

CHAPTER VIII

INTERACTION

Observing Interaction

Once a teacher has arranged an environment to facilitate development, his next responsibility is to carefully observe and guide the student's interaction with it. Interaction is the way in which the environment and the student operate upon each other. The quality of the interaction is a function of the match between environmental arrangement and student developmental level. The previous chapter addressed the subject of environmental arrangement. This chapter will focus on the relationship between student developmental level and interaction.

Developmental Level

According to Piaget, children construct knowledge (schemas) about the world around them.

Fundamental to Piaget's theory is the notion that knowledge is not passively received from the environment but actively constructed by the organism. Piaget rejects the S--O--R model because it assumes that the organism perceives and receives the stimulus from the outside in a passive way. As Piaget puts it, there is nothing stimulating about the stimulus itself, and stimuli as such do not stimulate the organism. It is the organism that acts on the stimulus, and not the other way around. ...For example, the baby may be exposed to his bottle hundreds of times, but he does not know it well enough to recognize it until he has constructed the object in his mind (Kamii, 1972, p.112).

Piaget has discovered that this process of construction changes as the child develops. Piaget has identified four major stages which represent different levels of cognitive development. These are: 1) sensory motor stage, 2) preoperational stage, 3) stage of concrete operations, and 4) formal operations.

In the sensory motor stage

Children...encounter objects through random physical movement, without thought (Dyrlfi, 1972, p.6).

The muscular reflexes by constant exercise, become modified and the child's physical movements in space get coordinated. He acquires notions of objects and their permanency... (Raman, 1973, p.7)

In the preoperational stage the child approaches problems through trial and error.

...the child does not use logical operations in his thinking. ...the child is perceptually oriented, i.e. he makes judgements on the basis of how things look to him... He is aware of only one variable or property since it stands out visually. He lacks the ability to coordinate variables... The development of logical process, though not stagnant, is very slow... (Ibid; p.8)

In the stage of concrete operations:

...the child...begins to think logically, but this thought is concrete rather than abstract. In other words, while he can now perform simple logical operations, the child can do more advanced thinking if given physical objects to manipulate than he can if he is expected to do the same problems symbolically (Dryll, 1972, p.12).

Finally, in the stage of formal operations

The individual in the stage of formal operations learns to manipulate symbols and deal with ideas verbally without the necessity for always working directly with the physical objects. In other words, he becomes able to think in increasingly abstract terms.

The individual in this stage also learns to hypothesize before doing something. He can suggest for example What might happen if I put an ice cube in a glass of cooking oil," and can then perform the operations necessary to either prove or disprove his suppositions (Ibid. p.23).

The first step, then, in observing interaction is to identify the general developmental level of the child. The environments should then be arranged with the consideration of developmental data. The teacher can observe the degree of complexity that can be handled and the degree of abstractness. The teacher also needs to observe the length of time children

spend in various activities (see chapter VII for discussion on complexity, abstractness, and pacing). A two year old may spend thirty minutes dropping pennies through a slot into a can. It is unlikely that a normal ten year old would be interested in doing that activity at all. The ten year old might spend half and hour writing a story--something that is very unlikely for a two and a half year old.

Obviously, a child cannot handle information until he has a framework for dealing with it. Watching the activities in which a child engages, the activities he avoids, the appropriate and inappropriate behaviors he manifests helps a teacher determine the level of development of a child's framework. The importance of the level of development of this general framework has been related in an example given by Kamii.

Let's take the example of the knowledge that Washington is the capital of the United States. If we tried to teach this knowledge to our preschool children, the most we would get would be rote recitation. The children would not even understand the statement because they do not have the general framework of knowledge into which they need to fit the statement in order to understand it. They need a framework of geography and political organization to understand this sentence. To have this framework, they have to have a general cognitive structure. Even the four-year olds living in Washington would not understand that they live in Washington, or that they live in a city and a country at the same time. To them, "capital" may mean a person, or a building, or a fountain, or nothing at all. Classification is thus involved in understanding each of these words, as well as the relationship among the three main words. In addition, space has to be structured to understand the spatial relationship between Washington and the United States.

