum development
previously mentioned. There are therefore many different aspects of this work which
are beyond the scope of this chapter, but the efforts we made to define curriculum in a
comprehensive way and the endeavor to create a process curriculum are directly relevant. Our experience has led us to conclude that if the field of curriculum is [274/5] moribund, it is because curriculum has been defined too narrowly in terms of subject matter or content rather than in the broader context of human development. To rescue it from that condition, we believe that curriculum development must be given a broader theoretical base that takes into account the nature of development and directly reflects the idea of process. Understanding a process approach to curriculum necessarily depends
upon knowing something about human development and the nature of process. For this reason, the process curriculum of the Anisa model, which is derived from a comprehensive theory of development, can only be understood by knowing the theory to
which we now turn our attention.

The Nature of Development and the Meaning of Process

Development refers to a change in an organism from one state to a more complex and
highly integrated state; process refers to a patterned expression of energy utilization
that depends on some structure in the brain that produces the pattern .

Developmental change is therefore accompanied by the accumulation and integration of new structures and their associated functions . Generally speaking, new structures and their integration occur as a result of biological maturation on the one hand and learning on the other.

Developmental psychology is the primary discipline concerned with a description and explanation of changes in patterns of human behavior over time. It therefore has a special interest in process. Understanding the nature of change and process has been problematical not only for psychology but also for philosophical thought and for the world of practical action as well. While much remains to be learned about the nature of human development and the processes involved in the organism's progression from conception to death, a great deal of knowledge has accumulated that has implications for educational practice in general and for the development of a process curriculum in particular.

The following list highlights certain features of the nature of development and the meaning of process, each one of which had an important bearing upon the development of the Anisa theories of development and curriculum.

1. Development presupposes potentiality—Once we agree that being is not characterized by static actuality, we are impelled to consider process, and process presupposes potentiality. Anything that develops must have the potential for becoming what it eventually does become (e.g., the oak tree, not the pine tree, is potentially present within the acorn).

2. Development presupposes some end state—This proposition is perhaps one of the more controversial issues in development. Such an assumption immediately raises a question as to what the end state is, and many scientists and theorists object to any idea of teleology (purpose or final cause) which such an assumption entails.

3. Development is orderly—If the movement from one state of being to a subsequent one is orderly, processes (i.e., the functionings associated with particular structures) must be characterized by a pattern and occur sequentially. [275/6]

4. Development is progressive—If the nature of change over time is progressive, a later developmental stage will always be different from a previous one and identifiably so on the basis of some criteria, usually complexity and level of

integration.
5. Development is cumulative and continuous—For all practical purposes, a later state of being is the consequence of the preceding stages of development. In other words, all subsequent stages have their roots in earlier stages; something cannot come out of nothing.
6. Development has a rhythm—Not only are the changes comprising development orderly in terms of their spatial configuration but there is also a temporal orderliness or pattern as well. Timing is important. For instance, certain nutritional elements or experiences are more critical at certain times than they are at others.
7. Development is irreversible—Changes take place in succession and are irreversible. Development proceeds irreversibly in one direction. For instance, it is not possible to "unlearn" something; it is only possible to add additional learning which may have the effect of altering a behavior that emerged out of some kind of prior learning.

Using the above characteristics of development as a point of departure, we formulated a comprehensive theory of development which defines development as the translation of potentiality into actuality and equates the translation with creativity, the "universal of universals". (Whitehead) The theory accounts for the means (process) by which the translation takes place, classifies potentialities, establishes three basic categories of environment, and describes the nature of actuality in terms of value formation (see Kalinowski and Jordon). This comprehensive theory of development serves as the generative base for the construction of a theory of curriculum which deals with both process and content. It affirms that the translation of potentiality into actuality is sustained by the organism itself at whatever state it is in at any given moment in time, by the environment, and by the interaction between them. All three have basic implications for the definition of curriculum.

The theory establishes two fundamental categories of potentialities: biological and psychological. It cites nutrition as the key factor in the actualization of biological potentialities and fixes learning as the key factor in the actualization of psychological potentialities. While the process curriculum of the Anisa model includes nutrition and the development of biological potentialities, this chapter focuses only on the process curriculum related to the actualization of psychological potentialities

(see
Raman, "Nutrition and Educational Planning"). Psychological potentialities are broken down into five basic categories: psychomotor, perceptual, cognitive, affective,
and volitional. Because the translation of these potentialities into actuality is regarded
as synonymous with creativity in the most fundamental sense of that term, we believe
that any school system intending to foster creativity must necessarily emphasize
process rather than product in its conception of the total curriculum. In the model,
each category of potentiality has been broken down further into important processes
which by virtue of their fundamental nature are keys to large numbers of subsequent
developments. These processes form the basis for the development of the Anisa process curriculum. Explanations and examples of these processes will be presented
later, and their implications for practice will be explored. [276/7]

If learning is the key factor in the translation of psychological potentialities into
actuality, then learning is the essential creative process around which the process
curriculum should be developed. Thus, understanding the nature of learning is for all
practical purposes the same as understanding the nature of process and a prerequisite to
the development of a process curriculum.

We conducted an extensive review and analysis of all major learning theories in hope of distilling from them a common denominator that would shed light on the nature of learning and lead to a fuller understanding of process . After an intensive
effort at comparative analysis, we finally arrived at the following definition: learning is
the ability of the organism to differentiate experience by breaking it down into
contrastable units; to combine or integrate these contrastable elements in novel ways thereby
generating new patterns of movement, perception, thoughts, feelings, and intentions; and to
generalize these patterns to new situations.

Differentiation, integration, and generalization, then, constitute the essential
characteristics of process; they depend on the development of particular structures in the
brain and are applicable to whatever category of potentiality is being

addressed . For
instance, processes pertinent to psychomotor potentialities will concern differentiation of
the movements of the various muscles of the body, their integration into particular
movement patterns such as walking, skipping, or swimming, and the generalization
of these patterns to a variety of other situations. If the process being developed is an
important and obvious one, we sometimes refer to it as a stage. When a child, for
example, is learning how to differentiate the movements of muscles which then become
integrated in a particular way so that locomotion in an upright position is possible, we
say that the child is at the "walking stage" that was preceded by a "crawling stage."
Because there is an infinite number of processes, some decision has to be made concerning which processes are important enough to be included in a process curriculum.
Our most difficult tasks continue to be identifying the processes which seem to be
critical for subsequent major developments, researching them, and expressing them as
elements in the process curriculum. Some processes are evidently essential or prerequisite
to the development of large numbers of additional processes, while others are not.
Taking this as a given, it follows that those processes which lead to the largest number of
important subsequent developments^ would be the ones which should be first in line
for inclusion in the process curriculum. Degree of probable necessity for subsequent
developments^ is one of the basic criteria we applied when deciding whether or not
to include a particular process in the curriculum.
We use the word process to refer to the functioning that is made possible by some
structure in the brain which is built up out of the organism's particular interactions
with particular environments. Process is not to be confused with activity that is
provided for a child. We reserve the phrase interaction with the environment to describe what the child does. It is the purpose of the process curriculum to specify
what kinds of environments and what kinds of interactions with those

environments are
necessary for particular structures to emerge, thereby endowing the child with competence
to function in terms of their associated processes. We cannot, as yet, isolate specific
anatomical structures in the tissues of the brain and their analogous physiological
functions on which the processes depend. We therefore infer the presence of the
structures and their functioning by patterns of behavior which we can [277/8] observe.
However, we should not make the mistake of believing that a given structure is not there
if the person does not perform a particular behavior. It is possible to know how to do
something without ever doing it so that if and when it is done, it is done right the first
time. In our view, an excessively behavioristic orientation to learning is like wearing
blinders. Much of what is important about the nature of human development and
learning is not directly observable, but just because we cannot see it is no justification for
believing it does not or cannot exist. What goes on inside the head is tremendously
important for psychology as a science . Thought does not necessarily have any
immediate or directly related behavioral manifestations; yet few people would deny
its importance.