A sixth grader can more or less understand that Washington is the capital of the United States. However, after six additional years of living, reading the newspaper, studying history and civics, and taking a senior trip to Washington, the same child will be able to derive much richer meanings from the same statement (Kamii, 1972, p.93-94).

The Learning Process

A child develops his schemas through learning. Learning consists of the processes of differentiation, integration, and generalization.

Differentiation is the process of selecting out, finding the differences in or between, distinguishing, discriminating, separating, or setting apart. It is facilitated by increasing clarity, reducing complexity, providing focus through cues, supplying comparison and contrast, and allowing for exploration of variation. These can be provided by re-arranging the environment (non-symbolic intervention) or through symbolic intervention.

Arranging the environments (non-symbolic intervention) has been discussed in the previous chapter. The environment should be arranged to provide for clarity. Children should be able to easily recognize materials, determine their use, and be able to find where to return them. This suggests that instructional materials should be contrasted against a plain ground. Walls, shelves, carpet, etc. should be a neutral as possible. The use of instructional units should be clearly indicated by their placement and display. They should be separated by space so that they can be clearly seen as a separate unit. Color and form can be used to provide definition. If the environment seems too difficult for a student the teacher should attempt to simplify it even more and perhaps even provide cues. For example, if a child is having trouble serializing ten different sized cubes in a building tower, the teacher might reduce the number of cubes giving the child only

three--the biggest, smallest, and one half way in between in size. The correct order could even be cued by laying the blocks out in a line in the correct sequence. If cueing is necessary, attempts should be made to eliminate it as soon as possible.

Sometimes the information a child needs is not provided naturally by the environment or is too subtle for the child to differentiate and the teacher needs to provide the information to the child symbolically. If the information is subtly inherent in the environment the teacher can use indirect symbolic intervention (ask questions). If the child is too frustrated or unable to get the information from the environment the teacher should use direct symbolic intervention (tell him).

A teacher can use indirect symbolic intervention (asking questions) when information is available to the student but he has not focused on it. Questions help focus a child's attention. During differentiation, a teacher should ask questions that help a child attend to separating data. These would be knowledge questions. A young child might be asked the difference between a watermelon and a cantaloupe. A college student might be asked the difference between learning and development. The significant thing for a teacher to realize is that he shouldn't begin with just any knowledge question. The teacher must select the important elements to which the child is failing to attend. Secondly, the teacher must ask the child the difference between these elements and other elements. Thus, a teacher doesn't just ask a child "What

is a cantaloupe?" He asks "What is the difference between a cantaloupe and a honeydew?" This focuses on the color of the flesh and the taste. He can then ask, "What is the difference between the cantaloupe and watermelon?" This draws attention to the texture of the outside.

Telling a child (direct symbolic intervention) should be used when information is not easily accessible for the child. For example, the only way for a young child to learn the name of the large, smooth, green egg shaped object with a red juicy inside and many small black seeds is to be told that it is a watermelon. There is nothing inherent in the appearance of the object that suggests that the particular sounds which make up the word watermelon should be connected with it.

In facilitating differentiation it is preferable to attempt to guide the process by first re-arranging the environment. If this is not enough, non-verbal cues should be used next followed by indirect symbolic cues (questions), and finally by direct symbolic cues (penciled marks, arrows, diagrams to spoken word).

Whereas differentiation is the process of separating elements, whether internal or external, integration is the process of organizing and relating the elements together in a new way providing new information, feelings, perceptions, or skills. Integration is the bringing or fitting together of parts into a whole. After a child is able to select out elements, he must figure out the relationships between the elements, how they organize into a whole. Students must put things together, combine, make connections, and synthesize.

Bloom has said:

This is a process of working with elements, parts, etc., and combining them in such a way as to constitute a pattern or structure not clearly there before. Generally this would involve a recombination of parts of previous experience with new material, reconstructed into a new and more or less well-integrated whole (Bloom, 1956, p.162)

For Bloom, integration is

...the notion that every experience involves a combination of parts of previous experience with the present experience in such a way that the organism is permanently changed, however slightly.

Often the concept of integration is discussed in terms of "creative learning"...In one sense all learning is creative; the individual has acquired an understanding or some other reorganization of experience which is novel for him (Ibid. p.165).

Once elements have been clearly separated out (differentiated) attention needs to focus on how they relate together. This process is facilitated by redirecting the procedures used to promote differentiation. A relationship represents aspects that elements have in common. Therefore, clarity, simplicity, and cues can be used to focus on similarities and for drawing comparisons rather than on differences. For example, for differentiation, attention was focused on the differences between watermelons, honeydews, and cantaloupes. Students focused on the outer texture, inner color, and taste, in order to discover these qualities. Now, during integration, the child needs to discover that the smooth green outside always has the red inside with small black seeds and watery taste while the rough tan outside and orange inside consistently has a stronger and different taste while yellow smooth outside and green inside has a sweet taste. The relationship between the yellow smooth outside and green inside is that they both belong to the same unit which has a sweet taste. This unit of color,

nervous system stores information according to holographic principles. The theory claims that interference patterns from multiple signals which come to the nervous system at the same time are recorded at the synapse. Therefore, multi-stimulation facilitates pattern formation and recall.

In brief review, integration is the pulling together of elements into a pattern. It is facilitated by focusing attention on finding similarities and drawing comparisons, by providing time for incubation, and by providing a variety of experiences over time through different senses and modes of learning (perception, cognition, etc.).

The third process in learning is generalization.

Generalization is the process of extending the newly discovered relationships and patterns to include similar phenomena. It is the transferring of patterns of relationships to new situations. It is the inference of similarities and differences between one situation and event and other situations and events. In a way, generalization is a further, broader set of differentiations and integrations. In the example of the melons, the focusing on color, texture, etc. represented differentiation. The putting together the elements into a relationship which formed a unit (smooth green outside, red inside with seeds composes a watermelon) represented integration. The recognition that watermelons, cantaloupes, and honeydews are similar (are all melons) represented a generalization.

texture, and taste can then be distinguished from the other two units--cantaloupe and watermelon. (Next, a generalization can be drawn by noting the similarities between them--they each have a rind, seeds, are juicy, and their internal substance is similar in texture--defining attributes of "melonness."

Integration, then, is finding similarities and patterns. Patterning takes time.

Psychologists have long known that, when properly spaced, periods of learning are more effective than when continuous... here we see novelty in ideas appearing after intermittent attack upon the problem. Back of these facts stand a physiological process which is not yet completely understood. I suggest that we take the fact of increasing neural organization and growth as a phenomenon and deal with it as such until we know more about it (Hutchinson, 1947, p.247).

Dr. Maltz (1961) has provided findings which suggest that integration requires time. He gave examples of amputees continuing to respond as if they still had their missing limb up to twenty-eight days after amputation. They could obviously see that the limb was missing, they could talk about it being gone, but they would still act as if it were there. They had differentiated out that the limb was gone, but it took time to integrate that fact into their thinking and behavior. Thus, it seems appropriate to assume that integration can be facilitated when a series of experiences are spread over a period of time allowing time for incubation during which neural organization can take place.

In addition, multi-sensory and modal stimulation may also increase pattern formation. One current theory, based on the mathematical formulas derived from a study of holograms, hypothesizes that multi-sensory input is important because the

It is important that students be able to transfer learning from the specific situation they encountered to other similar situations. Such carry over is facilitated by exposure to other situations, phenomena, incidents, etc., and having students focus on similarities and differences with their specific newly integrated experience. Generalization calls for the newly integrated pattern to be treated as an element which is to be differentiated from other elements and integrated into an even broader pattern. It helps to allow the child to test out his newly found pattern of relationships in other contexts through reflection, direct comparison and contrast, or, if possible, by direct application.