A Comprehensive Theory of Curriculum

Ultimately, any satisfactory theory of curriculum must derive from a superordinate
theory that explains the nature of the human being whom the curriculum is supposed to
serve; thus a curriculum theory cannot be completely independent and autono mous.
If it is not derived from a theory of development, it is likely to be unworkable because
it fails to take into consideration the characteristics of man. For example, a curriculum
theory that does not take into consideration characteristics such as interest,
motivation, attention, and fatigue, or even more importantly, the develop mental
characteristics associated with the acquisition of knowledge, will be doomed to failure when
implemented and will survive only because other parts of the educational system
compensate in some way for its deficiencies. Unfortunately, there has been no adequate
theory of development from which a satisfactory theory of curriculum might be

derived.
This accounts for the inability of theorists up to this time to produce such a theory of
curriculum.
A theory of teaching, like a theory of curriculum, can also only exist as a derivative
from a theory of development. To teach is to help children learn; a successful theory
of teaching must therefore be derived from a theory of development that explicates the
nature of learning. In other words, if somebody is teaching, children must be learning;
if they are not, then we cannot say any teaching is going on (see Streets and Jordan).
From the Anisa theory of development we have derived compatible theories of curriculum
and teaching. There will no doubt be other theories of development emerging in the
future, and the Anisa theory will probably undergo perpetual modification and refinement.
However, the present Anisa theories of development and curriculum will suffice for our
purposes of explaining a process approach to curriculum and the rela tionship of process
to content.
On the propositions set forth by the Anisa theory of development, we based the
Anisa theory of curriculum which defines curriculum as two interrelated sets of
educational goals and what children do, usually with the help of peers and adults,
to achieve those goals. In essence, curriculum consists of goals and a specification of
interactions with particular environments to achieve those goals. For example, one set
of goals concerns assimilation of information about the world in which we live; they
form part of the content curriculum. Culture and direct experience are the primary
sources of this information, the organization of which rests on the classification of [278/9]
environments as set forth in the theory of development. The other set of goals
concerns the potentialities of man and the means by which they become actualized
through learning; they form part of the process curriculum. Achieving these two sets
of goals (i.e., content and process), results in the emergence of a personal identity—a
Self. As this Self gains mastery over its environment and over the processes of

its own
becoming, it can take charge of its own destiny; this is the overarching
purpose of the
Anisa model.
The five categories of potentialities established by the theory of development
provide the basic organization of the process curriculum. Designed to develop
competencies in each of these areas, the process curriculum sets the guidelines
for creating experiences for children that enable them to develop structures in
the brain
which when functioning are evidence that the child has developed a particular
process. Each category of potentiality has been broken down into the processes
which
underlie learning competence in that area . All of the processes, regardless of
the
category of potentiality to which they are related, are comprised of
differentiation,
integration, and generalization in some combination or another. The emphasis of
a
process curriculum is on the "how" as opposed to the "what" of a content
curriculum. For instance, the content curriculum may focus on what a child
should
be thinking about whereas the process curriculum focuses on enabling a child to
learn
how to think. The process curriculum of the Anisa model is thus organized to
enable a
child to know how to move his muscles and gain maximum control over them, how
to
perceive, how to think, how to feel, and how to formulate intentions and
consummate
them. As the child masters the basic processes in each of these areas, he
becomes a
competent learner—he learns how to learn. Learning how to learn is therefore
the
basic objective of the process curriculum; it is the means whereby one takes
charge of
one's own becoming.
It is the function of theory to guide practice toward some end. That is why the
Anisa
theory of curriculum not only specifies the ends but sheds light on how they
are to be
achieved. This is set forth by the interaction component of the curriculum
theory .
Detailed explanations of the content curriculum of the Anisa model and the
interaction component are beyond the scope of this chapter. However, it should
be
noted that no curriculum theory can be comprehensive if it does not include
both

content and process goals and specify what the children must do in what kind of environments in order to master the processes and assimilate the contents outlined in the goals.

Design for a Process Curriculum

The major tasks in designing the Anisa process curriculum were to identify the basic processes that make up learning competence in each of the five categories of potentialities and to determine what interactions with what kinds of environments are necessary to internalize them. In the following sections, a selected number of processes from each category will be identified and briefly explained . A few of the processes will be treated more fully than the others and serve as examples of how particular activities planned for the children are related to the mastery of the processes.

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The Psychomotor Process Curriculum

The general definition of psychomotor competence which follows will provide a framework for understanding each of the processes on which the psychomotor process curriculum is based.

Psychomotor competence is an inner awareness of all of the muscles (which can come under voluntary control to whatever degree), all of the differentiated movements of body parts they are capable of effecting, and the ability to execute an infinite variety of combinations (integrations) of such movements into patterns which express purposes of the organism. By 'body parts' we mean more than head, limbs, and trunk; included are muscles which control the size of the blood vessels, muscles which move the eyes, the tongue, the lips, and the bladder and anal sphincters, the muscles producing speech sounds, muscles which comprise the genital organs, and the diaphragm which controls breathing. (Blane and Jordan)

Since various muscle movements are patterned to carry out certain functions associated with different bodily systems, we have organized the basic process underlying psychomotor competence in terms of these systems.

Vital Functions Systems

Respiratory System.. Movement patterns involved in breathing involve the diaphragm and muscles controlling the movement of the ribs, throat, and nasal passages.

Circulatory System.. Movement patterns involve cardiac muscle and muscles in the walls of
blood vessels controlling dilation and constriction.
Digestive System.. Movement patterns involve muscles used in chewing, swallowing,
carrying the food to the stomach; the actions of the stomach muscles and intestines; and those
involved in elimination.
Reproductive System.. Movement patterns concern muscles of the female and male genitals and muscles in the uterine wall.
The movement patterns of all of the muscles involved in these vital functions systems are
largely determined by reflex action and maturation rather than consciously directed learning.
However, there are a variety of exercises that can increase voluntary control over them. For
instance, it is possible for a person to gain control over the muscles in the walls of the blood
vessels so that his high blood pressure can be voluntarily reduced through learning how to
dilate them. Many of the detailed aspects of this part of the Anisa process curriculum have yet to
be researched and developed. We include them here to demonstrate what comprehensiveness in
planning a psychomotor process curriculum requires.
Skeletal Muscle System
Balance and posture. This refers to the ability to maintain balance and posture through
movement accommodations to the forces of gravity while maintaining a [280/1] position in
space. Balance and posture are made up of several subprocesses as follows:
1. Verticality—One must have a functional awareness of different muscles and their movements in relationship to the direction of gravity and awareness of what neural muscular operations (i.e., integrations) stabilize the body with reference to this direction (i.e., verticality). This includes the awareness of which
muscles are down and which ones are up and how to move the required muscles to maintain stability.
2. Laterality—This refers to a functional awareness that the body has sides : right
and left (i.e., symmetrical laterality) and dorsal and ventral (i.e., asymmetrical
laterality).
3. Directionality—This refers to a functional awareness of the integration of verticality and laterality and their corresponding movement patterns to maintain
the organism in its relationship to the forces of gravity. Different

combinations
of verticality and laterality are reflected in movement patterns which are recognized as sitting, lying down, bending over, standing, kneeling, etc. Directionality does not include movement from one locality to another.

Locomotion. This refers to the ability to execute a series of muscular movements
which carries the whole organism through space over time while maintaining balance
and posture. The subprocesses of locomotion are:

1. Sequence—This is the ability to organize the movement of body parts in an ordered series which can culminate in activities such as walking or running.
2. Synchrony—This refers to the ability to make movements of body parts simultaneously.
3. Rhythm—This is the ability to perform a regular succession of repeated motor actions
where there are alternations of tensing and relaxing the muscles or particular groups of muscles.
4. Pace—This refers to the ability to establish the appropriate timing of locomotor
movements given the intentions of the organism . This includes being able to speed up or slow down movements for a particular purpose.