Altogether, learning competence is the gaining of conscious control over differentiation, integration, and generalization as applied to the multiplicity of processes underlying the five general categories of potentiality: psycho-motor, perceptual, cognitive, affective, and volitional. These processes are utilized in developing skills for interacting with the physical, human, self, and unknown environments creating technological (for the physical environment), moral (for the human environment), and spiritual (for the unknown environment) competencies. This means that interaction involves both process and content. Therefore, a teacher must diagnose and guide interaction on the basis of the development of process and the learning of content. This necessitates knowledge of the important processes

underlying the five categories of potentialities and the information to be acquired in the major categories of content.

Categories of Potentialities

As mentioned, the basic categories of potentialities are volitional, affective, psycho-motor, perceptual, and cognitive. Of course, there are an infinite number of potentialities. Each may become a specific process of interaction with the environment. A process is an "...ordered expression of a potentiality (Kalinowski & Jordan, 1973,p.5)." Because there is no way to determine all of the processes, it becomes necessary to

....identify those processes which are central--those which have the greatest importance for the subsequent life of the organism. The importance of a process is defined by two criteria: (1) the degree to which it engenders effectance, (i.e., the degree of control over the environment it brings to the organism); and (2) the extent to which it is fundamental to other processes, (i.e., the extent to which it creates or extends potentiality).

Processes themselves are initiated and maintained through interaction with the environment (Ibid.).

In the actualization of potentialities through an ordered expression (process), a stage (representing the basic unit of change) consists of differentiation and integration (and the sub-stage of generalization in psychological expressions) (Ibid.p.13). In guiding interaction a teacher needs to be able to identify important processes, the units of change (stages) which take place in each, and the elements which need to be differentiated, integrated, and generalized in each unit of change (stage).

This information can be found in the specifications of the Anisa Model. For each of the five general categories of potentialities the Anisa Model has identified the "central" processes which "...have the greatest importance for the subsequent life of the organism (Ibid.p.5)." A specification has been written for each process containing a definition, description (and a review of the literature), developmental sequence, justification for selection of the process in terms of its importance to learning competence, educational objectives, proto-typical experiences for facilitating differentiation, integration, and generalization, and procedures for evaluation. A listing of processes identified by Anisa can be found in the appendix.

A recognition of the central processes, the developmental hierarchy of changes for each, the elements in each which need to be differentiated, integrated, and generalized is important. It has been found

...only about half of the adult American population fully reaches Piaget's stage of formal operational reasoning and only 5% reach the highest moral stage demonstrating that natural or universal forms of development are not inevitable but depend on experience (Kohlberg & Mayer, 1972 p.486).

The task of the teacher is to influence the kinds of experience a child has in order to insure maximum development of potential. This means the teacher needs to recognize the child's current stage of development and be able to arrange environments and guide interaction in such a way that facilitates the differentiation, integration, and generalization leading to the next

stage (a change representing a higher level of competence). Consequently, the teacher is in charge and responsible for providing general goals, the manner of organization which will facilitate their achievement, and evaluation of that organization and the level of achievement attained.

Guiding Interaction

In order to guide interaction, a teacher must understand the nature of structure in the classroom. Structure refers to process of organization. The central questions involved are what decisions are to be made, who is to make them and when are they to be made. Traditionally, this has raised questions about intentionality (who makes the decisions) and discipline (what to do in order to have student decisions match teacher decisions). Romantics (Rousseau, A.S. Neil, proponents of free schools and de-schooling), believe the decisions should be left to the child and the teacher should not interfere. Cultural transmissionists (Skinner, Ausubel) believe the teacher should make the decisions and intervene when a student decision does not match the standards set by society as represented by the teacher. A developmentalist (Piaget, Kohlberg, Anisa), on the other hand, takes neither view. The child cannot be left to fend all by himself. Development does not occur naturally and should not be left to accident. However, this does not mean the teacher should be dogmatic and an elitist. The teacher is guided by general principles of development which allow for growth of increased

competency. Using these principles the teacher provides opportunities for the kind of interaction which allows the child to construct his own knowledge (knowledge is not forced upon or demanded of children)(Kohlberg & Mayer, 1972). Environmental arrangements (both physical and human) provide the organization which facilitates development. In this way, the structure that is provided is a precondition for learning and development. Within the structure (upon the conditions established) the child makes decisions. If the structure is clear and consistent the child will get the information and feedback he needs for making better decisions, gaining control over the environment, and thereby developing competence.