There are an infinite number of combinations of the above subprocesses that yield
different patterns of locomotion such as walking, hopping, jumping, swimming, galloping, skating, and diving.

Manipulation. This refers to the ability to handle or cause some aspects of the environment to be moved in accordance with some purpose . The subprocesses of manipulation are:

1. Making contact—This is the ability to reach and grasp an object or to receive it by
catching.
2. Maintaining contact—This refers to holding the object as long as required to
achieve a particular purpose.
3. Handling—This is the ability to squeeze, rub, pierce, roll, or otherwise control the
object.
4. Termination of contact—This refers to releasing or dropping objects or propelling them by throwing.

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Manipulation occurs, of course, in conjunction with maintaining balance and posture or
during locomotion. It also includes the use of objects as extensions of the body such as
when one uses a hammer, a shovel, a surfboard, or a pole for vaulting.

Speech System

This system involves the control of muscle movements that cause air to

be propelled through the vocal cords. Some of these movements are made by the same muscles which control the respiratory system, but there are additional voluntary elements in the case of speech, laughing, or singing. A special kind of timing and control are required when speech is introduced. Speech also depends upon one's control of muscles of the pharynx and larynx involved in the production of sound and the vocal chords which provide alteration of pitch, amplitude, and timbre. In addition, speech involves the muscles of. the face, throat, jaw, tongue, and lips. (ref?)^

Most of the muscle movements involved in producing articulate speech come under voluntary control with maturation, and very little conscious effort is required to learn how to speak. However, children who develop speech problems may require particular exercises that enable them to make appropriate differentiations, integrations, and generalizations in relationship to the production of particular sounds . Part of the problem associated with a speech disorder may also be of a perceptual -auditory nature, or it could be the result of a failure to associate causally (i.e., integrate) a particular set of muscle movements with the particular kind of speech sound desired.

Perceptual Systems

A variety of muscles are used to support or increase perceptual acuity through different modalities. For instance, vision is related to eyelid movements, the movements of the eyeball (circular, vertical, horizontal), and lens accommodation. Olfactory perception is dependent in part upon the muscles which control breathing. Auditory perception is enhanced by posturing and/or turning the head in order to pick up the sound waves more directly. Taste is enhanced by the movement of the tongue. Stimulation of the cutaneous receptors for touch is dependent in part on other bodily movements. (ref?)^

The Anisa psychomotor process curriculum consists of statements of objectives pertinent to each of the processes and subprocesses outlined above and the actual exercises (i.e., interactions with particular environments) that children go through in order to develop the specific competencies desired. In most cases, not one but several processes are involved in a given activity, and they are therefore internalized collectively rather than individually. In the Anisa model, movement and dance (one element of the arts curriculum which also involves music and sound, the visual and plastic arts, theatre arts, and poetry and literature) provide the chief vehicle for the development of psychomotor competence in the early grades . In addition there

are a
variety of exercises, games, and sports activities which engage the whole child—his
perceptual faculties, thinking, feeling, volition, as well as his psychomotor abilities .
The advantage of having a process curriculum is that it attempts to make certain that
nothing important is left out. In the case of special problems where a child is having
coordination difficulties, for instance, it is useful to analyze the muscles involved and
[282/3] prescribe particular kinds of exercises that will enable the child to make the
appropriate differentiations and integrations of movements and to generalize them
under a variety of circumstances.
As an example, let us single out the process of directionality and discuss some of the
activities that children might go through in order to achieve maximum functional
awareness of this process.
Activity I
Set a particular problem for each group of children and let them work it out in their own way, as follows:
Ask the children to see how many ways they can maintain their balance by assuming a particular posture in which there is only one contact point with the floor. The most obvious solution to this problem is to stand on one foot . Since we do not ordinarily stand on one foot for very long, maintaining balance with only one contact point requires moving all other muscles in a variety of directions in order to maintain balance. This exercise enables the children to gain experience in directing the pattern of movement of muscles over
which they would not ordinarily gain full control. Different levels of complexity can be introduced to meet different developmental levels. For instance, ask those children who find it too easy to stand on one foot to squat down as far as they can go and maintain their position and balance on one foot alone.
Ask for other solutions to the same problem (e.g., rolling the body up into a ball
and using the back or perhaps the buttocks as the one contact point).
Activity II
Ask the children to strike a posture having only two contact points with the floor,
only one of which can be a foot, and maintain balance. The solution might be to use one foot and one hand. Advanced students may use both hands. Some could use a knee and a foot, a knee and a hand, or a knee and the head, and so forth.

Activity III
Ask the children to assume a posture with three contact points, only one or none
of which can be the feet.
Activity IV
Ask the children to strike a posture which involves four contact points with the
floor, none of which can be made with hands or feet . They can use elbows and knees.
Activity V
The complexity of the above problems and their solutions can be increased by adding the dimension of locomotion to balance and posture. For instance, when the child tries to move maintaining only one contact point, his most obvious
[283/4] solution is to hop on one foot. Trying to move while maintaining balance
and posture under the constraints of each problem activity requires the patterning of
muscle movements in unusual ways and leads to an increased voluntary control over skeletal muscles. These problems can be very interesting and entertaining. New kinds of movement patterns can be discovered which might later be introduced into more serious choreographic efforts.
Since the Anisa theory of development cites interaction with the environment as the
means by which potentiality is translated into actuality, the implications of psychomotor competence for the development of all other competencies is heavily implicated. We interact with the environment chiefly by means of moving our muscles, whether we are moving our bodies through space or interacting with the human environment through speech, gestures, or bodily contact. Furthermore, when a child activates his muscles, it is impossible for him not to be involved in what he is
doing. In other words, a kind of intrinsic motivation accompanies the movement of
muscles. The more the content curriculum and other aspects of the process curriculum involve the movement of muscles, the more enthusiastic the pursuit of
learning is likely to be. For these reasons, the psychomotor process curriculum is
given great emphasis in the Anisa model.
The integration of content with process and some processes with other processes is a
paramount feature of the Anisa model. Because the number of possible combinations for children at different levels is practically infinite, descriptions of all
of them cannot be written down. That is why teachers must understand the theory thoroughly, for on that basis they can generate any number of activities designed to

achieve any number of particular objectives, process or content, which can be associated with the basic psychomotor objectives. For example, an important part of the content curriculum in the Anisa model concerns the names of all of the body parts, descriptions of the movements they can make, and general knowledge about the body as it relates to physical health. The vocabulary required to explain and deal with all of the movement and balance problems possible in developing psychomotor competence is extensive, and exposure to such terms helps the child enlarge his vocabulary. To sit passively at a desk and hear someone explain all of the body parts, all of the movements, or the kinds of joints we have and to memorize the vocabulary would be excessively boring; and the child would have difficulty remembering the information. But when learning such a vocabulary and information about body parts and their functioning is integrated with movement and dance, it is accomplished in a way that is simple for the child. When the child is out on the floor and involved in moving his own body, he is able to assimilate a tremendous amount of content efficiently while at the same time learn how to gain voluntary control over his muscles.

Combining vocabulary development and learning facts about the human body with the psychomotor curriculum is one thing; combining it with reasoning and mathematical thinking is another. However, it can be done. For example, the child grasps rhythm easily when he experiences the movement of body parts . Rhythm means timing and timing means a coordination of patterned durations of movement. Duration means measurement, numbers, mathematics .

Classification, seriation, and conservation are important cognitive processes in understanding number relations [284/5] (see "The Cognitive Process Curriculum," ^P. 289). Movements can be classified (smooth or jerky, slow or fast, complex or simple); they can be seriated (from slow to fast, from high to low, from fine to gross); or they can be conserved (length of arm movement is not changed when speed is altered).

Movement, coupled with problems involving these cognitive processes, has important implications for establishing the cognitive base required for a full understanding of mathematics.