The teacher's task, therefore, is not so much to tell the child exactly what to do, how to do it, and when to do it. Nor is the task to punish a child for making an inappropriate decision. Instead, the task is to arrange the environment in such a way as to allow a child a number of decisions anyone of which will provide opportunity for development. If in interacting the child makes an inappropriate decision the teacher's job is to guide the interaction so the child gets the feedback he needs to change. Everyday many opportunities are available for psycho-motor, perceptual, affective, cognitive and volitional development. In addition, opportunities for moral, technological, spiritual, and symbolic development are also provided. These opportunities are at various levels of complexity so that the child can become engaged with those at his own developmental level.

Guiding interaction involves 1) rearranging environments, 2) establishing groundrules (which are part of the human environment), 3) intervening, and 4) pacing. Inherent in all are purposes (goals), clarity and consistency of organization, and method of evaluation.

Rearranging environments

Although environmental arrangement has already been discussed to some extent, it needs to be stressed that environments cue and direct behavior. The stereotype of a traditional classroom gives the student the following choices: 1) sit at desks, stand up, move around, sit on floors, 2) read textbook, listen to teacher, talk to friends, bring in own activities, do nothing, doodle, experiment with few resources at hand--throw spit wads, carve on desks, and so on. How many of these choices does the teacher wish the child to take? What choices does the child have for psycho-motor activity? (Climbing over desks? Throwing spit wads?) What perceptual activities are available? (Counting holes in the tiles in the ceiling? Looking at members of the opposite sex?) Obviously, the child has a few options. However, they are not options which will maximally benefit the child. The teacher probably only desires the child to choose one or two of these options. Therefore, the teacher probably establishes groundrules to limit the child's options.

If, in such an environmental arrangement, the groundrules limit the choices even more so that the children can only sit at desks and either read or listen to the teacher, and if intervention is basically intended to take place through

paper exchanges (tests), and if pacing consists only of variation between book assignment and teacher talk, the teacher is faced with an impossible task of providing something meaningful enough to initiate and maintain involvement. The task becomes even more clearly hopeless when the differences in developmental level are considered.

In such an environment, the student has only one choice that he can make that will satisfy his teacher. That one choice may, or may not, facilitate his development. The student also has a limited number of other choices which he could make that would not satisfy his teacher. The question arises of how to reverse the situation putting the student in a position where he has a number of choices to make that will not only satisfy his teacher but will promote his development and only a few choices which would be inappropriate.

The teacher needs to consider what options are being offered to students to take. The environment should be arranged so that the options are clear, there are at least several, and most of them are desirable. Undesirable options should be eliminated environmentally if possible.

Establishing groundrules

Options which cannot be eliminated through environmental arrangements are, ideally, eliminated through groundrules. Groundrules should focus attention on what is done. For example, one groundrule might be "Here we walk." That rule implies that running is not appropriate in class. Nothing

is wrong with running. In class, however, it may result in accidents (slipping, knocking over someone's project etc.) because children have not completely developed control in movement, coordination, timing, judgment of momentum, etc. Environmental arrangements can decrease tendencies to desire to run (space is divided into small activity areas, corridors provided by shelves etc. are fairly short), but it would be ridiculous to go to the extremes necessary to environmentally limit running altogether (fill room with water, lower ceiling to two feet from floor etc.). So, a groundrule is established. It eliminates problems. It helps create order. It focuses attention on some options while drawing attention away from others. Walking is quieter. It eliminates games of chase.

Enforcement of groundrules is important. The rules need to be clear so they can be consistently enforced. It is easy to see if a child is walking or running. Rules that require constant interpretation should be avoided. Therefore, rules like "No goofing off" should be changed.