The Anisa process curriculum not only specifies goals but also provides the conceptua l

frame work through w hic h teac he rs ca n c ollabora te . Tha t is, mus icians,
dancers, and specialists in exercise, science, and mathematics can come together to
discover how their various disciplines might be expressed through integrated activities
which would strengthen a variety of processes while at the same time enable children to
assimilate an enormous amount of content. It is not difficult to see that there is an
endless number of possibilities for providing highly motivating ways of assimilating
content by integrating it with a psychomotor process curriculum.

The Perceptual Process Curriculum

Perceptual competence refers to the capacity to differentiate sensory information
and then integrate that information into generalizable patterns, which constitute
interpretations of reality, that enable the organism to make meaningful decisions and
to act. Interpretation always concerns the organization of incoming stimuli in terms
of past experience, present needs, and aspirations or intentions which involve the future.

Perceptual competence rests upon an internal structuring which functions as a set of
rules which generate and direct the basic processes of differentiation, integration, and
generalization on which the interpretation or organization depends (Conway, 1974).

Perceptual processes include those underlying vision, audition, olfaction (smell),
gustation (taste), the cutaneous senses (those relating to the skin, such as pressure,
cold, hot), and the vestibular senses (equilibrium).

Following is a breakdown of visual perception into a large number of processes,
each one of which constitutes an element in the process curriculum dealing with visual
perception. There are similar breakdowns of processes underlying each of the other
subcategories of perceptual competence, but they are too extensive to be included
here.

Visual Perception of Movement

This refers to seeing objects move rather than the perception of movement through
kinesthetic and vestibular senses. Vision is not required to determine that the

body as
a whole is moving through space. Visual input while on an enclosed elevator, for
example, will not be related to its movement or the movement of the body; one determines that the body is moving through vestibular and kinesthetic senses. Movement
perception depends on a wide variety of subprocesses, such as those listed below.

1. Directionality—This is one aspect of movement perception and consists of
several elements: fixation (holding an object centrally in the visual field), [285/6]
horizontal pursuit (following movement from right to left or from left to right), vertical pursuit (following an object moving up or down), circular pursuit (following objects moving in circular motion, clockwise or counterclockwise), depth pursuit (following an object that is moving towards the
eyes or away from the eyes), and combinations of the above.
2. Duration (Time Perception)—This is another aspect of movement perception and consists of several elements: velocity (being able to see the relative speeds
of moving objects—slower/faster—and to see changes in speeds), synchrony or simultaneity (being able to ascertain that objects are moving at the same time), rhythm
(being able to see a pattern in movement), sequence (being able to see a repetition of
patterned units or that one thing comes after another temporally), pace (being able
to see variations in the size of temporal units as represented by movement patterns
even though the relationship between rhythm and sequence remains constant), and cause/effect (being able to see that one event, B, occurs only after a prior event, A.
[This is a perceptual form of inference]).
3. Space (Two-dimensional and Three-dimensional)—This is a third aspect of movement
perception and consists of two elements. Figure-ground or form perception encompasses several aspects: contour (being able to see the characteristics of the outer form of an object), edge (being able to locate the demarcation that
forms the outer limits of an object), proximity (being able to distinguish the nearness
or farness of objects in relationship to one another, such as above/below—height or
verticality, left/right—width or laterality; front/back or before/behind—judgment

of depth, and size/area—judgment of distances), separation (being able to discern disconnectedness among objects), closure (a filling in of gaps to create
a figure [another form of perceptual inference analogous to interpolation in cognition])^, continuity (being able to organize objects into a sequence [a form of
perceptual inference analogous to cognitive extrapolation]), and constancy (being
able to interpret the apparent changes in shape that occur when perspective changes as a function of perspective and not a change in the actual shape of an object. The visual image of both shape and size changes with shift in perspective; the objects themselves remain constant). The second element is projective space which is three-dimensional only and is determined by a number of
cues, some of which can be perceived by one eye alone and some of which require both eyes. Monocular cues consist of proximal size (closer objects appear
larger), brightness (closer objects are brighter), shading (shadows create perspective and depth), texture gradient (closer gradients are coarser in texture),
linear perspective (parallel lines converge as they recede from the viewer), interposition (closer objects obscure objects behind them), and movement parallax (closer objects appear to move faster). Binocular cues consist of convergence (the closer the object, the more the eyes must turn inward toward each
other) and retinal disparity (the closer the object, the greater the disparity between the images falling on the two retinas).

4. Color—This is yet another aspect of perception and consists of several elements:
hue (being able to discriminate among different wave lengths, for example, being able to tell the difference between red, blue, yellow ^), saturation (being
able to discriminate among complexities of light waves, determining the relative
[286/7] amounts of gray present within a given hue), brightness (being able to discriminate among different amounts of light reflecting from a given object [being able to tell the difference between shades of one hue such as red, which might be broken down into pink, red, and maroon])^, and contrast (combinations of all of the above).

5. Translation of Two-dimensional Representations into Their Three-dimensional Referents—Since a great deal of education in the classroom is mediated through two-
dimensional representations of three-dimensional reality, children need particular experiences in order to make this kind of translation.

6. Translation of Three-dimensional Reality into Two-dimensional Representations—
This occurs primarily through drawing pictures and involves knowledge of the

various monocular cues, such as texture gradients, other depth cues created by shadows, diminishing size with increased distance from the viewer, etc.

As a case in point, let us examine in some detail the process of figure -ground perception, which we define as

The ability to differentiate certain features from a previously undifferentiated perceptual field and integrate these features into a figure or pattern that is distinctly separate from and predominant over the remaining information in the perceptual field. Those aspects of the field unassociated with the figure become the background, or simply ground. (Anisa, p. 1)

A large variety of simple visual discrimination tasks or games can be devised to facilitate the development of figure-ground perception. Such tasks may also serve a basic diagnostic function as well. For example, the teacher might present a picture containing a variety of different overlapping shapes and objects to the child and ask him to pick out particular shapes such as circles and triangles . More difficult exercises might include a variety of familiar shapes, such as birds, rabbits, and fish, all of which can be embedded in a confusing background of competing lines . The child can then be asked to locate each shape and trace it with a finger. Different levels of difficulty can be introduced into any particular exercise by making the differentiations more complex or making the integration of the differentiated elements into some kind of figure that is less obvious. For instance, commonly known shapes, such as a circle or an outline of a house, are comprised of lines or elements that can be integrated into those particular figures. If, however, a more abstract or unfamiliar figure is embedded, it will be a greater challenge for a child to make the differentiations and integrations necessary to recognize the figure. As an alternative approach, an outline of the abstract embedded figure can also be drawn as a separate figure, and the child can be asked to locate it in the "ground" of a great number of intersecting lines. Here the task is more difficult because elements are arbitrarily assigned to figure or ground; there is nothing intrinsic to the abstract figure that will help the child separate figure from ground . The separation must take place in

his
mind as he gives salience to certain differentiated elements and then integrates them
into the desired figure. [287/8]
A good example of how to integrate this aspect of the process curriculum, figure-ground
perception, with a science content curriculum concerning information about insects ^arid plant
life is to design activities for learning about camouflage in nature and its relation to evolution.
Certain moths, for instance, have patterns on their wings which are exactly the same color and
have the same configurations as the barks of certain trees. Certain worms have the colors and
shapes of twigs. The praying mantis looks exactly like the grass. The visual characteristics of
a large number of plants and animals evolved by virtue of natural selection precisely because of
the figure-ground phenomenon. In the case of the moths, those visual characteristics which
enabled them to be part of the ground rather than the figure when they settled on certain trees
made it more difficult for birds to see them. Over time, the moths which were camouflaged
became more numerous because fewer of them were eaten by birds. They lived longer and
reproduced more, while the more conspicuous members of their own species eventually
became extinct because they were eaten more frequently and therefore could not reproduce as
rapidly nor as many times. A variety of related activities based on the phenomenon of
camouflage can be organized. Children can be invited to draw pictures in which they hide (i.e.,
merge figure with ground) a given insect; or if there is enough time, they can be invited to
camouflage themselves and hide, while others try to find them. The game of hiding the
thimble takes on a new dimension of expertise in light of the knowledge of the figure-ground
process.
More advanced skills, such as reading, also depend upon figure-ground perception. The
reason most printed material is black on white is to facilitate figure-ground discrimination.
Red print on a maroon background would make figure-ground perception extremely difficult.

Reading music presents an even more difficult task since the musical staff, key signatures, and
cleft designation are figure, distinguishable from a white background; but these figures function
more as ground when notes are placed upon the staff. Thus, there are a variety of levels of
complexity in figure-ground perception where some figures are ground in relationship to
other figures and so on.
There are a number of variables that have an influence on figure-ground discrimination and
which can be manipulated. For instance, Katz showed that a child's recognition of the
figure is improved if he knows the label for that figure. Several studies indicate that
complex figures tend to attract more attention than simple figures (Willis and Dornbusch).
Experience or habit will cause certain elements to be differentiated from a background and
integrated into a figure. For instance, the experience of looking at the human face and a
habit of associating certain contours with the nose, the mouth, the eyes, and so forth, will enable
the child to "see faces" in almost any complex set of lines that contain these elements (Goldstein
and Mackenburg). A dark-light contrast is positively correlated with the ability to
distinguish figure from ground (Lit ^and Vicars). Studies have also shown that if a figure does
not possess integrity or cohesion, it may be easily lost in a larger figure simply because its
contours provide insufficient contrast with the ground (Gottschaldt). Time is also an important
variable. The duration of exposure to a perceptual field will have an influence on one's
ability to differentiate figure from ground. Kahneman showed that a minimum amount of
time is required if differentiation is to take place and that there is also a saturation point
beyond which very little further differentiation tends to occur. In generating a particular
activity as a part of this aspect of the process curriculum, teachers can individualize the
experience by manipulating the variables of [288/9] labeling, complexity, experience or
habits, contrast, and timing. With appropriate manipulation, an experience can be

made extremely simple for young children on lower developmental levels or extremely complex and more challenging for older children or higher developmental
levels.

The Cognitive Process Curriculum

Cognition refers to the intellectual processes necessary for thinking and reasoning .

The problem of defining the exact nature of thinking is an old one, and much work
remains to be done if we are to achieve the clarity that will enable us to identify all of
the fundamental processes that make up thinking and which therefore should be included in the process curriculum.

Like the actualization of all the other potentialities, thinking develops from interaction with the environment. Piaget says, "Actually in order to know objects,
the subject must act upon them and therefore transform them: he must displace, connect,
combine, take apart, and reassemble them" (Piaget, 1970, p. 704)^. Here we see the
reflections of the general processes of differentiation ("displace" and "take apart")
and integration ("connect," "combine," and "reassemble") . Through these differentiations and integrations, internal structures are developed which form the basis of
cognitive competence. The cognitive processes associated with these structures have
been explored by Piaget, Bruner, and others. All of the processes are interrelated, and
some serve as developmental predecessors of others . Among the processes which make up cognitive competence are the following:

Object Permanence. Apprehension of the continued existence of a stable object when the object is no longer in the immediate perceptual field (called animal inference by Bertrand Russell).

Deduction. Drawing a necessary conclusion from a given premise or set of premises;
reasoning from the general to the particular.

Induction. Logical inference of the existence of a general principle from a given set
of particulars; reasoning particulars to the general.

Extrapolation. Estimation of the value or nature of a variable based upon an assumed relationship with an observed range of values or particulars; inference of the
next element which follows logically from a known sequence or pattern (e.g., 1, 3, 5, 7, 9,
x; in this case, x can be inferred by extrapolation to be 11).

Interpolation. Inference of the value or the nature of a missing element or an

empty
category from the context in which it exists (e.g., The boy missed the first two balls
pitched to him but _____ the third ball for a home run. By interpolation we conclude
that the blank would be filled in with the word "hit").
Implication. Logically deriving propositions from a given set of relations; implication may involve a combination of induction, deduction, interpolation and
extrapolation. [289/90]
Classification. Identification and abstraction of a common attribute or property
from a group of objects, actions, events, or ideas and integration of these properties or
attributes into a class or category which can be generalized to include all other
objects, actions, events, or ideas possessing these attributes.
Seriation. The differentiation of quantitative attributes among objects along the
single dimension, such as length, and the integration of these differences to form a
graded pattern which can be generalized to include elements beyond the original group.
Conservation. The abstraction of qualitative and quantitative invariance of an object, substance, or idea across transformations of associated secondary qualities.
Conservation is the ability to recognize that an object remains the same object despite
certain transformations. For instance, a pint of water in a tall glass is the same pint of
water when poured into a flat pan even though perceptually it may look like it is more.
Number Relations. Coordinating three primary logical processes, classification, seriation, and conservation, in understanding various concepts associated with the
construct of number (including: one-to-one correspondence, ordination, cardination,
and measurement).
Analogy and Metaphor. Abstracting conceptual relations from one set of conditions
and then applying them to another set of conditions as a means of achieving explanatory insight (e.g., "A hand is to a glove what a foot is to a _____ .". Using
the process of analogy, one would very likely fill in the blank with "shoe.")
There are a large number of other processes which make up thinking, but the preceding list provides enough examples to convey the general idea of a process curriculum in the area of cognition. Let us now use classification to show how

the
process curriculum sets guidelines for activities that will enable a child to classify.
An individual's control over his environment and over his interactions with his environment becomes efficient when he is able to differentiate the many elements
which comprise the environment and organize them in a pattern congruent with his
own needs and intentions. One means by which the individual achieves this is to reduce the complexities of experience to manageable proportions by categorizing or
grouping experiences with respect to some shared quality; this process is the first
function of classification. The formation of entities called classes can thus be
regarded as an essential ingredient of the thinking process itself (Flavell), and as
Elkind points out, classification responses help to maintain the psychic economy
by eliminating the need for fresh adaptation every time a new experience is encountered.
Any curriculum fostering classification processes cannot ignore the developmental
sequence in which they appear. Up to this time, our knowledge of the step-by-step
development in this area of cognitive growth comes mainly from the research of Inhelder and Piaget. They have identified the following stages:

1. Simple sorting refers to grouping objects according to a single property perceptually obvious such as color, shape, or size. [290/1]
2. True classification refers to abstracting a common property in a group of objects and
finding the same property in other objects in the group.
3. Multiple classification refers to grouping objects on the basis of more than one
common property. Multiple classification also entails a recognition that any given object can belong to several classes at the same time.
4. All/Some relations refers to being able to recognize a distinction between classes
on the basis of a property which belongs to all members of the class and a property which belongs only to some members of the class. For instance, in a display of red squares, red triangles, and red circles, understanding all/some relationships would enable a child to recognize that all shapes are red while only some are squares or triangles.
5. Class-inclusion relations refers to an ability to form subclasses of objects or
events while including the subclass within a larger class . For instance, in a

container of wooden beads some of which are red and yellow in color, there is a subclass of red beads and a subclass of yellow beads, both of which belong to the class of wooden beads.

For those interested in an alternative listing, Koffsky used a scalographic study of classification development and presented a more detailed sequence of skill development than that presented here.

An example of the kind of experience a child needs in order to achieve one of the subprocesses of classification might prove useful. Let us assume that multiple classification is the subprocess of classification to be learned by the child . The purpose of the activity suggested is to enable a child to understand how an object classified on the basis of one attribute may belong to other classes at the same time (intersection) and/or that objects may be classified on the basis of two attributes (matrices) at the same time. The activity requires two large rings of sufficient diameter to include the following variety of objects when placed on a flat surface: four red triangles, four green triangles, four red rectangles, and four black rectangles. The child is instructed to place the rings near one another on a table or floor. He is invited to place all of the triangles inside one of the rings and then to place all of the remaining red objects inside the other ring so that the first ring can only have triangle s. The second ring is allowed to have red objects only. The two rings can then be intersected, and the child can be asked which of the objects can be placed in the intersection area on the basis of this rule. If he places only red triangles in the intersection, he understands multiple classification. A similar exercise can be done using a matrix where a given object appears in both a column and a row. ^Rows could be set up on the basis of geometric shapes and columns could be established on the basis of color.