Rules need to be consistently enforced. Exceptions should be few and based on a good rationale. Even visiting adults should be asked to follow the rules. If a rule is broken the teacher should not threaten to enforce the rule, he should not dish out verbiage, and he should avoid punishing or humiliating the child. Depending upon the seriousness of the infraction the teacher should either just say, "here we don't do that" and tell the child to correct his mistake, or remove the

child from the activity or the activity from the child.

This should be done in an unemotional, objective tone that clearly indicates a statement of fact.

If the structure is clear and well thought out, the teacher should never have to vacillate in determining whether to put up with behavior which is inappropriate. Such behavior calls for immediate intervention.

Intervening

When environmental arrangements and groundrules are not enough to move the child in the direction of development, intervention (guiding interaction) is necessary. Intervention is only necessary when 1) a child is breaking a groundrule, or 2) a child is moving away from success. Intervention with children who have broken groundrules has just been discussed.

Intervening to facilitate success implies that the teacher has an idea of some potential outcomes that can be derived from the experience that is appropriate for the child. The first kind of situation that might arise is the child may not be able to ascertain from an instructional unit its purpose or possible uses. The child needs to be introduced (initiated) into the use of the instructional unit. This calls for demonstration.

Demonstration is a technique for displaying information in basically a non-verbal way. It is useful because, if it

is done well, it is direct and uncluttered. Verbal symbolization is a step removed from reality and requires translation on the part of the student.

An effective demonstration provides a child with a clear view and orientation. It provides a clear demarcation between each step (usually indicated by a pause) and focuses attention only on the important aspects of process.

No matter what processes the instructional unit was chiefly intended for, the teacher should always keep volition and affect in mind. The teacher should not look bored, hurried, bothered etc. He should look attentive and effect closure in his operation.

Ideally, a demonstration should be given to just one student and no more than three so the teacher can give personal attention to the learner. Once a demonstration has been given, students can teach other students. Demonstrations can also be introduced through audio-visual aids. But, this allows for no exchange of feedback.

Focusing is a second type of intervention for facilitation of success. A teacher may attempt to help a child differentiate, integrate, or generalize by non symbolic or symbolic efforts to get the child to attend certain elements (see discussion on differentiation, integration, and generalization).

Feedback is a third type of possible intervention. If a child cannot receive appropriate information from the environment about the appropriateness of his efforts, the teacher may

need to provide the information. Such is the case in the breaking of groundrules. Feedback doesn't always have to be negative, however. Reinforcement may be thought of as positive feedback.

Pacing

Pacing is the rate or tempo of an activity. The tempo of activity should vary during the day. Tempo should be adjusted to physical and psychological needs. Providing options and choices allows individuals to adjust the pace to their own needs. However, the teacher needs to provide for some variation and plan for overall timing.

Variation can come from shifts between active, quiet, and passive activities, social and individual activities, and even from goal generated activities to activities which generate the goal.

Experiences which are active involves a fast pace and movement. Quiet experiences require less movement. Dancing is active and sewing is quiet. In both of these types of activities the student is acting upon the environment. In passive activity, on the other hand, instead of acting the student is influenced by, and receptive to, receiving. Listening and observing are passive activities. Watching football on television is passive, playing football is active, and playing chess is quiet. Each of the three types of activities are appropriate for meeting different needs. Passive activity should be minimized for students who have yet to reach the stage of formal operations. Unfortunately, students currently spend about 57% of their time in school in passive activity.

Evaluating Interaction

Evaluation involves gathering data on the effectiveness of the program in terms of pre-determined objectives, and analyzing that data for making decisions about future programming. The teacher needs to judge the quality and clarity of goals, the manner of organization for their attainment (structure), the shifts in student development, and the accuracy and appropriateness of measures used for evaluation. With this information the teacher can make effective decisions to improve his efforts at guiding interaction.