A teacher who understands the Anisa theories is able to integrate the process curriculum with the content curriculum. In zoology, all of the animals have to be classified; in music, particular pieces can be placed in different classifications (e.g., romantic, classical, baroque, impressionistic, etc.); in social studies, societies can be classified in terms of the basis of their economy (i.e., hunting, food

gathering,
agricultural, fishing, etc.); in anthropology, men are classified according to races (i.e.,
biologically inherited physical attributes). Understanding both science and the arts as
disciplines depends upon the ability to classify; yet children are rarely taught what the
process of classification is so that they understand that they are applying or making
use of the same process no matter what the content might be. If they were taught the
[291/2] process with an emphasis equal to that given to content, what they learned about
classification in zoology, for instance, would be transferable to classification tasks in
social studies. It is the transferability of knowledge through the generalization of
process that is the hallmark of a competent learner . Thus, from an Anisa point of
view, process is the primary means of integrating the content curriculum.

The Affective Process Curriculum

Affective competence depends on the degree to which the organization of emotions
and feelings predispose the child to interact with the environment in ways which
support the release of further potentiality . Emotions are always associated with
processes from all other categories (i.e., perceptual, psychomotor, cognitive, etc.),
though in varying degrees of intensity. If the emotions are not properly organized, the
functioning of other areas may also be impaired. How to feel about things, people,
events, and ideas is for the most part learned but rarely "taught" in any direct or
conscious way in school. Because the organization of a child's emotional life takes
place through learning, it concerns the ability to differentiate feelings, to associate
(i.e., integrate) them with particular objects, people, events, or ideals, and to
generalize them to other environments . If this is done in a way that creates a
reality-based stability in the relationship between the child and his environment,
interactions will promote further growth.

We find it useful to regard emotional states as subjective assessments of the
viability of the organism at any given time. Since viability depends on the

integrity of
the organism itself and involves its relationship to the rest of the
environment,
emotional states always have a direct implication for doing something about
oneself or
altering one's relationship to the environment in some way. If, for instance,
one has
learned to be afraid of some object which is not harmful and for which there is
no
reason to be frightened, one's relationship to that object will be unstable in
the sense
that it is not based on reality but on error. If being frightened is uncalled
for, the
subjective assessment of viability represented by the fright is inaccurate and
unreliable; it leads to behavior patterns which reduce one's effectance as he
interacts
with the environment. "Effectance" is a word proposed by Robert White. In his
discussion on competence and motivation, he writes:
My proposal is that activity, manipulation, and exploration, which are all
pretty much of a
piece in the infant, be considered together as aspects of competence, and that
for the
present we assume the one general motivational principle lies behind them. The
word I
have suggested for this motive is effectance because its most characteristic
feature is seen in
the production of effects on the environment (White, 1959)
Because emotions are powerful determinants of behavior, it is important that
they
become organized in ways that enable the organism to maintain the best possible
relationship with its environment. Affective competence means having emotional
reactions to situations which represent accurate assessments of viability .
Behavior
based on erroneous assessments will very likely lead to more pathology.
Mowrer suggests two fundamental emotions : fear and hope. In essence,
they function as appraisals of viability. If we find ourselves in a threatening
situation, we
[292/3] have the subjective experience of fear and this directs us to try out a
number of
things to reduce the fear. If what we try out increases the fear, we usually
stop doing
them and try something else until we find something that gives us a little bit
of hope. The
experience of hope causes us to increase our efforts along those lines until a
condition of
complete viability is attained.
Several researchers, such as Arnold, Black, Brown, Cofer, Hillman, Plutchik,

Stronguran, and Young, have proposed paradigms for explaining the nature of emotions and how they are interrelated, but further research is required to clarify a number of unresolved issues (i.e., the difference between sensations, feelings, and emotions; relationship of physical pain to psychological pain). Even though much work remains to be done before we have a clear understanding of how emotions are organized to help create stable personalities, one thing is certain; namely, any educational system neglecting the emotional life of the child runs the risk of doing more harm than good. A person whose emotions are disorganized becomes his own worst enemy; his relationship to his environment, particularly other human beings, will be perpetually disturbed, and the general effect will be suppression of his potentialities .

To be comprehensive, any process curriculum will inevitably include as one of its main goals the cultivation of a rich and stable emotional life.

Teachers can assist children in achieving affective competence primarily through the relationships which they establish with them and the clarity and consistency of feedback they provide the children as they interact with the environment. Reward and punishment, two kinds of feedback, are particularly powerful means of helping a child to organize emotions in reference to objects, people, events, and ideas. Excessive inconsistency in rewarding and punishing a child leads to conflict in the organization of emotions and therefore disturbances in behavior. A comprehensive and detailed theory concerning emotional development and the processes which comprise it awaits further research and elaboration. In the meantime, we are studying a number of processes pertinent to gaining affective competence which involve inhibiting, coping, managing, and facilitating emotions and feelings in terms of subjective aim or sense of purpose. For example, it is important to be able to cope with sadness, disappointment, or feelings of persecution, particularly if the sadness or disappointment leads to behavior that undermines the achievement of a higher purpose. Similarly, it is essential for children to learn how to manage anxiety, how to inhibit a destructive impulse, and, perhaps more significantly than we think, how to facilitate

expressions of
joy, happiness, and gladness on appropriate occasions. (see Carney)

The Volitional Process Curriculum

Volition may be conceived as the central factor of self -causation or self-actualization of potentialities. It is intimately connected with one's growing sense of purpose and the use of goals consistent with the purpose as a general criterion for deciding how to interact with the environment. Thus, the purposive construction of experience and its role in actualizing other potentialities depends upon volitional capacity. Because purpose and intention both implicate the future, a child's positive orientation to his own future rests on the sense of power he has over it by virtue of experiencing his inner capacity to intend something and carry it through to a final consummation [293/4] compatible with some purpose he has in mind. Children who grow up having no experience in setting their own objectives and pursuing the steps required to achieve them never become fully independent, responsible, and self-reliant human beings. In our view, the critical role of volition in self-actualization makes all of the processes underlying the development of volitional competence a necessary part of any comprehensive process curriculum.

We have identified three basic processes on which volitional competence rests : attention, goal setting, and will. From a Whiteheadian point of view, these processes underlying volitional competence can be regarded as progressive steps in the enfoldment of organismic purpose. In other words, will arises out of intention to achieve the goals set, the setting of goals presupposes attention which in turn presupposes purpose or interest. Keep in mind that these processes are not functionally separate elements of volition; we find justification in breaking them down into these elements only for the sake of conceptual clarity and because such differentiation provides a scheme that has more direct implications for curriculum construction (see Conway, in press). Following are fuller descriptions of each of these processes and their related subprocesses.

Attention

Many researchers (Mackworth, Broadbent, Ryan, Neisser, Norman, Vernon, Bakan, Hebb, and Conway, 1973) have generated a variety of perspectives and raised a

number of important issues concerning the nature of attention . The material presented in this section draws extensively on the work of Conway who made an extensive survey of the literature in preparation for the development of the Anisa process curriculum for the development of volitional competence . From that survey, we arrived at the definition of attention as the purposive selection (differentiation) and organization (integration) of bodily movement, sensory information, feelings, thought, and memory into a single focus of conscious experience. This definition represents a general synthesis of a large number of definitions and theoretical perspectives put forward by different theorists. Although a great deal of research on attention has been carried out, there has, up to this point, been no theoretical base broad enough to integrate the wide variety of findings and make sense of the extensive body of data accumulated.