Goals

Goals need to be based on philosophical and developmental principles which facilitate the actualization of human potential. This calls for process as well and content goals. They should be stated in empirically identifiable terms. This is particularly difficult for process goals. A single behavior or skill does not represent a process. An evaluator must search for a hierarchical pattern of changes in behavior which are irreversible and generalized across a field of responses. (Kohlberg & Mayer, 1972).

Attainment of Goals

Development needs to be evaluated over time. Has a lasting change taken place? Does the change represent improved competence?

Structure

The way to evaluate structure is to check the ratio of teacher output against the level of student development.

If teacher output is great and student development is low, something is wrong in organization (assuming the goals are appropriate). The evaluator needs to consider the options available to students, the use of the environment in defining those options, the clarity of groundrules and the consistency of their enforcement. In addition, the evaluator needs to consider the quality of intervention (demonstration, focus, and provisioning of feedback).

Measurement and instrumentation

Instrumentation refers "...to any systematic approach for gathering observations which can aid the evaluator in making decisions (Lyons, 1970)."

Measurement is the process of using a test, scale, or instrument to obtain a relatively objective and quantified indication of a person's standing on a characteristic represented by the device employed (Wilson, Robeck, Michael. 1971, pp.456).

Measurement is the placing of a value relationship on the information.

The question is how to gather objective information which will indicate level of development. This requires gathering data about each one of the processes central to the development of learning competence. This means, for example, that the teacher needs to gather information about goal setting, attention, will, effective coping, management of anxiety etc.

At this point in time instrumentation has not been developed for adequately evaluating many of the processes.

Further research is required to more clearly ascertain developmental sequences in the areas of learning competence and educational objectives which could then serve as criteria for measurement. Meanwhile, the most complete compendium of information available is summarized in the Anisa specifications. At this stage, the teacher must rely to some extent on intuitive hunches. This is due to a lack of attention devoted by researchers and evaluators to development. Unfortunately, the methodologies created for evaluation of skill attainment are not directly transferable to evaluation of the development of processes.

To summarize this chapter on interaction, the teacher needs to determine the student developmental level when possible. A child's level of development is reflected in his facility for differentiating, integrating, and generalizing experience in each of the multiplicity of processes classified under the five categories of potentialities: psycho-motor, perceptual, affective, cognitive, and volitional. The teacher facilitates this development through arranging environments and guiding interaction. This is the basic method of organization (structure) Structure is a precondition for learning and development. It requires principles for arranging environments, setting up groundrules, for intervention, and for providing pacing. Purpose, clarity and consistency of organization, and method of evaluation should be inherent in the structure.

Part I of this dissertation reviewed the literature concerned with teaching. It showed that there are many views of how teaching can best be analyzed. Chapter I showed that some educators think teaching can be understood as a set of behaviors. These people reject the idea of using theory as a basis for research believing theory prejudices investigation. Chapter II presented the opposite view. Many educators feel that theory is the key factor in an analysis of teaching. Some authorities believe in the importance of learning theory while others stress the need for a separate theory of teaching. In chapters III and IV another view is presented that is not as concerned with theory or behavior as it is with specification of a systematic set of procedures. Chapter V focused on the educational belief that prefers to see teaching analyzed in terms of human interaction. Chapter VI set forth some current models of teaching. Some educators believe teaching can be analyzed as a set of competencies while others see teaching as a decision making process.

It is helpful to see these views in the broader context of which they are a part. This broader context, the major current trends in education, is summarized on the next page.

Since each view fills a gap left by the other views, none is adequate by itself. Part II of this dissertation has attempted to outline a basic framework (a paradigm of teaching) within which all the views can be integrated. The chief elements of this paradigm are summarized following the next page.

TRENDS IN EDUCATION

Focus The Educator		Philosophy		Theory of		Learning		Motivation		Communication		Theory		Curriculum		Teacher		Student	
1. The Romantic		(Rousseau, Romantic		Personality		View		Psychosexual		A.S. Hall, Naturalism		Free Schools		Deschooling		The self in		Counselor	
2. The Social Interactionist		(Open Education)		Eclectic		Experimentation		Progressivism		Need		Satisfaction		Experience		Need		Satisfaction	
3. The Personalist		(Carl Rogers, Personality		Psychosexual-		Existentialism		View		Use the		concrete		consequences		Non-directive		The self in	
4. The Behaviorist		(Skinner)		Behavioral		S-R		Environmental		State in		Behavioral		Reinforcement		Anything		Programmed	
5. The Traditionalist		(Ausubel)		Normalist		Reception		Learning		To know		Rhetoric		Cultural		Transmission		Cultural	
6. The Developmentalist		(Piaget-Vernier)		Cognitive-Interactional		View		Developmental		To know		Definition		Competence		Integration		Processes	
7. The Information Processing		(Bruner, T. McV. Hunt)		Information		Processing		Developmental		To know		Definition		Competence		Integration		Processes	

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The following is a sample illustration of some of the elements to be considered in a Western classroom taken as a case in point.

ENVIRONMENTS

PHYSICAL ENVIRONMENT		HUMAN ENVIRONMENT	
Context	Instructional Units	Climate	Instructional Units
Configurations (physical) setting display storage (non physical) time healthfulness	Instructional objects audio-visual aids field trips simulation games reading material bulletin boards	solidarity loyalty morale satisfaction atmosphere	lecture demonstration modeling discussion role playing Group Games brainstorming problem solving
Elements 1) room characteristics space surface lighting ventilation acoustics temperature furniture tables chairs desks cushions pads rugs platforms shelves drawers dividers	supplies materials equipment	trust security empathy standards supportiveness acceptance respect openness responsibility self discipline	size grouping commonality of goal procedures communication network feedback system interaction pattern agendas interpersonal skills a) task b) socio-emotional

PHYSICAL ENVIRONMENT		HUMAN ENVIRONMENT	
Attributes		Dynamic Attributes	Static Attributes
a) of solids	b) of light	consistency	age of students
shape	& sound	reinforcement	sex of students
size	1 intensity	freedom from	size of students
weight	d direction	threat, tension,	number of students
color	color	fatigue	age ratio
texture		degree of member	
substance	c) of air	contribution	
temperature	temperature	structure	
	flow	sensitivity	
		objectivity	
		obedience	
<u>Content</u>			
potential purposes (uses)			
potential consequences			
<u>Structure</u>			
Patterns			
complexity (variables, relevance)			
variation (variety, quantity, versatility, effect of time, novelty)			
<u>Elements</u>			
concreteness (real to representational)			
clarity (contrast, focus, order			
consistency			
subtlety			
immediacy			
sequence)			
<u>Criteria for evaluating environments</u>			
<u>Feasibility</u>			
possibility			
economy			
efficiency			
time			
<u>Desirability (value)</u>			
suitability (match with level of development and interest)			
healthfulness (promote development)			
political			
aesthetic			
moral			
ethical (conform to rules)			
<u>Functionality</u>			
usefulness (degree of meeting purposes--			
check for deficiencies in configurations and element			
needs in terms of content, attributes, structure			
multi-purposed-flexibility			

INTERACTION

Observing Interaction

Developmental Level

Stages
Sequence

The Learning Process

Differentiation
Integration
Generalization

The Categories of Potentialities

psycho-motor
Perceptual
Volitional
Affective
Cognitive

Guiding Interaction

Rearranging Environments

Establishing and Enforcing Groundrules

Intervening (symbolically and non-symbolically)

Demonstrating
Focusing
Providing Feedback

Pacing

Active v.s. quiet, v.s. passive activity
Social v.s. individual activity
Goal generates activity v.s. activity generates goal

Evaluating Interaction

Goal Clarification
Goal Attainment (results)
Structure (organization)
Measurement and Instrumentation

APPENDIX

- A. The Anisa Model: A New Vision and a New Way in Early Education.
Daniel C. Jordan and Donald Streets.
- B. Partial Listing of Processes taken from Releasing the Potentials
of the Child an unpublished manuscript by Daniel C. Jordan and
Donald Streets.
- C. An Annotated Bibliography