We have formulated the preceding definition in accordance with the principle that theoretical statements should illumine and explain experience but not contradict it. In that regard, we have found the works of Titchener and James useful from the experiential point of view and the work of Whitehead to be of critical importance in providing the unifying philosophical and theoretical perspective.

Titchener, taking a structuralist approach to explain attention, concentrated more on the qualities and characteristics of the stimulus being attended to (i.e., intensity, discreteness, irregularity, suddenness, novelty, rate of change). James, on the other hand, took a functionalist approach and viewed attention as a selection process determined more by the subject.

> It is the taking possession by the mind, in clear and vivid form of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration [294/5] of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others and is a condition which has a real opposite in the confused, scatterbrained state which in French is called distraction. (James. Vol. 1, p. 403)

What is it that directs us to "withdraw from some things in order to deal effectively with others" and avoid the "scatterbrained" state ? Many different things can influence us to leave some things to deal with others; examples are thirst,

hunger,
desires, discomforts, or any of the other so-called primary and secondary drives. In
man, even these things may be dominated by higher aspirations . In this regard.
Whitehead's contribution establishes the rationale for accepting subjective aim or
purpose as the major unifying force that is expressed in the unitary experience we call
focal awareness. One of the great problems that has plagued psychological inquiry
concerns the question of how many things one can hold in focal awareness, that is, pay
attention to, at one time. In simple terms, the answer seems to be that the mind is
capable of grasping and paying attention to any number of things, provided those
things are connected in some way and make an integrated whole . If the elements are
disparate and unconnected, then the mind must make a choice of one or the other . In
other words, the power of differentiation or abstraction must be accompanied by the
power to integrate if those differentiated elements are to come into focal awareness at
the same time. The integrating factor will tend to be the sense of purpose or intention
of the person. We therefore see attention as an act of constructive synthesis which
reflects past experience, present needs, and future intentions.
What is the nature of synthesis? Are all of the elements synthesized held in focal
awareness with equal clarity? Our experience tells us that we can be aware of some
things very acutely while at the same time be only somewhat aware of other things. It
appears that consciousness is comprised of different levels of attention, hierarchically
organized. Focal awareness is at the peak of consciousness . It arises out of a
perpetually emerging integration of a number of elements from lower levels of
consciousness. For example, if we are good readers, we are focally aware of meaning
that arises out of the sequence of words; on a slightly lower level of consciousness or
attention, we are aware of words; below that, we are aware of the individual letters
that make up the words. Reading is a complex process; its purpose is to derive
meaning from a graphic code made up of letters . If letters themselves are what

is
in focal awareness, reading will be impossible because meaning inheres in the relationships among words and not in the letters themselves, although there are no
words without letters. The purpose of reading determines the hierarchy of awareness
levels. If the hierarchy is reversed, reading ceases.
Inasmuch as very little formal learning takes place unless there is an intention to
learn and an ability to pay attention to the primary elements of the learning task,
learning how to attend and concentrate becomes increasingly more important as the
child develops. For this reason, attention occupies a central position in the configuration of processes which make up the Anisa process curriculum. While a great deal of learning can take place incidentally simply by virtue of the child's interaction
with the environment, attaining higher levels of competence in all categories of
potentialities, particularly those requiring exceptionally refined motor movements (e.g.,
playing the violin) or those that demand well-developed reasoning abilities (e.g., working
out the solution to a complex and difficult mathematical problem), requires highly developed attentiveness. [295/6]

Goal Setting

In arriving at a definition of goal setting, we have drawn on the works of a number
of investigators (Locke, 1966; Locke and Bryan; Ryan; Franken and Morphy; Hughes; Winter et al.) who have investigated the dynamics of goal setting and their
organizing effects on behavior. In the Anisa model, goal setting is defined as the
process by which an individual organizes his future by differentiating events which when sequenced (integrated) appropriately arrive at that anticipated future. At the heart of goal setting is making a decision about how one's energy will be used. The word decide means to cut off; every decision, then, has the consequence of ruling out or saying "no" to any number of possible actions which will have to be rejected on the basis that they will not lead to the achievement of the goal being set . It is not difficult to imagine why children who grow up in circumstances in homes and in schools where they are not allowed to set goals and have very little experience in making their own decisions become indecisive in their general approach to life. Such people are inveterate procrastinators and their orientation to opportunity is to wait until circumstances and other people force a decision one way or another. They do not take an active hand in shaping their own destinies but allow the shaping to be done by forces

outside themselves. Since one of the basic purposes of the Anisa model is to prepare children to take over the responsibility for determining their own destinies, it makes provision for definitive guidance in setting goals . In systems based on the model, children have daily opportunities for setting both short-term and long-term goals which they are encouraged to pursue until they accomplish them . Such an accomplishment brings about what Whitehead considers to be an essential motivating element in the general process of self-actualization, namely, self-enjoyment. Being able to decide what it is one wants to accomplish and then being able to achieve it are vital to the maintenance of mental health and stability of personality . It is the wellspring of reality-based confidence, one of the fundamental sources of self-encouragement.

Because man is fundamentally a social being, there are group or community counterparts to most of the processes we are discussing. For example, the source of group encouragement, motivation, and morale lies in members of the group participating in collective intentions and consummating them. If children are to become socially mature, they must learn how to participate in the formulation and sharing of group goals and cooperate with others to accomplish them. This aspect of the Anisa process curriculum is referred to later in conjunction with a discussion on the development of moral competence.

Will

Will is the realization of an intention or accomplishment of a goal . It is expressed in terms of three subprocesses: self-initiation, perseverance, and effecting closure.

The concept of will has been at the center of philosophical inquiry and controversy for centuries. Our tentative definition represents a synthesis of the views of many thinkers and the findings of a large number of researchers (May; James; Kenny; Polanyi; and Arieti). The implications of self-initiation, perseverance, and effecting closure for a process curriculum are extensive. They are the ingredients of autonomy and independence and can be fostered as part of any activity associated with other elements of the process and content curricula. [296/7]

Once we grasp the essential nature of attention, goal setting, and will as an active process of differentiating and integrating experience around purpose, it follows that we cannot expect a child to stay at a task for any length of time if he cannot intera ct with the environment. The findings of empirical studies clearly demonstrate the inferiority of a passive modality of learning. A child must be able to manipulate and act upon his environment; otherwise, he will not develop high levels of

attention and
sense his own effectiveness, because there is very little feedback on what he is doing in
the passive modality, simply because he is doing so little. Awareness of and sensitivity to
feedback comes with active experience where there is an abundance of feedback . For
this reason, teachers can improve the volitional capacity of their children, particularly
those concerned with attentional processes, if they will demonstrate and directly
involve the children in a wide variety of interactions with the environment rather than
just explain to the children how something should be done but not have them do it .
Learning how to pay attention, set goals, and effect closure comes from actively doing
rather than passively observing somebody else's doing.
We have not devised a great number of experiences specifically for the purpose of
helping children learn how to pay attention, set goals, and activate their wills,
although in some cases it might be desirable to do so. Rather, since volitional effort is
an intrinsic demand of all intentional learning, the pedagogical requirements for
teaching the child how to attend, adopt goals, and achieve them have to be met in
every learning task. Therefore, while all experiences planned as part of the Anisa
process curriculum involve a variety of different processes, they always include
attention, goal setting, and will. In time children learn how to arrange their own
environments so that they control the level of distraction, but they also learn how to
ignore irrelevant stimuli and carry on with the task in hand . A teacher can help a
child to gain powers of concentration by regularly providing him with feedback on
what he is doing and assisting him in understanding a need for seeking out
feedback on his own. Eventually, a person can provide a good deal of his own
feedback by learning how to establish criteria by which to measure his own
progress. Once such criteria are established and justified, the person can compare
what he is doing or producing with the established criteria and determine for himself

whether or not he is satisfied with his work or whether he should try to improve what he is doing. Being able to fantasize the achievement of the goal (i.e., what it "feels like" and looks like to have achieved the goal) is important. Such fantasies function as an intrinsic source of motivation to persevere. They create the anticipation of inner satisfaction that comes when intentions are consummated in accordance with expectations. The fantasy is a projection of what it is like for there to be a good fit between what one is doing and the criteria by which goal achievement is determined. Teachers can use a variety of questioning procedures to encourage a child to fantasize in this constructive way. They can also involve children in the reading of stories whose basic themes elaborate an idea, relate the idea to specific goals, show how the main characters of the stories primarily pay attention to those things which lead them towards the goals, and exemplify the function of accurate feedback in maintaining high levels of perseverance.

Timing is also an important element in assisting children to attain volitional competence. Since children work at different rates, they finish what they start at different times. If the rhythm of the school day is dictated by bells which ring at predetermined [297/8] intervals and the bells signal the termination of all activities of one kind and a shift to another category of activities, many children will perpetually experience a loss of inner satisfaction that comes from consummating their intentions. Repeatedly being robbed of such inner satisfaction undermines the attainment of volitional competence. Therefore, one of the most important things a teacher can do to assist a child in achieving volitional competence is to insist that when he begins something, he is not only allowed, but actively encouraged, to finish what he begins. In most cases, this will mean going by individual developmental time rather than clock time.

The Process Curriculum, Value Formation, and the Emergence of Personal Identity

The fundamental proposition of the Anisa theory of development, that is, the translation of potentiality into actuality is sustained by interaction with the

environment,
has extensive ramifications for both content and process curricula . The theory not
only provides a means of classifying interactions but also classifies environments . As
one might expect, interaction with different kinds of environments produces
different patterns of actualized potentialities . Since a potentiality is a latent
power or unexpressed energy, it is expressed as power or energy in one or more of the
categories of potentialities when it is actualized. For instance, before a child learns to
walk, he has the psychomotor potentiality of walking.
The model establishes three basic classifications of the environment following the
ontological levels of creation as set forth by Whitehead, namely, the physical or
nonhuman environment (minerals, vegetables, and animals), the human environment,
and the unknown environment. The model also recognizes the existence of a fourth
environment—the Self, a fusion of the other three in microcosm which emerges over
time and becomes the most consistent part of its own environment . The theory
of development explains how the powers or energies are structured as they come
into being when potentialities are actualized. In other words, the energies which represent
actualized potentialities are not randomly expressed after they are actualized; they
are patterned. We call these patterns values. (For additional information, see "Self-
Actualization as Value Formation: The Anisa Theory of Value" and Biological
Dimensions of the Value Theory of the Anisa Educational Model by Raman.) Thus,
as the organism interacts with the physical environment, it forms material values and
on these values rest a person's technological competence. As the organism interacts
with the human environment, it forms social values on which the person's moral
competence rests. As the organism interacts with unknowns (e.g., his future, his
own potentialities which are not fully known to him, his own mortality, etc.), he structures
assumptions about the unknowns which incorporate some kind of position on
ultimate unknowns. Because unknowns can only be approached on faith, we say that the
interaction of the organism with the unknown environment leads to the formation of

aesthetic or religious values on which philosophical or spiritual competence rests . It is important to note here that we are defining religion in a psychological sense rather than in a denominational sense . In other words, faith is a psychological phenomenon which is open to scientific inquiry like any other psychological phenomenon. Its operation in the human psyche speaks to the organism's orientation [298/9] to the future, purpose, ideals, aspirations, and hopes. Seen in this light, "religious activity" is manifested in everybody's life, even if he regards himself as an atheist. The integration of a person's material, social, and religious values is the structural and functional reality of personal identity—the Self. A person's values define him. They represent how he deploys his energy and therefore manifests to everyone what he believes to be most worthwhile and least worthwhile . We refer to the patterns of energy use, that is, how a person invests the most precious asset he has, his energies, when we talk about a person's values in some abstract sense.

When we say we want to get to know somebody, we are really saying that we want to know the patterns through which he expresses the energy available to him. This will tell us who he is, whether we can get along with him, and whether we will like him. The Self, defined in this way, focuses on process and dynamics and thus presents character in terms of patterned energy utilization.

When interacting with the physical environment, these patterns will lead to technological competence or incompetence. When interacting with the human environment, such patterns might be seen as responsible, irresponsible, cooperative, fair, honest, deceitful, aggressive, caring, helpful, disruptive, or hostile. These patterns define the moral competence of the Self (see Theroux).

When the organism interacts with the unknown, it uses energy to form ideas about ultimate concerns. This includes the formation of an ideal Self as a part of those ultimate concerns. The patterns of energy used to form and nurture these ideas give purpose to life; they are the source of its wholeness and stability and the lure for its becoming. On these patterns rest the philosophical and aesthetic competence of the Self.

The model also explains how three basic symbol systems—mathematics, language, and the arts mediate the structuring of material, social, and aesthetic values respectively. (For a fuller discussion on the role of the arts in education, see "The Arts—Neglected Resources in Education," by Jordan.) These symbol systems are at the core of the Anisa curriculum and are the connecting links between the process and content curricula.

Conclusion

To the extent that teachers and educational administrators have felt that the field of curriculum is moribund, as Schwab expressed it, they have felt compelled to revive it by initiating a number of curriculum innovations. A substantial number of these innovations have tried to take into account the idea of development, interaction, and process. In the absence of a well-defined theory of development, most of these efforts have resulted in a concentration on providing a wide variety of materials as a means of keeping children engaged in activities, whether or not these activities lead to any particular educational objectives . Kliebard, in reappraising Tyler's curriculum rationale, even goes so far as to suggest that "the starting point for a model of curriculum and instruction is not the statement of objectives but the activity (learning experience), and whatever objectives do appear will arise within that activity as a way of adding a new dimension to it" (Kliebard, pp. 268-69).

While this move in the direction of involving children in more activity may be a good one, doing so without having objectives in mind has resulted in a neglect of [299/300] content. Special attention must therefore be given to content if children in an "open" educational system where varieties of activities are optional are to glean basic information about the world in which they live and the culture of which they are a part. Children who do not assimilate such information will be at a disadvantage when compared with those who do.

Unfortunately, not only does content tend to be neglected when activities are emphasized and goals left to chance but fundamental processes may not be internalized either. We take the view that at least for a certain percentage of the child's time in the school setting, activities should be organized to achieve

particular
process objectives (e.g., classification, seriation, figure-ground, laterality, etc.) as
well as content objectives. Optional activities which are not organized to achieve
particular educational objectives may yield a limited harvest; it is possible for children to
engage in activity without learning very much. Teachers and parents too easily fall
into the trap of believing that a great deal of learning is taking place simply
because the children are busy. While it may be true that a child who is engaged in
activities is probably learning more than a child who is not, this does not release
the serious educator from the obligation to make all activities function as a means of
imparting content and enabling the child to internalize process. The child who is an
enthusiastic participant in activities and produces many things may be regarded by a
teacher as a child who is, because of so many achievements, learning at an optimum rate.
Yet the evidence indicates that achieving is not necessarily the same as
internalizing a process. A child may be able to give a correct response to a stimulus
without understanding why it is correct. He can remember that four is the correct
response to the stimulus question "What is two plus two?" without understanding
the process of addition. For this reason, it is essential that teachers not regard
products as evidence that the underlying process has been internalized.
The problem of distinguishing process from product or process from achievement is an
old one in education (Werner). It is a problem which developmental psychologists,
particularly through the work of Piaget, are beginning to solve. Ultimately, the most
successful educational systems will be those that achieve a balance between content
and process and find a way to integrate them within a single curriculum . The
integration of the content and process curricula requires the differentiation of the
teaching staff and their coordination through effective administration. (For a full
discussion on the role of administration in staff differentiation an d curriculum
implementation in the Anisa Model, see Streets.) The Anisa model represents one

promising effort in that direction.

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